TO TECH CAREERS

- System administration
- VLSI and Chip design
- Mobile app development
- Rich Internet Applications
- Game design
- Web analytics and SEO
- Web designing
- Software testing
- Indie-development
- Information security
- Industrial design
- Flash and HTML 5
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System Administration
Put the technical skills you’ve acquired over the years to good use and consider a career in system administration.

Be a Chip off the old block
All that you’ve ever wanted to know about a career in VLSI and Chip Design

Careers in Mobile App Development
With the apps and smartphone industry having firmly established itself in India it’s the perfect time to think about a career in this field

Careers in RIA development
What is RIA? Can one look forward to a career in RIA development as a tempting prospect? It begs us to think about the opportunities available and what the future holds for RIAs and its developers

How to start a career as a Game Designer
The rising popularity of gaming has drawn intense interest in game development as a lucrative career option. But what does it take to be a successful game designer?
Careers in Web Analytics and SEO
In this section, we take stock of the opportunities and focus on the skill sets required to hone your talent and excel in this line of work.

Careers in Web Designing
Be an architect of the web and in turn shape your own future. Read on to find out how...

Careers in Software Testing
Testers with domain-specific knowledge and technical skills are paid more than developers. Interested?

Indie-pendence
The high, lows and promises of life as an indie developer

Secure your career
Frequent attacks, fraud, economic espionage, computer hacking involving the smallest companies and giants like Google make IT security a career option worth looking at

Designing Careers
If you have a creative bent of mind, a career in Industrial Design might be just the right path for you.

Careers in Flash and HTML5
The demand for this dual proficiency is going sky high, while the scarcity is driving up salaries considerably. There couldn’t be a better time to look at these as viable career options.
Geeks keep the cogs of the world machine running

Watch any Hollywood high-school drama and you’ll find geeks being portrayed as the weak downtrodden lot who get trampled on by the jocks of the world. At least that’s how it used to be. Watch any modern-day coming-of-age story and halfway down the movie, the once-bullied bespectacled bicycle riding nerd will be driving up in a sports car with a supermodel for arm candy. He’s still a bespectacled nerd of course but what these movies are trying to show you here is that in the real world geeks, nerds or anyone who builds their careers on technology (and primarily computers to be specific) will eventually hit it big.

And it’s so obvious when you think about it. Just about every business today relies on an IT backbone not just to thrive but even to survive. At a very pedestrian level even a company that fulfils simple packaging orders for vendors relies on email, computers and telephones to service its clients. And chances are there are IT professionals who make it all function the way it should.

The gamut of careers one can look at in the technology sector doesn’t just extend to the very basic example we gave above. There are specialised areas such as VLSI and Chip Design, Software Testing, Information Security and literally dozens of others. In fact as per a study published by US News & World Report, covering the The 100 Best Jobs of 2013, 5 of the top 10 were in Technology (The other five were in Healthcare - http://digit.in/topjobz).

Over the years, we’ve covered quite a few technology careers in Digit. We realised that many of those careers are still hot and sought after. While a few nitty gritties such as the certifications, pay scales and technical skills
required have changed, at their core they’re still the same and very much in demand. With this thought in mind we’ve come up with this compendium of tech careers in the form of a Fast Track.

While compiling it, we’ve tried to update all the information to the current landscape. And we’re hoping it will give young people such as yourself a glimpse into what it’s like to build a career in the technology sector.

Good luck on your endeavours and happy reading.
Chapter #01

SYSTEM ADMINISTRATION

Put the technical skills you’ve acquired over the years to good use and consider a career in system administration.

If there’s one thing Digit readers are familiar with, it’s getting calls from friends and relatives to fix their PCs. Being geeks, we’ve all often been the go-to guys for everyone: from uncles and aunties to neighbours and neighbours’ uncles and aunties and occasionally the cute chick from college. Well maybe not so much the cute chick, but one can always dream.

If you’re nodding your head right now, perhaps it’s time to consider putting all that tech gyan to some good use. Can you actually make a career out of the troubleshooting knowledge you’ve acquired over the years? Will
people actually pay you for your tech wizardry? (and no, we don’t mean a squishy 5-Star offered as reward with a dentured grin).

Jokes aside, you need to ask yourself if your interest actually lies in IT and Support. If the answer is ‘yes’, then you know where to go from here. Get going!

**A career awaits...**

Just as you're the go-to guy for all PC problems in your neighbourhood, there's usually a person in large corporations who does essentially the same thing. Of course this usually underappreciated fellow does much more than just fix PC problems. A system administrator (usually referred to as ‘SysAdmin’) is responsible for the upkeep, configuration and smooth and trustworthy operation of computer systems in the professional industry. System Admins are usually placed in charge of multi-computer setups or servers. Their job is to ensure that the uptime, performance, resources, and security of the computers they manage meet the needs of the users on the server. A system administrator is given the freedom to upgrade computer components and software. He takes on the role of a technical advisor by automating routine tasks and (as and when required) writing computer programs. He's the all-round troubleshooter with a hierarchy that involves supervising a staff of Junior Administrators to provide technical support to users as and when needed.

**The path of the System Administrator**

Ever asked yourself ‘Where do system administrators come from?’

No, no storks involved. A passion for computers and technology, and a drive to make a living off that passion. A degree in IT or CS (Engineering) is recommended, of course. Or even a degree in Computer Engineering with a natural affinity towards software and software design. Based on people we spoke to, your academic credentials should simply go on to show your interest in the field of technology and possibly management. Simply put, you don't need to be a rocket scientist, but ‘What’s a keystroke?’ shouldn't be a question on your mind, either.

To find out more, Team Digit spoke to some system admins to tell us more about their jobs.

Syed Ibrahim is a network administrator at Alpsoft Technologies Pte Ltd., Singapore. Alpsoft is a company that deals with technology solutions for several companies, worldwide. Ibrahim did his Masters in Information Technology, and specialised in Computer Networking from the James Cook
Syed Ibrahim, 
Network Engineer/Manager, 
Alpsoft Technologies, 
Singapore

University, Australia. He went on to be a system engineer at Mercury Software Technologies in Chennai, and continued with the profile at Xchanging, Singapore before his current posting at Alpsoft Technologies. He was kind enough to answer some questions about being a system administrator and how he got where he is.

Balaji Ramarao is our senior consultant for this article. He spent close to 22 years in this field. Educated in Madurai, he’s done his graduation with a Post-Graduate Diploma in Systems Development from NIIT. He’s also done his training in Madurai, Chennai, Egypt and Bangalore. He has several certifications, including that of an ethical hacker. In the past decade, he was in charge of System Administration & Problem Management at Aditya Birla Minacs Worldwide Limited for over 14 years. He is currently employed as the Senior Manager of IT at Advanced Business & Healthcare Solutions India Pvt Ltd. Even though he started his career as a programmer, his vast experience as a system admin in this field gives us invaluable insight into System Administration.

A three-step guide to SysAdmin 101

“Yes, I wanted to be a system administrator”, said Ibrahim when asked whether it was always his choice of a vocation. “The steps that I took were along the course of my life.” He went on to suggest that those who intended to take the same route should cultivate a passion for computers and have an innate desire of keeping a ear to the ground when it comes to learning new things about technology. This is important when it comes to a career in any field. Practice makes perfect. One way to get there is by having a go at learning how to handle and repair your own computer. You will make mistakes, obviously, but it’s all part of the learning process. The third step towards becoming a System Administrator is to learn about servers. Subjects such as Windows Active Directory, Mail Servers and FSMO roles are good topics to get a headstart on. A good way to pick up on the basics of System Administration is by doing an MCSA certification, at least.
**Getting into System Administration**

Syed admitted that experience was more important than anything else you could do to get a job in System Administration. Then come the certificates. Certifications seem to be a lot more important when getting a job as a system administrator. Even more important than a college degree. When asked about this anomaly Syed said, “A degree has some weightage, but the certifications help the manager to gauge your skills better.”

Balaji Ramarao seems to agree with this statement. He says that three years of certification is more than enough to impress the company. One or two years of work experience would also go a long way. However, even though book knowledge and certification help, to a certain level, a budding SysAdmin should have 2-3 years of on-the-job training, initially.

There are several certifications which are recognised when applying for a job in System Administration:

- MCSA (Microsoft Certified Solutions Associate) for System Admin/ System Engineer
- MCITP (Microsoft Certified IT Professional) for System Admin/ System Engineer
- CCNA (Cisco Certified Network Associate) for Network Admin/ Network Engineer
- CCNP (Cisco Certified Networking Professional) for Network Admin/ Network Engineer

Other than these, there’s also LPIC (Linux Professional Institute Certification 1, 2 and 3), RHCE (Red Hat Certified Engineer), HPASE, HPCSE (HP Accredited Systems Engineer and Certified Systems Engineer), OCP and OCA (Oracle Certified Professional and Oracle System Administrator). Most of these courses, as you can see, are Operating System-specific, which inherently implies that though the job of System Admins may be the same, their specialisation is the lynchpin to their job (i.e. depending on the system that the company’s server is built on).

**Specialisations**

Other than specialisation of the operating systems that run servers, system administrators also specialise in four main fields:

- **Architects:** System Architects lay out the system of a company from scratch – deciding the foundational operating system that everything would run on and the material required to ensure that things are set up smoothly and making sure that everything is ready before giving the go-ahead.
Designers: System Designers work hand-in-hand with the System Architects. They help set up and design the system – right from the server to the individual PCs. They implement the ideas laid forth by the Architect.

Engineers: The most well-known of System Admins. They’re the people who’re on hand whenever and wherever things need to be kept top notch, wherever any kind of updates are required. They’re the keepers of peace between user and interface. From the point when the system is set up, they work to keep the machine well-oiled and running.

Consultants: The druids of this little Gaulish village, the System Consultants are referred to whenever any of the others hit a wall in the process. They smoothen out the wrinkles and advise as and when required. They’re the troubleshooters to the troubleshooters. Usually, consultants are people who have several years (if not decades) of experience in the field of system management. Occasionally, consultants are trained to be exactly that. These consultants are usually the best and brightest of their generation.

Role of the System Administrator
As mentioned in the beginning, the role of the System Administrator is to ensure fluidity in the functioning of the network in the company in question.
It’s their job to anticipate potential issues and come up with contingencies for the same.

On being questioned whether the profile changes from company to company, Syed says, “Yes, the role of the system administrator can change depending on the structure and size of the company. In case of small and medium scale companies, the complete network meaning the servers, network devices such as routers and switches, and their configuration will also be managed by the system administrators."

“The role of the System Administrator changes with enterprise, mid-range & small companies. There is a specific job in System Admin at the enterprise Level. This is mainly because of volume of the business and the number of employees,” Ramarao added, when asked the same question.

This being said, we should also point out that there has always been a confusion between the job descriptions of system administrators and network administrators. The truth is there isn’t any tangible difference between the two jobs.

A system administrator’s job is usually broader and not as specialised as that of a network admin; though, admittedly, ‘SysAdmin’ usually refers to the person who manages the servers. Smaller companies tend to have just system administrators.
CAREER PATH OF A SYSTEM ADMINISTRATOR
(FROM LOWEST TO HIGHEST)
Asst System Admin || Sys. Admin || Senior Sysadmin ||
(This is where the hierarchy ends for those only interested in the technical part of System Administration. If you wish to go further into the Management part of the hierarchy, read on)
Team Leader || Asst.Manager || Manager-IT || Sr.Manager || Assistant General Manager-IT || General Manager-IT || Assistant Vice President-IT || Vice President-IT || Chief Information Officer ||

A network administrator, on the other hand, usually deals with switches, hubs and routers on a network. Sometimes they also have to deal with VPNs and firewalls. Larger companies usually split off these duties from a system administrator to a network administrator.

The first paycheck
Obviously, like in any other field, fresher salaries are never fixed. But based on our own research, a fresher in this field would earn a salary of around Rs.95,000-1,20,000 per annum. If you’re good at your job, however, the rise up the ladder is quite fast.
The future of System Administration

When asked about the future of this career, Ramarao responded saying, “There is a start and there is an end for all. New Technology will come and this will die soon.” Syed also admitted that most of the companies are moving towards Virtualisation and even network devices such as routers and switches are moving towards it through SDN (Software-Defined Networking).

So it seems that like everything else in the job market, System Administration is also (somewhat ironically) feeling the effects of the advent of technological advancement. With telecommunication becoming more and more popular, the job of a system administrator may just become a little more redundant. But there’s something to be said about having a person hands-on, taking care of setting up your system and maintaining it.
Chapter #02

BE A CHIP OFF THE OLD BLOCK

All that you’ve ever wanted to know about a career in VLSI and Chip Design

Chip designing is a challenging job because of the constant innovation in process technology. In addition to its dynamic nature, as products become increasingly complex these challenges must also be overcome. At its base lies Electronics Engineering and Computer Science and like others, this industry too, is not without its lore and legend.
The Indian story of VLSI began in 1985, when Texas Instruments set up the first design centre in Bangalore, thereby ushering in an era of widespread chip design and VLSI. Today, Texas Instruments finds itself in the company of names such as AMD, Intel and NVIDIA, apart from firms such as KPIT and Mindtree Consulting engaged in ASIC (Application Specific Integrated Circuit) designs. According to 6Wresearch, VLSI design service companies in India are expected to be worth $3.02 billion by 2017, from all three segments — analogue, digital and mixed signal. However, the industry is expected to shift to mixed signal in the coming years. Also, despite the difference in salaries slowly narrowing, having designs produced in India still presents a huge comparative advantage; so the future is bright.

**The Indian link to VLSI**

Processors and chips developed today contain millions of transistors, hence, the term VLSI (very large scale integration). NVIDIA’s Indian operation has more than 780 employees across three sites – Bangalore, Pune and Hyderabad. According to Amit Verma, Director of Human Resources, NVIDIA (India), “In these centres, the focus is on end-to-end ASIC product development encompassing architecture, RTL design, verification, timing, physical design, system engineering (including board bring up and debugging) and quality assurance for chipset and mobile products. NVIDIA’s Indian engineers are part of the company’s worldwide team and their contribution is vital to the business as a whole.”

On the other hand, AMD has two centres in India, where AMD teams usually work on one or two products at a time. This involves a fair bit of interaction with the teams abroad. “Shanghai was, for example, a joint effort between Boston and India”, said Karthik Muthusamy, former General Manager, India Design Centre at AMD India Engineering Centre.

**Basic requirements**

Passion and an early understanding of this field is essential. Aspirants will work with sophisticated design tools, chip architectures and test methods. So, apart from technical expertise, additional skill sets are also important. “Key areas that we look for in our engineers would be strong analytical skills, good problem solving skills, a willingness to work with teams as collaboration is a part of the job profile, and so a lot of communication skills.” said Rohit Vidwans, former director of Digital Enterprise Group (DEG), Intel India. Specific to chip design activities, companies look for
Electrical and Computer Science engineers, even Chemical engineers or someone with a strong background in Physics. As for degree certification, companies hire all the way up from a Bachelors degree to a Masters in Science degree, as well as PhD holders; thus, spanning the entire spectrum of educational degrees.

**Technical requirements**

A strong hardware engineering background with specialisation in VLSI design is a must. Additionally, knowledge of digital systems and VLSI design, computer architecture, computer arithmetic, C/C++ programming languages, CMOS transistors and circuits is necessary. In VLSI design, tools play a major role. An integral part of an engineer’s work deals with using the latest industry tools from Synopsys, Cadence and other EDA vendors. An understanding of hardware languages such as Verilog is also important. Other languages such as Perl and C come in handy too. Processor description languages such as nML and Lisa will be an added plus if you’re thinking of a career specialisation in microprocessor design.

“Apart from architecture and HDLs, chip designing in today’s world will need in-depth knowledge of even transaction level modeling using SystemC, knowledge of electronic design automation tools, and some understanding of the backend timing / manufacturing issues. Knowledge of simulation tools and interactions with memory/cache design will also be needed.” says Sandeep Kumar, a consultant architect at Coware India Pvt Ltd. Sandeep has sketched a successful career in this field, now spanning over 17 years of experience.

**Recruitment**

Companies are in search of highly motivated individuals with strong analytical and communication skills. Apart from educational degrees, companies are also interested in the fundamentals. “There are people who understand how to push the tools, but when we talk to candidates we try to see if they are familiar with fundamentals. For example, if we’re working on a GCC component, we would want to know where you put this particular switch. Why here? Why do you use it? OK, you know how to use ASIC tools, but do you know why you did certain things that way? Ability to understand and pick up is important,” said Karthik. Arriving at the answer is as important as getting to the answer itself. So you can expect these kinds of questions in the interview rounds. Most companies have tests for analytical ability.
Talent is sourced by tying up with premier schools in the country, where companies engage in open forums and interviews. Internship is another means. Intel has a very strong internship programme. Hiring engineering students as interns and having them work with their design teams lets students get a first-hand experience of what it’s like to work in this industry. At the end, companies take on the better ones as fulltime employees. Intel has been known to take on over 100-150 interns working in different development groups across India.

The intake varies widely from company to company. AMD believes in taking only a few people at a time. This is due to the steep learning curve. When it comes to microprocessor design, it doesn’t use large teams. The Athlon design was done with less than 200 people. Therefore, finding the right talent is more important than making up the numbers.

**Training**

Some reports suggest that while sourcing talent, semiconductor companies find that there’s a lack of engineers who can immediately be deployed on a design and that Indian electronics engineers need additional training and skill development. However, many industry insiders we spoke to

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**THE RIGHT COURSE**

Companies consider Tier 1 colleges in India such as IITs, BITS, NITs, etc., as a good source of qualified engineers. However, candidates from regional colleges such as VJTI or Manipal Institute are also considered, provided these students can opt for a course in VLSI design. Companies look for students at undergraduate and masters levels in computer science and electronics domains with a consistently high GPA. Here’s a list of some of the top places that offer courses in VLSI Design and allied fields, as recommended by VLSI chip design companies.

- **CDAC, Hyderabad**: Certificate course in Digital and Analog VLSI Design (CDAD)
- **Sandeepani School of VLSI Design, Bangalore & Hyderabad**: Post-graduate diploma in VLSI Design
- **Veda IIT, Hyderabad**: MS and Diploma in VLSI and Embedded Systems
- **Cranes Software, Bangalore**: Embedded System certification
- **Vedant Chandigarh, Lucknow**: Course in front-end and back-end design including Analogue & Mixed Signal Design

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beg to differ. In fact, they believe Indian engineers come with strong conceptual understanding and impressive learning aptitude. They need to be trained only on the latest tools and development methodologies as they’re not usually exposed to these at the college level. However, they’re able to pick up everything they need pretty quickly.

When working on projects for designing low power chips, efficient multi-core architectures, mixed signal chips, memory sub-systems, interrupt controllers, and interfacing with video/audio processor, the basic textbook knowledge may be insufficient.

“Current curriculum touches the basics of computer architecture, while taking up a school project and learning the relevant design automation tools, from companies like Cadence/Mentor Graphics/Synopsys will be a practical help,” said Sandeep.

Some companies have strong mentorship programmes whereby junior engineers are paired with a senior engineer who coaches and guides them along their way. This is, of course, in addition to regular training programmes.

**Work culture**

It’s not all work and no play when it comes to a career in chip designing. It’s a very young industry to work in and the average age of employees at most companies is low, making the work culture active and vibrant. Companies have extremely challenging programmes which motivate teams to deliver; but at the same time, there are several recreational activities such as team building, sports and quarterlies. Intel organises events such as cricket sessions and tennis matches that involve employees as well as their families. So it’s a mixture of cutting edge work and fun.

**Career path**

Career paths in this industry are well defined for aspirants in both, technical and management functions. Typically, an engineer takes about 5-6 years to reach the position of a Senior Design Engineer. As the aspirant gains more work experience by working with different designs, he can advance to a Lead position. Post this level, the engineer can decide if he wants to continue in the technical function or move to a management function such as Project Manager, both of which are equally fulfilling depending on the inclination. How quickly you grow depends entirely on your individual ability. You can also branch off and choose to become
an expert in a certain technology, for instance, L2 design, and be a mentor or Senior Fellow.

As for the salaries in this industry, a fresher starts off at around 5 lakhs per annum while a Lead Engineer generally gets 8-12 lakhs. In a few years, one can progress to Project Lead where 12-20 lakhs is the norm and the sky is the limit, depending on the brand.

**Summing it up**

For a successful career in any field, you need to have a special interest in the subject and a dream to make a difference. Chip design is an extremely fulfilling career option for the technically and technologically inclined. Conscious choices have to be made along the way which may be less rewarding in the short run, such as going in for a focused Masters with a good project. The money and lucrative job offers will follow once you’ve developed the required skill sets and gained the experience.

As for the areas to look out for, the general consensus is that chips designed for consumer electronics is a growth area. Designing for wireless devices and multi-core processor design is bound to go up too, while integration of MEMS (Micro-Electro-Mechanical Systems) is a growth area that has great applications in the healthcare and medical arena. Entertainment and graphics technologies coupled with designing chips that give you higher performance at lower power consumption should be the focus for young entrants. “The dawn of energy age has increased demand on semiconductors to do more with less energy (performance per unit of energy). Another trend is towards always-on mobile connected devices. This is giving a push to cloud computing where most of the

“Seeing technologies you’ve worked on, being put into day to day use is quite an exhilarating experience!”

— Rohit Vidwans  
Former Director of Digital Enterprise Group, Intel India
horsepower is in a data centre and a smart connected device can access this capability from anywhere.” says Dr. Atul Garg (PhD), a senior chip designer at NVIDIA Corporation, Santa Clara, USA. The engineer from IIT Kanpur, who now holds ten design patents to his credit has this final advice for aspirants: “Keep yourself current with state of the art in such a fast moving industry, increase productivity to be in sync with industry trends, and keeping ahead of the competition. Learning is a lifelong process and nothing is impossible if you work hard.”
CAREERS IN MOBILE APP DEVELOPMENT

With the apps and smartphone industry having firmly established itself in India it’s the perfect time to think about a career in this field

Who could’ve imagined in the time of an innocuous little app called Snake that the mobile app development industry would be where it is today. A recent report by Gartner pegged the total number of apps downloaded across all
platforms at 64 billion in 2012 and that number is projected to hit 268 billion by 2017. Roughly 91% of this sales figure is attributed to free applications and paid applications being the other 9%. This trend too is going to stay on the same path for a couple of years down the line.

Back in the day, carriers had a walled garden approach strictly controlling the app content worldwide, and in countries like India the developer revenue share was as low as 30%. Apple came in with the App Store and in one fell swoop changed the game for everyone, developers et al. This was followed by Google’s Android Market and Nokia’s Ovi Store. Today we have various platforms present in the market that run on mobile phones, tablets, and even netbooks; viz Adobe AIR, Java ME, Meego, Symbian, Android, iOS (Apple), Samsung bada, RIM (BlackBerry), Windows Mobile, Brew and many more. In the last few years, the balance has changed sharply in favour of a select few with Android being the most popular platform and IOS coming in at a close second.

The app industry is one of the most rapidly evolving technology fronts right now. Devices such as mobile phones, tablets and now even home appliances are running apps. Apps that can be downloaded, apps that can connect to the internet and apps that can define lifestyles are all in operation. This process has been ongoing for quite some time. A few years ago when we spoke to Siddharth Sharma from RapidSoft Technologies, an Indian app development company which caters to telecom clients such as AT&T, Telefonica and Verizon, the company was actively building such solutions.

**Development landscape demystified**

The entire developer ecosystem can broadly be categorised into the demand side and the supply side. On the demand side, you have three kinds of entities. There are the gaming, publishing and content companies trying to develop their own offerings in the mobile space. This kind of content could even be in the cloud since you have a web interface on mobiles as well. Then, there are people who are developing their own applications and porting those applications on to the different marketplaces. The third kind includes OPDs or Offshore Product Development companies that exploit the arbitrage opportunity that’s created in this space. On the supply side, there are again three profiles for mobile developers – MIS developers, who are part of a large enterprise organisation whose concerns are compatibility, scalability, security etc; game developers, who work across platforms; and
web developers, who work in the mobile space and develop mobile web pages or Rich Internet Applications.

**Education, certification and employment**

The people most suited for this field have a technical background. They could be B.E. or B.Tech, B.CA, M.CA or Computer Science graduates. Such courses impart a certain amount of base knowledge in terms of coding such as C++ or C# or technologies such as J2EE. But these curriculum driven skill-sets do not necessarily prepare students for employability. Perhaps this is why you have India-based training institutes such as [www.FresherLab.com](http://www.FresherLab.com) and [www.edumobile.org](http://www.edumobile.org) cropping up. Sushant, CTO of Porting Lab that runs EDUMobile echoed our opinion reasoning when he said, “we felt that there is wide gap between the knowledge imparted by universities and that required for the market place and so we thought of creating modular training programs to augment the university training available to most engineers. Even mainstream institutes have now acknowledged the rise of this sector and have begun offering courses for the same. Even IIT-Delhi offers a masters course in Mobile Computing which doesn’t focus on app development but rather will provide conceptual knowledge of the mobile platform in general.

When Windows Phone 7 was newly launched, DreamSpark ([www.dreamspark.com](http://www.dreamspark.com)) ensured plenty of support systems for developers – be it access to devices to test their applications, access to the latest SDKs or even getting their applications on to the marketplace. The Microsoft program provided free tools such as Visual Studio to students. Even before WP7, DreamSpark had about 3 million students who were part of this program and it’s pretty easy to get a Dreamspark membership using an ISIC identity card.

**Knowledge base**

If students want to gain capability, they should have the requisite skill sets to develop across all platforms. A platform is like a channel of distribution. If you have expertise on only one type of platform you’re leaving out opportunities to monetise other channels. If you’re comfortable with, say, development in J2ME and want to port your app to the Symbian platform you need to look at developing a few ancillary skills. “Qt is a good place to start”, advises Anup C Shan, a web developer at Oracle who also builds mobile apps as a hobby. Qt is a cross-platform application framework for developing applications with a graphical user interface (GUI). It’s used for the KDE environment on Linux and is platform independent. With Qt,
you can write code once and it will (supposedly) work on all Windows, BlackBerry, iOS and Android devices. Besides, there’s a decent amount of documentation available online.

In a similar fashion, there exists Unity which is slowly gaining popularity in the gaming industry since it too has a “code once port everywhere” approach and supports IOS, Android, Windows Store, WP8 and BlackBerry10. Moreover, they apps can be designed to work in browsers which have the Unity player plugin installed. There aren’t any industry-wide accepted training courses currently available since Unity is pretty nascent in India but online resources are plenty. Multi-platform tools are what start-ups primarily look for. Though diversity is desirable it’s not always favourable in all cases. The MIS type of enterprise developers generally work in platform-specific teams. Hence the opposite, leading to specialisation.

Also another approach is to go for these tools which provide most of the code base for you and all you need to do is pick certain libraries from them and majority of your application code is taken care of. These software may utilise a revenue sharing program which are tier-based. Once you achieve a certain revenue amount then the share percentage skews towards these software so the more popular your app becomes the more you pay up.

**Is code enough?**
Mobile app development has two factors to it – coding and user
experience. “Really, it’s important to think about what the user feels about the application after he or she is done using it. Is he or she thinking ‘Geez, that was tough, thank God I got through that’, or is it closer to ‘Wow that was quick, I wish I could do more through this app’”, says Sean Mahoney, president and CEO of mobile app development company AndPlus. If you’ve written highly optimised code but have not paid attention to how a user will interact with the application, it will fail. Developers must have design interface skills in addition to technical knowledge. In India, coding is not the differentiator. Multi touch, pinch to zoom, gesture recognition and accelerometers are trends app developers must keep in mind to make the experience richer, enticing and exciting. The underlying technology is a mere tool while the developer’s expertise is a basic requirement.

**Pay scales and career path**

Pay scales in app development companies are a little higher than those of IT professionals from other backgrounds such as Java or .Net, simply because of current demand. iPhone and Android developers are more preferred right now. By and large, freshers can expect to make anywhere between 2.5 to 3 lakhs.

“Most of the IT companies in India have Mobile Software departments and the exploding Smartphone market is a big opportunity for everyone. On an average anyone with one year of experience in iPhone or Android gets anywhere from Rs. 25,000 to Rs. 35,000 per month”, said Sushant Das, CTO of The Porting Lab. “Candidates are expected to pick up languages and programming concepts through their formal education course but not so much the actual working on development tools.”

From a fresher’s hiring standpoint we check analytical ability and algorithm making ability at entry point,” added Siddharth from RapidSoft. Companies depending on their size can take candidates who have trained with, say, Aptech or NIIT, or depending on their hiring guidelines insist on Engineering/M.CA degrees. On hiring freshers, companies put them through about six months of training, in which they’re made conversant with the different platforms and technologies. In RapidSoft the career path goes something like this – Junior Developer > Program Lead > Team Lead > Project/Delivery Manager. The position of Project Manager can be attained in about 10 years, and once in this position you can hope to conservatively draw Rs.14-17 lakhs. The sky is the limit.
Resource Central
- http://developer.blackberry.com/
- http://developer.bada.com
- http://unity3d.com/learn

3rd Party Tools
- http://appery.io/
- http://mobileroadie.com/
- http://www.theappbuilder.com/
- http://www.goodbarber.com/
- http://www.appypie.com/
- http://www.appmachine.com/
CAREERS IN RIA DEVELOPMENT

What is RIA? Can one look forward to a career in RIA development as a tempting prospect? It begs us to think about the opportunities available and what the future holds for RIAs and its developers
Rich internet applications, or RIAs, in simpler terms are web applications that work like full-fledged desktop applications in many ways. They’re delivered to the user through a site-specific browser either through a plug-in or a virtual machine. With more and more services moving to the cloud and with increased internet connectivity RIA development is in high demand. RIAs provide robust ways of interacting with users with way more efficiency than ever before. As a simple example, traditional applications generally tend to be limited to form fields, radio buttons, and check boxes whereas RIAs can allow the user to perform in-line editing, drag and drop items or otherwise interact directly with the elements. Popular browser-based RIAs include Flickr, Google Maps and eBay; desktop-based RIAs include Twhirl and Tweetdeck, both of which interact with the Twitter website; and enterprise applications such as Accelerate4Pharma, a pharmaceutical application.

A career in RIA development is becoming increasingly relevant and sought after. With the increasing penetration of the social web among the masses, RIAs dominate the arenas of online gaming as well as applications such as video, sharing and recording. Development of new technologies and web standards such as HTML5 and JavaScript-based widgets are set to provide solutions for mobile web experiences and fuel the need for new creative developers adept with RIA knowledge. As a developer familiar with RIA technologies, you can be assured of a career with top class placement in the programming and IT industry. With the increasing dependency on building and developing content for browsers, desktops and mobile platforms, this sort of talent is being sought after in great demand by all modern IT and web companies.

**Frameworks to build RIAs**

A framework is the platform on which a RIA is built and deployed. There are many different RIA frameworks. One of the biggest such platforms for RIA development is offered by Adobe which includes Adobe Flash, Flex and AIR. Another such framework is Silverlight offered by Microsoft.
It’s available for multiple browsers, including Firefox and Safari, and the Windows and Mac OS X operating systems. There’s also an open source Silverlight project for the Linux operating system. Curl is another RIA framework designed for business use. Curl doesn’t focus on graphics and advertising, but rather on applications that integrate with business data systems. Apart from these, other important RIA frameworks include Google Web Toolkit, JavaFX, Mozilla Prism and OpenLazlo.

RIA development can be done through a variety of frameworks and technologies. For coding the back-end part of the application, you can make use of programming languages such as Java, ColdFusion, PHP, Rails, .NET, etc. For the client side you can use established MVC frameworks including Flex/ActionScript and Ajax, some emerging ones for Silverlight, and adapted Java frameworks for JavaFX. The primary quality for a developer is the ability to define the needs and capabilities of an application well if he wants to determine both, the back-end and the front-end application architecture well.

**Requirements for RIA development**

Irrespective of which RIA technology you’re using or learning to use – be it Flex, Ajax, JavaFX, Silverlight, or any other RIA technology – there’s a similarity in the architecture, in that most typically there will be a stateful client application and a back-end layer of separate services. Success in designing and building a rich internet application would depend a lot on how well this differentiation is understood and taken care of. RIA developers starting off see a salary upward of ₹10,00,000 per annum. An experienced Senior Technical Lead can get anywhere up to ₹20,00,000.

In today’s global business environment, where customers are more demanding than ever and brand loyalty is increasingly difficult to obtain, deeper customer engagement is integral to an organisation’s success. RIAs
tend to make these customer interactions more compelling, engaging, dynamic and useful. Business executives increasingly recognise the value customer engagement brings to their businesses. For example, most studies on engagement indicate that better engagement translates into improved customer loyalty and higher profits. Engagement is also critical to transforming customers into active advocates for brands and businesses; engaged customers will recommend products and services to others.

**Usefulness of RIAs to businesses**
Well-designed RIAs can produce impressive results that can help prove the value of current investments and make the case for future RIA projects. Firms that measure the business impact of their RIAs say that rich applications meet or exceed their goals. Improved ease of use for customers dealing with RIAs drives higher conversion rates and order size. More shoppers convert to buyers when they can easily trade off product options and costs in
real time. And because of increased ease of completing complex orders online, fewer customers give up. Additionally, the ability for RIAs to incorporate rich media pays dividends and helps boost margins. RIAs not only enable better configurations, they also allow firms to embed video and other contextual help content into applications. Users who access these types of help features convert at a higher rate than those who don’t.
HTML5 versus Flash

YouTube is one of the biggest examples of the success of RIA technologies. It is increasingly delivering full length movies and live streaming events, and doing this without any issues or interruptions often requires fine control over buffering and dynamic quality control. Kuan Yong, ex-platforms product manager at Google’s YouTube, says that despite his company’s efforts to make YouTube videos run in an HTML5 player, Flash isn’t going anywhere. “Flash Player addresses these needs by letting applications manage the downloading and playback of video via ActionScript in conjunction with either HTTP or the RTMP video streaming protocol,” explains Yong. “The HTML5 standard itself does not address video streaming protocols, but a number of vendors and organisations are working to improve the experience of delivering video over HTTP.” YouTube also has to offer copy protection for some videos, like YouTube Rentals. The Flash Platform’s RTMPE protocol is compatible with copyright protection technology, but HTML5 is not. Flash also remains the preferred option for video embedding. In conjunction with Google’s decision to bake Flash support into its Android devices, Flash doesn’t appear to be going anywhere anytime soon.

Nonetheless the iPhone and iPad put Flash and any plug-in based RIA application in general in a bad spotlight. Apple’s side of the story is that Flash is a low performance, insecure, battery life drainer. Steve Jobs has been quoted in some articles as saying that Adobe programmers were “lazy” because they didn’t improve Flash. But despite its popularity this is not an issue only restricted to Flash but all plug-in based RIA frameworks. Microsoft Silverlight and Java are also affected by many of the issues affecting Flash. None of these run on the iPhone or iPad today. HTML5 though is hailed as the future of the Web and RIA development. But it could take a very long time for it to be mature enough for extensive use. HTML5 is large and complex, and if we are to trust current projections, all parts would only be complete by the year 2022, some 18 years after the process started in 2004.
However, some websites are already using, if not the complete spec but a subset of, HTML5. For example, YouTube and Vimeo have already rolled out use of the video element in HTML5. The working subset of HTML5 is nowhere close to the power of Flash. There are many advanced effects that are only available in Flash, Silverlight or Java. For example, Google, which is driving HTML5, relies on Flash in Google Maps for Street View and in Gmail for the multiple file upload capability. There are tens of thousands of Flash games on the web including game apps within Facebook. This wouldn’t be possible with HTML5 anytime soon.

It’s not just about features, but also about deployed infrastructure that favour Flash. A pragmatic perspective should look at the numerous tools, ad engines, business processes, infrastructure and platforms that support and/or enable Flash-based advertising. This aggregate mass will take a long time to shift to an alternative, no matter how good that alternative may be, due to sheer inertia of large scale systems that are operationally functional. HTML5 is the future of the web, for simple interactivity, including charting, some limited 3D vector graphics, image transforms, video and audio. It’s possible that 90-95% of an average enterprise’s needs could be met by HTML5. There are only a few classes of corporate apps that would gain significant benefit from Flash, Silverlight or Java over what’s available in HTML5 or even in Ajax.
Learning RIA technologies has never been easier. With all these companies trying to promote the use of their own technologies, there are innumerable resources available online either by Adobe, Microsoft or other open source communities. With the right creative and technical knowledge matched with prowess, getting yourself hired in this area could be very easy and exciting.
How to start a career as a Game Designer

The rising popularity of gaming has drawn intense interest in game development as a lucrative career option. But what does it take to be a successful game designer?

Nearly all of us have played video games as children and some of us continue to do so as adults. But have you ever wondered how such a complex piece of software is made? What kind of knowledge and skills are required to make a “good” game? Well, if you learn the right tools.
have ever wanted to get into the game of making a game, maybe you would want to look at game design as a career. Interested? Read on!

**What it is, what it isn't**

Game design is the craft of knowing how hurling disgruntled birds on a stack of pigs can actually be fun for millions of people on the planet while making a franchise worth billions of dollars. Well, kind of.

Academically speaking, you could say that Game Design is an art and a science. It is the art of envisioning the storyline, content and rules of a game; while it is the science of examining the psychology of the player and his relationship with the game. In short, game design involves figuring out what will get a player hooked to a game and what won't... and creating games that will work.

So who is the mastermind that uses game design theories to create a successful game? (drumroll please): the Game Designer!

A Game Designer is someone who has a vision of what the game is as it goes through iterations during its development cycle. Any game you see in the market is usually the brainchild of a Game Designer. You could say that he is the one who makes sure that a Half life game plays and feels like a Half life game. He doesn't design the artwork or do the programming: he is to a game what a director is to a movie—he can make or break a game concept.

In fact, contrary to popular belief, Game Design doesn't just mean designing video games for PC/Consoles... it could also mean designing board, card or live action games. Game Design is also used by companies to ‘gamify’ less interesting activities for their employees or customers.

**Myths and Expectations**

So, first things first: Game Design isn't Programming. Game Design isn't Character Design or Animation. Game Design isn't Story Writing for Games and Game Design surely isn't Game Testing. If you have been a die-hard gamer and you think you would want to make games because you can play games—you would be disappointed to know that it doesn’t qualify you to become a Game Designer. Yes, being a gamer does help. However, a Game Designer has to enter the industry with minimal bias towards all kinds of games; Games that are played by players from varied age groups, genders and geographies; on varied platforms and with varied play times.

As a Game Designer it’s unlikely that your first project will be a God of War 4 or a similarly huge AAA blockbuster title. It’s likely, that at
the start you may be working for studio as a Trainee or Associate Game Designer. Most Game Designers have to start off on smaller design tasks like balancing how much gold a player gets in a certain area of a game or designing levels in projects before they are given the responsibility of envisioning the entire game. Let’s face it, you are new and a lot of time and money is at stake.

**State of the Gaming Industry**

The gaming industry in India is about to hit a boom. However, the production houses in India are mostly into smaller scale projects on platforms like Web / Mobile / Flash / HTML5. But no need to be disheartened, there are some bigger studios who work on cutting-edge 3D games for PC / PS3 as well. And the rest of the studios have essentially applied the Indian IT industry model of taking outsourced projects to sustain their businesses.

At the same time, the global gaming industry is pretty much awaiting a massive change. Social gaming on Facebook has already jumped the shark. Mobile gaming is gaining a stronghold as smartphones become cheaper and more powerful and more and more people are connected via 3G. Today, India and China are seen as the next targets that need to be specifically cracked. While publishers may argue that localized games and content are needed to pierce such a tough market like India with such diverse demographics, there are designers who say that there is nothing that can be called “Games for India”. Games are games. When my mom played Temple Run, she didn’t look at the obvious references to media like Indiana Jones or Uncharted, and still she plays it much better than me and enjoys the game fully. The reason being, the game didn’t alienate her. So, such a market barrier can be resolved by making the game more accessible.

**The Position of a Game Designer**

So, what is it that a Game Designer is supposed to do? Well, the Game Designer is like the MBA of the gaming industry. An MBA graduate goes through 36 subjects over 2 years ranging from Mathematics to Economics to Taxation laws. The same holds true for a Game Designer. Apart from knowledge of designing games, a Game Designer is expected to have understanding of Art / Aesthetics, Programming, Project Management, Culture, Languages, Sound Design / Music etc. You will be the only person who will have a complete vision of the game in the team and you will have to work with Programmers, Artists, Project Managers and even other Designers to bring the
How to start a career as a Game Designer

game to life. Knowing a thing or two about such topics removes unwanted friction in communication. And since you are a creative person, it is desirable for you to also have a reasonable amount of exposure to varied media such as Movies, Music, Comics, Anime / Manga, TV Shows etc. At the end of the day, making games is a business and you are supposed to make a game that people will be willing to pay for. Games are cultural products and you cannot even accidentally offend people of a certain country because you didn’t know something in your game is considered distasteful in their culture—cultural awareness is necessary.

Your typical work routine
Every designer has a different style of work and every game studio will have a different work-culture and expectations. But, at the end of the day, a major chunk of your work is actually communication. Before the start of any project, Game Designers typically make documents called Game Concept or Pitch Documents which are small 1 or 2 page documents describing - say - a new idea for a Shooter game. This is the time when a Game Designer has to be an excellent salesman with remarkable showmanship—enough to convince his peers and the investors alike. Every studio has its due process of selecting game concepts which could be produced. Yes, there is no lack of ideas in this industry. You work with teams of extremely talented and creative people and everyone has their own ideas of the game they would like to have made and work on. Normally, peer review and business feasibility are benchmarks for selection of such a game. Once a game enters production, Designers work on a document called the GDD or the Game Design Document. A GDD, is sort of like a bible of the entire game. It describes everything about the game right from the story to the UI to the Characters to the Gameplay. The purpose of such a document is to communicate to the team as to how the game will play. So, your Programmer is confused how high the character should jump? The Level Designer is confused how

The Ubisoft campus in Pune
the Boss level will play? The Artist wants to know how big the boss is? All these questions would be normally answered in a GDD. And as teams grow to numbers in the hundreds and the production spans for 3-5 years for the bigger AAA games, it becomes crucial to have a one-stop ready reference for such games. Also, it is handy for newcomers in the team to be able use the GDD to know about the game rather than approach the Game Designer for every little doubt they may have. Point to be noted - apart from tuning the gameplay and brainstorming with your team for ideas, most of your time would be spent in documenting details about the game in relevant document using Microsoft Word.

Also, in this industry you have to keep up with the rest. Strength wise, it is a very small industry and everyone knows everyone. You will almost certainly work with a lot of people you meet in one or the other form. Later on in your career, you would essentially need to network with other Developers around the world and go to events like GDC, Casual Connect, PAX etc. to get some exposure.

As of today, in India - NASSCOM Gaming Forum on Facebook is a hangout place for the local Game Developers. It’s a nice place to talk to professionals and get advice and even share ideas.

**When do I start becoming a Game Designer? Is it too late for me?**

OK, so you are finally starting to get a better picture in your mind about this and you think you want to make games. But wait... you are already working somewhere and it is not a game studio. Is it too late now? The simple answer is NO! Back in my Game Design school, we had students aged 17 to 32; one student being a lawyer-turned-Game Designer with a PhD. All that matters is passion coupled with practicality. If you are determined, you could always explore by learning things on your own. There are a lot of books, resources and videos on this topic. One could easily experiment with the wacky new ideas one may have and even prototype them if they know a programmer or can program themselves.

**How do you convince your parents if you are too young?**

“And how much does your girl / boy earn?” This is the age–old question parents (especially in India) dread. There is one thing the better part of this industry expects you to have - an attitude where you don’t work for money but for the craft of it. Of course, it’s not like they are not going to pay you. But
you will be hired for your work. No certificate from any school or college is going to get you into this industry. Your 98.23% in SSC will not ensure a job in this industry and neither will being an IITian. Nothing but your work can. You develop your skills, your score a nice job, you get paid handsomely, it is that straightforward. Especially in India, unlike Engineering, there is NO standard pay scale for a Game Designer. It may range between 20k a month to more than a lakh depending on your skill. And if the very first question you ask is “What is the package?” you won’t be treated very well. It could be your second question, this industry expects passion first!

**Options: Schools, Self-Learning, Mentoring?**

Now then, what are your options if you want to train yourself to be a Game Designer? The good news is that there is no predetermined path to this career.

In India, your options are limited. An unbiased personal recommendation as an author of this article would be DSK Supinfogame, Pune which happens to be my alma-mater. The reason being their approach towards educating you in this craft is 100% practical. They train you via projects (that become a part of your portfolio) and by the time you graduate - you know how to work in teams and make projects possible and design really good games. Their faculty comprises professionals from western gaming industry and they seem to know what they are doing. I can’t recommend any other school (most Indian schools confuse Game Design and Game Art themselves!). Digipen, VFS and CMU are other schools abroad that will provide the kind of education that you need. Also, try to make sure the program is practical and that it is at least two years in duration.

**What to avoid**

1. A school that says that they will teach you Game Engines (Let’s describe these as “software/middleware used to make games”) should sound alarms. A Game Designer knows how to be resourceful enough to learn
things on their own. Approach a school that teaches you how to work with the tools rather than just teaches you the tools.

2. Any guarantee of salary packages, getting jobs, internships and placements should sound alarms. There are a lot of ‘Diploma-mills’ cropping up in every nook-and-corner of the country trying to make a quick buck off kids who are just excited about gaming and parents who are worried about salaries. A lot of such institutes even end up hiring their own alumni for meager pay-scales. A good school will have enough reputation in the market to not need to shout from the rooftops. Check their alumni and their achievements. They expect you to be good enough to score internships and jobs on their own. Remember, there is no scarcity of jobs, only scarcity of right people for the jobs.

3. Avoid schools which rely a lot on theory. You can get that anywhere for free, even YouTube. The job of a good Game Design school is to not to teach you but rather provide conditions for you to learn in and at times, even pressure you. There is a lot more to Game Design than just design, there is people management, project management, ego management and so much more. All of this will make you ready to work on a live project in a Studio.

   Alternatively, you could go head-on and join as a trainee or a Game Tester and work your way up the ladder. That gives a totally different kind of conditioning and working style. And relies heavily on learning using low risk live projects and proving your mettle.

   And lastly, you could go lone wolf, where you try to do as many things as you can on your own (with some collaboration) and release games on your own too. This involves a lot of investment and patience and it will keep you hungry for a while before your hard work starts paying off. In any case, all three approaches rely heavily on self learning and differ only on the basis of how much time and money you invest and what you expect from yourself.

**Future Opportunities – Is the sky really the limit?**

So, you are a Game Designer now. Where do you go from here? Well, two things come into play at this stage. The first is knowing that you will never stop learning as a Designer. The second is knowing what you want from your career. Do you see yourself making this unique game no one else seems to have made? Go ahead, gather a team, inspire others with your idea and start a studio. Get a prototype running and approach a publisher (in the same
way a writer would approach one for funding / marketing / development / distribution) to pitch your game to. Even though this stage normally comes in at 3-10 years of work experience, depending on how enterprising you are, you don’t always need to start your own company to see your ideas come to fruition. If the idea is good and you sell it well, your studio could fund it. But nothing should stop you from doing the same either.

Good luck! 😊
In this section, we take stock of the opportunities and focus on the skill sets required to hone your talent and excel in this line of work.
The rapid proliferation of the Web and constantly connected devices has made digital marketing an inevitable career option for number-crunching geeks. And two of the most engaging facets of digital marketing are SEO and Web Analytics. SEO stands for Search Engine Optimisation, and as the name suggests it involves knowing the nitty-gritty of search engines to attract users to your online properties – making sure that you gain a relevant audience and the search engine users get exactly what they came for. Analytics, on the other hand, is about collecting and analysing data collected from your websites and distilling the data into research which will help improve your website’s performance.

**Background**

Before we proceed, a quick primer. In simplest terms SEO is all about boosting your search engine ranks. You don’t pay for clicks, but you employ other services that make changes such as website improvements, copywriting audience engagement on social channels, link building and content provision to make sure that your site gets to the top of the search engines. As for how the search engines work, SEOs treat them like black boxes since you can’t really figure out how they work internally. So you employ a combination of reverse-engineering, experiments and educated guesswork to arrive at ways to improve your search listings.

The right kind of SEO can get your page views soaring
Web analytics, on the other hand, measures the footprints of a user’s activity on your website and outside it, and regurgitating detailed reports and insights into user behaviour, so that you can calibrate all your marketing channels including SEO to better serve your customers. According to Google's Digital Marketing Evangelist Avinash Kaushik, Web Analytics practitioners fall into two categories: Implementers and Data Reporters. Implementers are the ones who integrate code from vendors into websites while the data reporters liaison with the management to piece together insights into how spending in different marketing channels affects your website/brand.

**Indian opportunities**

India is uniquely poised in the digital marketing scene as it has something very unique to offer to the marketers – its fledgling online population. Of its nearly 1.2 billion population, roughly 120 million people are online in
India – that’s only about 10% of the population. About 13 billion advertisements are served on this medium month on month.

This industry is particularly on the lookout for experienced professionals in Analytics. This is just one part of the story though, “There are a lot of firms out there who specialise in SEO consulting, i.e. handle SEO for firms which outsource this work, but there is a dearth of organisations which provide the same services in Web Analytics”, says Rakesh Makhija, web analytics consultant at Tatvic, one such Web Analytics consulting firm. On the whole, there are opportunities galore, both – on the in-house and consulting fronts, and the industry is thirsty for talent and experience.

Profile and requirements
Passion and a keen insight into data are very essential for a job in either of these paradigms. Aspirants looking for jobs in SEO also need a background in web development with hands-on skills in both, front-end and back-end technologies. Apart from this, they’re also expected to diversify and curate content on the website particularly by handling user interaction and comments and implement high-quality link-building strategies for the websites in their portfolio. SEO is also very much about reverse engineering and
second guessing the search engine, skills which can only be accrued and honed after years of experience.

From our previous dichotomy of available job profiles in Analytics, if you’re more interested in the technical aspects of things then the companies expect you to be well-versed with front-end technologies especially JavaScript. There are many tools/vendors in the market which aid analysts in collecting, organising and reporting the data viz. Google Analytics, Omniture, IBM Digital Analytics, Webtrends and so on. The onus is on the analytics implementers to ensure that all the systems active on your web properties are completely in sync as errors or miscalibration could lead to catastrophic results. “We look for people who have a logical bend and enjoy number crunching, also they should be willing to work as a part of a team as collaboration is a part of the job profile,” adds Rakesh.

As for the degree certification, companies usually don’t demand any particular degree but as a minimum the aspirant should possess a Bachelor’s degree. A background in science or technology is an added bonus but not a necessity. Along with this, some workable knowledge of HTML and JavaS-
As an entry-level SEO executive/business analyst you can expect anything from Rs.1.8 lakhs-2.5 lakhs p.a.; while an experienced SEO executive/analyst stands to rake in a minimum of Rs.4.8 lakhs p.a. though the exact amount varies from company to company.

**Training**

A recent survey by Adobe and CMO Council taken by 295 senior marketers in Asia-Pacific show that the industry in the APAC region lags behind its global counterparts in terms of experienced talent. Although we have excellent resources as far as web development skills go, marketing teams don’t have the right skills and/or experience to handle digital marketing strategies on a large scale but this is partly due to the fact that such corpora-
tions suffered from a paucity of hiring budget which prevented them from recruiting senior talent. All in all, an experienced SEO expert/analyst will be welcomed with open arms by organisations all around.

When it comes to training it boils down to your ability to grasp the essentials and your aptitude for learning. It’s easier for students with a technical background to pick up things faster as far as SEO is concerned, while in the case of Web Analytics you need to understand the nitty-gritties of an analytics tool to get a clear picture of what’s taking place. Usually a digital marketing agency or an SEO/Analytics Consultancy doesn’t limit itself to one particular tool but chooses to work with a vendor which best meets its budget and requirements, so a new entrant has to first train with the experienced staff and find his way around with the tool. After understanding the working of the various vendor platforms, an aspirant is bumped up to design and implement strategies at an industry-level. You usually progress to a vertical after accruing enough experience in dealing with industries.

**Certifications**

Many institutes have come up across India to offer courses and/or certification in SEO and Web Analytics. There are also a couple of places online which offer excellent certificate courses for a fee.

1. **Web Intelligence**
   This course is a collaboration of the University of California, Irvine Extension, the University of British Columbia Continuing Studies Program and the Digital Analytics Association. It’s an award-winning course on digital analytics with subjects such as Data Warehousing, Business Intelligence
and other such business topics. The course is completely online and roughly costs about Rs.2,27,153. You can find more information about the course at: http://unex.uci.edu/areas/it/web_intel/

2. Market Motive
While the Web Intelligence course at Irvine is more focused on Analytics, Market Motive provides you with an entire gamut of certifications for nearly all paradigms in digital marketing with courses covering Fundamentals, Search Engine Optimisation, Web Analytics, Conversion Optimisation, Social Media Marketing, Pay Per Click Marketing and Digital PR. MM offers a comprehensive self-paced study plan in which all the material – including training videos, lessons, quizzes plus a platform to meet peers from the industry – is available online itself. There is no one-time fee, but the access costs about Rs.16,047 per month. Learn more at: http://www.marketmotive.com/

3. Conversion University
This is a free course by Google but it focuses on Google Analytics as opposed to Web Analytics in general. The resources are excellent; it has got both,
video and text-based lessons to help you become a more knowledgeable Google Analytics user. Google also provides a Google Analytics Individual Qualification which shows your proficiency with the platform. The test is a 90-minute open book exam, with 80% passing marks. You can access the test at Google Testing Center with each test costing roughly Rs.2,684. The course resides at: http://www.google.co.in/analytics/iq.html

Adobe also provides training services and a certificate program for digital marketing aspirants who specialise in working on its Digital Marketing Suite. But as a rule of thumb, such courses focus on the tool and won’t give you much coverage about the basics which apply to every platform in the wild. Best of luck!

**Conclusion**

We’ve offered a glimpse of the future to those of you who are interested in a career in SEO and Web Analytics. Something to look out for here would be business intelligence, which involves providing the management with business-specific decisions based on the data coming in from various marketing platforms.

But the digital marketing scene doesn’t just end here. We haven’t even broached the topics of Paid Search Marketing, Social Media Marketing and Mobile Marketing. There’s no denying the fact that digital marketing is poised to bring about a revolution in how people interact with brands and businesses both, online and offline. The key is to keep oneself updated and never stop learning.
What are the first thoughts that come to your mind when you hear “web designing”? Obviously, it would involve the web and creativity. And you’re not wrong, the basic premise is pretty straightforward: There’s a medium (the
internet), a delivery method (a browser) and an end-user, and the job of the web designer is to create content, deliver it and run usability and readability checks to ensure that everything runs the way it is intended to.

**Starting with the basics**

There are prerequisites to becoming a web designer. Since this is a knowledge intensive job, you need to have sound knowledge of mark-up languages such as HTML, XHTML and XML; stylesheet languages such as CSS and XSL; client-side scripting such as JavaScript; server-side scripting such as PHP and ASP; database technologies such as MySQL and PostgreSQL; graphics design tools like Adobe Photoshop, Adobe Illustrator and Adobe InDesign; and multimedia technologies like Flash and Silverlight. If these terms sound overwhelming, you probably haven’t taken your first steps into the coding world just yet. Don’t worry; start small with basics like HTML. Later you can specialise in one or more amongst these based on what interests you. Although it does help to have broad-based knowledge – it’s what separates an average designer from the pros. Tenacity and an eye for detail are also key to success.

You may wonder “How is web designing different from programming and graphics designing?” Graphics design is a much wider field and is not limited to the web. When applied solely to the web, graphics designing is the part that forms the visual aspects of the site; whereas web programming involves writing the code that lends the website the functionality that makes the design work. A web designer has knowledge of both, programming and graphics designing. The job profile also depends on the size and structure of the company that you work in. In smaller companies, everyone does a little bit of everything – the work is shared and overlaps amongst people.

**A day in the life of a Web Designer**

A typical day starts with the designer sitting down with clients for a thorough need-analysis. This is where communication and assimilation skills come in handy; after all, a job well understood is a job half done. In most cases, the client will provide you with required inputs such as text, imagery, logo, fonts and pictures; there are exceptions where the designer is asked to create these aspects too.

G. Sai Nihas, who works as a freelancer for 3SixtyFive, a social media and branding firm, sums up his typical day like this: “on an average I work for about 7-8 hours, and I use Adobe Photoshop CS5, Adobe Illustrator CS5 and
Adobe InDesign CS5. Also, I think what separates an average designer from a master is the amount of creativity involved and the time taken to accomplish the project.” Nihas further clarifies that his work mainly involves creating the interface i.e. the overall look of the page, hence he doesn’t need to fiddle with the functionality part of the website which involves programming.

There’s an important distinction to be made here between web designers and web developers. Binny V.A., a freelance web developer, gives us his perspective: “People outside the web development field, say desktop programmers and managers, usually club us web designers and web developers together. But no one in the web development field will confuse the two. That being said, there are quite a few programmers who are great at designing and development and vice-versa.”

Once the designer has the concept and the content, he converts these into a design that is both, intriguing and user-friendly.

A smart designer will, over and above the basic skills and knowledge, use the many smart tools available to enhance his productivity. This may include (but is not limited to) website downtime diagnostic tools, automated form designing services, progress monitor software, organisation tools, online collaboration tools and website traffic analysis tools. Apart from these, Binny V.A. preaches the importance of an online presence as an edge in order to connect within the industry and source work: “Many clients
have contacted me after seeing my blog. So, I would classify my blogging and social network activities as part of my job as well. That makes Twitter one of the tools of the trade."

**Being good on paper helps, but don’t let the lack of it stop you**

Because the nature of work is not managerial and merit is assessed on the basis of level of skills, the academic requirements in the field are not rigid or set in stone. That being said, larger corporations, in most cases won’t even consider you if you don’t have at least a Bachelor’s degree in Computer Sciences or Engineering. But if you have proven your mettle, have an impressive portfolio and possess a sound knowledge of computer science, programming, advertising, graphics, and art and design you should have no trouble in picking up freelance jobs and gaining a full time position in start-ups and smaller organisations.

To this effect Nihas opines, “of course, certifications and educational credentials do help, you basically get to charge at least 25% more if you have a qualification, because it helps the client to have more confidence in you and as a result of that, he wouldn’t mind shelling out some extra cash.”
Let’s get certified
Once you have completed your graduation (or even while you’re pursuing it), it is time to get certified and go gold, so to speak. Certifications help you in a number of different ways. Firstly, they add weight to your resume and ensure that you can demand a higher package. Secondly, you pick up new skill sets, or at the very minimum, reinforce your existing knowledge. There are a few institutions that offer certifications e.g. Maya Academy of Advanced Cinematics; Arena Animation; Doomshell Academy of Advanced Computing, Jaipur; Caba Innovatives, Delhi; TGC Animation and Multimedia, Delhi; Lakhotia Computer Centre, Kochi; Gurumantra Institute of Design and Animation, Pune; IHRD, Trivandrum; and Animaster, Bangalore. These institutions are much respected and offer special courses designed specifically for web designers.

Here’s a related inspirational story for you. Meet Mayank Yadav, the globe-trotting CEO of Radiate Labs; a creative web and mobile solutions firm based in Gurgaon. The firm develops, inter alia, applications for...
Careers in Web Designing

Mayank has been developing websites since he was in ninth grade and believes in the concept of self-learning and says that, “learning never ends.” If there’s a conclusive example that mainstream success does not always equate with formal education, this is it.

At a crossroad – Freelance or Employment?

Eventually, at some point in time, not only a web designer but almost all professionals have to choose which road they want to go down: a freelancer picking up his own projects or a fully employed professional with a firm. Freelancers typically need to work on a strong portfolio if they expect to find decent work. Since you’re not backed by a brand as a freelancer, the onus lies on you to build your own personal brand and market yourself online. A strong social media presence is obviously your best option in this regard. The advantages of working as a freelancer include the freedom to choose your work and set your own timelines; you may find yourself with more spare time which you can use to level-up yourself. The disadvantages are, or rather some things that you should keep in mind are: working as a freelancer requires a lot of self-discipline, it is only too easy to lay back and watch a movie instead of working and then there’s the lack of stability.

One of the cons of being employed is that you have no control over which projects you get to work on, something creative people typically have a problem with. The advantages are quite apparent too: you’re assured of a consistent source of income; you’re still “in the game”, so to speak, and

Nifty Tools and Web Applications for Web Designers

• **Are my site up:** This tool helps you to check at one glance if all your servers are up and running http://aremysitesup.com/
• **Firebug:** An add-on for Firefox browser which allows you to inspect, edit and monitor CSS, HTML, JavaScript and Net requests in any web page. http://getfirebug.com/
• **FontExplorer X Pro:** This works like a suitcase for fonts – a very useful companion www.fontexplorerx.com
• **ClueApp:** The tool helps you answer questions like – which page are the users spending the most time at? http://www.clueapp.com/
• **Kuler:** A web hosted application that generates colour themes www.kuler.adobe.com

Apple, BlackBerry and Android.
can always switch companies and move to greener pastures. In the end, it is solely a question of personal choice: which path suits your idea of work better?

**Getting a move on**

Freshers keep dreaming about bagging that perfect job that they’ve envisioned so well within their minds, but where exactly is it? Set your sights high. There are a few gold standard firms in the creative business which you should aspire for. Some companies that stand out in terms of their body of work, brand image, future prospects offered to employees and overall industry reputation are: Ogilvy & Mather, Ray & Keshavan, Origami Studio, Stark Communications, Webchutney, Solutions Digitas, AgencyDigi and Quasar WPP. There are many others that cater to niche segments, so it’s important to do your homework. Also, other than true-blue design firms, every decent sized company also requires in-house web designers.

Now, where do freelancers get a start? After gaining some experience, establish your online presence – if done right, this should be enough in itself. If this doesn’t work, you could start by picking up a job from one of the many websites online that connect freelancers to employers offering projects. Head to websites such as Freelancer.com, iFreelance.com and Elance.com.

In terms of compensation, the career offers a steady progression with respect to the cumulative experience. Starting may be humble with the package offered anywhere being between ₹1,00,000 to ₹1,20,000 p.a. but with years of experience under your belt and a strong portfolio even fetching ₹10,00,000-12,00,000 p.a. or more is not implausible.
The changing landscape of the inter-webs
The state of the internet and the exponential rate of its evolution is a surprise to no one. And as an architect of the web, no one is more deeply impacted by this flux of change more than web designers. On one hand there is the need to continuously update your knowledge to keep up with the pace of growth and emergence of new technologies, and on the other hand is the excitement that comes with doing this. Web 2.0 has come and gone, HTML 5 is here and today there is talk of responsive web design – essentially websites that adapt to the kind of device they’re being viewed on. With the web being accessed from a plethora of devices such as smartphones and tablets, design is transforming itself to newer more touch-friendly UIs.

Hosted services, web applications, mash-ups and folksonomies are what web designers of today need to know. Brands are skipping the website format entirely and gravitating towards platforms like Facebook. Many entities such as online retailers have now set up shop exclusively on Facebook pages and conduct business through specialised e-Commerce apps hosted on their pages.

Pretty much all old-world services have started moving into the web – a second dotcom boom, so to speak – and one that is unlikely to see a bust. Regarding the future Mayank says, “The internet is becoming a very important part of everyone’s life, everything is getting the “e” in it. As with e-Commerce, e-meetings, etc. So our suggestion for people who want to make a career in this profession, is to just give it your best shot.”

On that rather motivational note, happy designing!
CAREERS IN SOFTWARE TESTING

Testers with domain-specific knowledge and technical skills are paid more than developers. Interested?

There was a time when Software Testing was considered a layman’s job with no required domain or technical skills. Anyone with basic knowledge of computers could be employed as a Tester. The work allocation for testers was also very limited.
The job has gained significance over time, and the testing team is now involved in the complete end-to-end process, beginning from the initial requirement reviews right until the testing of the final software. Testers with domain-specific knowledge and technical skills are in demand, paid more than our favourite developers, and those with remarkable skills are climbing the corporate ladder faster as well. Testing skills in niche areas such as SOA (Service-oriented architecture) testing, mobile-based testing, security testing and database-oriented testing are in top demand.

There was a time when a ratio of 1:10 prevailed in the industry where one tester was hired for every 10 developers. Now, however, the ratio is 1:4 or even 1:2 depending upon the criticality of the project; for instance a banking or insurance project.

Software Testing, also known as Quality Assurance Analysis, involves checking for bugs in software. Being a software tester, you need to be analytical, open-minded, creative, detail-oriented, passionate, patient and a good listener. Tamanna Bedi, QA manager at Graycell Technology Exports commented, “Software testing is a gold mine for the people who like to learn new stuff and want to dig down deep into the code. The industry looks for dynamic individuals who can possess the skill of finding bugs and can give innovative solution for the same.”

**Why Software Testing?**
If you’re sitting on the fence unable to decide whether this is the career for you, here are a few motivations for getting into software testing:
Good Packages and Returns: Equal or better packages are being offered to QA Analysts (Quality Assurance) these days in comparison to their developer peers. The reason for this is the varied kinds of projects in the market where primary focus is not on development but on maintenance and performance. The other reason is data security which is the main concern for every client right now. Automation testers, performance testers, database testers and security testers are paid generously in the industry.

Ample On-site Opportunities: Clients like having the confidence that the software they’ve paid for actually works. Therefore, they always need more testers on-site than developers to test their software thoroughly. Secondly, as testing is a short-term activity covering Staged Deliveries, Bug Fixing, Re-Testing, User Acceptance Testing (UAT) etc. it’s easy to compensate. Testing done on-site also makes communication easier as there might be tests which require interaction with other technical groups and business experts usually present at on-site offices. And on-site locations might be exotic too.

Lucrative Alternate Career: If you decide to take up the profile of a tester and should you decide this is not the line for you, there’s another lucrative role waiting in the wings for you – that of a Business Analyst.
or BA. The reason for this obvious career progression is the tester/QA analyst’s involvement in the end-to-end business process. For instance, during the early stage of a project when requirements are floated around among developers and testers, the testers are expected to study, understand and remember each and every word of the requirement. In contrast, the developers need only focus on their specific module. This ends up giving testers an edge when switching over to a BA profile.

Certifications – The entry pass
Though it’s not mandatory to be certified to find work as a software tester in the industry, it’s a useful add-on. Software testing certifications can be acquired either before entering the industry or while working with an organisation. There are various internationally acclaimed certifications such as CSTE, CSQA and ISTQB available in the market to assess the knowledge of software testing at all experience levels. Let’s take a quick look at these certifications:

ISTQB
International Software Testing Qualifications Board (ISTQB) has two levels
Careers in software testing – Foundation and Advanced Level. If you’re new to Software Testing, then this is the exam for you. It helps you understand the basics and the right process of performing the testing. Know more at http://www.istqb.in/

CAST, CSTE and CMST
These certifications require some prior experience in the field of testing. Certified Associate in Software Testing (CAST) is like a foundation level; whereas Certified Software Test Engineer (CSTE) and Certified Manager of Software Testing (CMST) are practitioner’s level and managerial level certifications. These certifications are administered by Quality Assurance International (QAI), a US-based international organic certification company. Visit: http://www.softwarecertifications.org/

CASQ, CSQA and CMSQ
These certifications majorly focus on the quality side. These certifications are also administered by QAI and information about them is available at http://www.softwarecertifications.org/
Automated testing tools certifications
There are various certifications for automation tools such as QTP, Loadrunner, Winrunner, Rational Tools etc. These certifications help to evaluate your knowledge and confidence on these tools and are a great add-on for an impressive resume.

Co-founder of BQurious Software, Susheel Yadav, states, “Advent of Agile methodologies has also prompted the move towards test automation due to short release cycles. In order to stay competitive, manual testers are now required to pick up skills on various automation tools such as HP QTP, MS Coded UI and Open Source tools such as Selenium and Watir.”

Education and training – Crafting the path
Institutes such as SEED Infotech, Pune hold diploma programs catering to Software Testing. PureTesting and QACampus are two of the few training organisations that provide targeted learning packages; they have specialised trainers who teach and conduct hands-on sessions revolving around specific testing.

To become an automation expert, you must attain good knowledge of automation tools such as Selenium, HP QTP, VSTS, Rational Functional Tester, HP Quality Center etc.
Career Path – The way to go

Software Testing has opened up various career paths for aspirants. There are two major paths which you can take when you enter the industry. The standard path is parallel to the development hierarchy. Testers are usually hired as ‘Software Testers’ or ‘Testing Engineers’. After around 2-3 years, based on your performance you’re promoted to ‘Senior Tester’ level. Subsequently, after around 5-6 years of experience, you can be granted the position of ‘Team Lead’, and so on. An alternate path can be the technical path. Software Testing allows you to wear various kinds of hats; if you want to change track after a while, you can do so without impacting your current experience. Here are some of the other roles you can take up:

- **Automation Testing:** As an Automation Test Engineer, you will be responsible for automating manual test case execution which otherwise could be quite time-consuming. Automation Testing helps reduce the time and cost for a project, and is therefore preferable. Also it can be implemented in all kinds of projects. Automation testing takes care of redundant types of test execution, which otherwise is a boring and lengthy process.
- **Performance Testing:** As a Performance Test Engineer, you’ll be responsible for checking application responsiveness. This step can only be performed when all other test activities have been completed. It helps identify the load or stress an application can bear under certain situations. Performance Testing is not applicable for all types of projects and is done only if the client demands it. Hence, Performance Testers are less in demand as compared to their counterparts.

- **Business Analyst:** As a Business Analyst, you’ll be responsible for analysing and assessing your company’s business model and work flows, and especially how it integrates technology. Based on your observations, you’ll suggest and drive process improvements.
INDIE-PENDENCE

The high, lows and promises of life as an indie developer

With the explosive growth of smartphones and tablets, app development is no longer a hobby but a viable career choice. We speak to four promising independent developers, who’ve all witnessed varying amounts of success, about what it means to be an indie developer and what people looking to join the ranks should know.

The line-up
Sreekanth Sastry
Sreekanth, a Bangalore resident, is a software professional with a history of working with startups and established companies. He has now started Antarajaal, a company developing vernacular lifestyle mobile apps for iOS and Android. He is behind ‘Situational Gita’, an app that recently broke into the Top 10 paid apps list on the Indian iTunes App Store.
Nirmit Gauravbhai Kavaiya

Nirmit, a 22-year-old resident of Rajkot, has been working on and developing apps for Windows Phone and Windows for three years. He has so far published close to twenty apps, out of which Ludo, a free app for Windows 8 has been downloaded by over 50,000 users in nine months.

Raja & Shanthi

Raja and Shanthi are a husband-wife duo from Chennai who used to work in the VFX industry but now have their own company- WapleStuff- that publishes apps for iOS. Their first app, Pick- The Purchase Tracker, has been downloaded by over 1,14,000 iOS users across the world and was also featured by Apple in the ‘Apps for Shopping’ and ‘Shopping Assistants’ sections in the US App Store.
Rahul Mathur
The youngest of the lot at 21 years, Rahul develops for Windows Phone and is currently interning with the Walt Disney Company in Mumbai. He is responsible for the WP app, Instant Access that has been downloaded over 20,000 times.

Now that you’re familiar with them, here’s what they had to say about life as an indie developer:

On choosing to become an indie developer
Sreekanth, Raja and Shanthi said their decision was based on their excitement at the potential of mobile apps and how they were connecting with users at a personal level and changing lives at the ground level on a day to day basis.

Nirmit and Rahul were more pragmatic with Nirmit looking at earning some money and strengthening his resume by developing apps. Rahul came from a coding background and then joined the Microsoft Student Partner program, following which he realised that the WP App Store was anemic and decided to make apps for it.

Picking the ecosystems to develop for
Sreekanth started developing first for iOS because of its simplicity and ease of testing. However, he soon recognised the numbers behind Android and began developing for it as well. Nirmit exploited his background in Microsoft .Net and developing soft-
Indie-pendence ware for Windows and Windows Mobile to move on to Windows Phone and Windows 8.

Raja and Shanti picked iOS because the iPhone was the first smartphone they used and they “fell in love with it.” They also preferred the iOS audience who were more likely to spend on an app. Rahul saw the potential of Windows Phone and the convergent future that Microsoft has promised with Windows 8 and Windows Phone 8.

**Biggest pitfalls of working as an independent developer**

All five had different experiences to share from their time as indie developers. For Sreekanth, the biggest drawback is the absence of a team and the relationships you develop when working with a team. Rahul revealed that another drawback of working as a solo developer was that he didn’t have a second/third-party whose experience he could count on, especially with respect to things he wasn’t so great at like design. Nirmit pointed to the difficulty in getting freelance projects as an indie developer especially without a strong portfolio and experience, both of which take time to build upon.

Raja and Shanti made an interesting observation about how developers expect their work to end when the app is complete. However, through their experience, they realised that without a marketing plan, their app got lost in the crowd, especially one as huge as the one in the Apple App Store. They stressed on the importance of things like building a dedicated website, creating demo videos of the app, reaching out to review sites and even making the app free for a limited time to generate buzz, in order to get the kind of download numbers that stand out.

**Financial stability as an independent developer**

Sreekanth said that a developer working on services can expect a semblance of financial stability by pursuing multiple projects that can generate consistent cash flow. However, developing products (read: individual apps) is risky and all the developer can hope is for the product to be noticed by a large number of users and generate some cash.

Nirmit stressed on choosing the right platform to ensure quick monetization for apps. However, where platforms like iOS and Android may seem like they would be easier to make money off, even a burgeoning platform like Windows Phone could be monetized by someone with patience and a good sense of what works and what doesn’t. Raja and Shanti had a similar
outlook and revealed that they were making little money before their app was featured by Apple.

**Final advice**

Sreekanth said that he believes that aspiring developers have a wide gamut of options and it’s not necessary for an independent developer to produce their own apps. Instead they could also work as consultants and work on app ideas of other people. He added that while developing apps on your own is a risk, the huge number of smartphone users out there means that there are plenty of investment opportunities and users to target.

Rahul emphasised on the importance of coding and comprehending your own code. He said that every developer should enjoy debugging their apps and pushing them towards perfection. He added that developers should participate in forums and discussions and not be afraid of asking questions, even the simplest ones, in order to improve their own understanding of the field.

Nirmit’s advice to aspiring developers was to start immediately and allot daily time to work on ideas and apps. Like Rahul, he focused on the importance of feedback and the need to open up to suggestions, in order to help to develop confidence in your own work. Raja and Shanti also talked about having confidence in the products you create but to be prepared for the fact that there was no ‘easy money’ in app development. To garner success, Raja and Shanti said that developers need to be willing work very hard and put maximum effort into every single app they create.

**Choosing between working for a development firm or continuing as indie developers**

Nirmit, Sreekanth, Raja and Shanti were all happy in their current profiles as independent developers. Nirmit felt very strongly about the fact that he wouldn’t fit into a 9 to 6 job in a development firm. He revealed that
**THE STORIES BEHIND THEIR APPS**

Sreekanth Sastry on Situational Gita (iOS/Android): The intent behind the app was simple - can we present the answers from the Bhagavad Gita in a new format that people can relate to in an obvious way, and can we match learning to day-to-day situations? Dr. Dinesh Anvekar who has devoted many years to the study of Bhagavad Gita helped us in this effort.

We wanted to be different from the rest of the “Gita” apps so we based the navigation on categories. We thought that would help users easily identify with their situations and quickly dive into sections they were interested in.

**Rahul Mathur on Instant Access (WP):** It took me a week to learn about the SDK, brush my C# skills and in another week the application was up in the marketplace. The feedback was incredible - I would get mail from several people every week telling me how useful it was. I found out that Microsoft employees were using that app too but the best part was noticing a random person in a restaurant using my app.

The whole ‘post-publishing’ scene was such an amazing inspiration for me to develop more applications. Instant Access isn’t my most downloaded app and is one of the simplest apps I have ever written but definitely the one I am particularly proud of because it ended up giving me a head start that I required at that point.

**Nirmit Kavaiya on Ludo (Windows 8):** I developed Ludo for Windows 8 last year after attending a coding hackathon organized by Microsoft in Pune. I was already developing Apps for Windows Phone, so I was quite familiar with the new features added to Windows 8. I learnt the new APIs, UI guidelines and completed Ludo in 20 days and got it approved from Microsoft.

Ludo is a free ad-supported app and has an average rating of 4.5 stars since its launch nine months ago. The in-app ads are only available in the U.S. and some European countries and I get a payout of $2,000 per month. That is a very small amount but, I’m working on some more features for the game like Board themes, 3D Dice, etc. and they will be available via In-App purchases so I’ll be able to get more revenue from the game.

**Raja & Shanti on Pick - The Purchase Tracker (iOS):** The idea for this app came to us when we took a trip to Europe last year during Christmas and shopped quite a bit. We started the development process by deciding on the core functionalities and use-case scenarios of the app.

We decided the app would do quick currency conversions, percentage calculations and keep a track of spending. The app would be targeting shoppers and travellers and would be optimized for single hand use (because shoppers will most likely have their shopping bags in one hand). The app would also need a simple and bright colour pallette.

For version 1.x, we wanted to develop the core functionality of the App with a simple and intuitive user experience. Our intention was not to overload the user with “features”, just to keep the App simple. Since launch, we’ve received a lot of positive feedback and we are gradually implementing new features.
he codes during the weekends and sometimes pulls all-nighters when working on something exciting, something he wouldn’t be able to do at a development firm.

Sreekanth stated that he wanted to stay away from working in bigger organizations as people there tended to have responsibilities but without the corresponding authority. Conversely, as an independent developer, he was glad to have the responsibility and authority to decide on a product plan. Raja and Shanti said that they too were happy as independent developers but were open to the idea of collaborating with others to work on projects.

If given the chance, Rahul said that he would love to work in a development firm as it would give him the freedom to simply focus on what he was good at and not be distracted by things like design, publishing and monetization. He added that he would like to gain experience in a firm and then return to indie development in the future with a better skill-set.

Where do Indie developers see themselves five years in the future?

Sreekanth: “I see Antarjaal with a rich portfolio of apps that have a cumulative download count of at least a million.”

Rahul: “Hopefully sipping coffee with Elon Musk and heading a product in the right direction!”

Nirmit: “Working in a small start-up of my own with small team of people passionate about creating great Apps for whichever ecosystem they’re targeting.”

Raja and Shanti: “Sitting in front of a Mac, creating apps with the focus same as now.”

thinkdigit.com
Frequent attacks, fraud, economic espionage, computer hacking involving the smallest companies and giants like Google make IT security a career option worth looking at.

Back in January 2010, Google announced in a blog post that it had been the victim of a highly sophisticated and targeted attack on its corporate infrastructure. If a giant like Google can fall prey to an information security breach, then what about others? With
increasing dependence on the digital medium, IT security has become very important. Any and every industry which has data at rest or data in motion can be a victim. In this scenario, IT security professionals are the guardians of such data.

For someone who’s interested, IT security is perhaps the most upcoming and challenging option available. Unlike other branches of IT, security is relatively impervious to recessionary upheavals. Besides, jobs in the software or programming domain can become monotonous. Chances are high that a person who enters as a Java, Cobol or C programmer will end up doing just that all through his career. “Whereas security is an evergreen field” says Rakesh Goyal. “As long as there will be information and digital assets, as long as there are people after these assets, there is bound to be a need for IT security professionals.” he adds. Rakesh Goyal has been a veteran of IT security since 18 years with six books and 50 research papers under his belt. He is the Managing Director of Sysman Computers Private Limited and Director-General, Centre for Research and Prevention of Computer Crimes. “Five different levels of encryption algorithms were recently broken by leveraging the increase in computing power of new age processors.” he informed us. Every assignment is new and every experience is a learning experience. Hackers are finding holes in everything, so professionals either have to be reactive or proactive. Being reactive you have to respond to attacks and plug those holes, and when proactive you have to think ahead of these miscreants. “The demand is increasing and there is a shortage so naturally I don’t need to mention that salaries are higher”, says Goyal. “Salary-wise professionals here command salaries that are least 1.5 to 2 times higher than the regular programmers.”

The roadmap
Like any industry, there are some entry barriers and prerequisites in the form of certifications and qualifications. Yet, it turns out that IT security is pretty open. “There are commonly known security certifications like CISSP from (ISC)2, GCIA, GCIH from GIAC which are widely accepted as entrance criteria. However, candidates with strong computer networking fundamentals and an inclination towards reverse engineering technology have a very good chance of succeeding in the industry.” says Shantanu Ghosh, Managing Director – India, Product Operations, Symantec Software India Pvt Ltd.

CEH (Certified Ethical Hacking) is an entry-level certification for awareness of different mechanisms used to compromise networks. There
Secure your career

are organisations which are recognised for the certifications they offer. ISACA (Information Systems Audit and Controls Association), IISSCC (International Information Systems Security Certification Consortium) and ISEB (Information Systems Examinations Board) are some of the bodies that conduct exams and accredit certification. Exams are either conducted online or at various centers, even in India. “There are also specialised post graduations in Engineering offered by different universities which are focused on information security.” said Ghosh.

**Essentials**

An enterprise security professional should have security certification, very strong fundamentals in network communication, and very good analytical skills. Goyal had a fair warning for all aspirants of this field “Read, read and read”. Unlike other domains in the IT sector, in information security you constantly need to be updated on things. “Engineers finish their B.E and then they become complacent,” he adds. This will certainly not do when it comes to IT security. Apart from these, good IQ, analytical skills and a natural curiosity about how networks work can’t be ignored.

**Job roles**

IT security or information security as a field has a very broad coverage. Opportunities exist in managing/administrating security devices, reporting/auditing on IT infrastructure, penetration testing, compliance reporting and management, as well as various engineering/security research roles in security product companies like Symantec who build security software.
products. You can specialise in one aspect or you can have overall coverage of all the domains.

The responsibilities will vary depending on the domain to which the security specialist belongs. Most large organisations have segregation of duties defined so security personnel can focus on those specific domains. In the Security Response domain, AV analysts focus on providing quick mitigation to security threats which are observed in the network. Experts are responsible for providing mitigation to vulnerabilities as they’re disclosed and providing mitigation for security risks whose information can be derived from security patches released by vendors.

They get to work on products that secure the email infrastructure or the instant messaging infrastructure of an organisation by keeping out spam, spim and viruses.

“Security domain encompasses many sub areas. At Symantec, there are multiple sub areas of specialisation like anti-fraud protection, anti-spam protection, network intrusion protection, desktop protection, compliance management, data leakage prevention and incident response”, informs Shantanu Ghosh.

The most glamorous subdomain however is ethical hacking or in security parlance – penetration testing. We spoke to penetration testing professional, Siddhesh Shenvi working for AAA Technologies, which specialises in the field of Information Systems (IS) Audit and Security consulting. “We have to sign NDAs (Non Disclosure Agreements) and operate under full authority given by our clients to penetrate and test the vulnerability of their systems,” says Siddhesh. He added, “This being the most challenging domain, we’re working with the newest technolo-
Secure your career in the sector. Suppose a system is behind a firewall, put in DMZ mode, or there are access control lists, and dual authentication systems; we bypass these security measures and gain access to the system”. He also informed us that despite being the most challenging, penetration testing is by far the most interesting aspect of IT security. “Here learning is a continuous, never ending process. Whatever knowledge you acquire is a treat, and still just a drop in the ocean”.

**Career paths**
The career path is dependent on the work domain the individual is currently in. “At Security Response Labs, engineers can grow from Security Engineers/Analysts to Principal Engineers/Analysts.” says Ghosh from Symantec. As they grow in these roles they’ll address standalone malware threats as well as network security issues.

Software development professionals are expected to have

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### CERTIFICATION RECKER

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<td>Certified Ethical Hacker</td>
<td>Very basic course and exam</td>
<td>Conducted by European Council</td>
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**SUB-DOMAINS UNDER IT SECURITY**

- Information Security Audit
- Application Audit
- Business Continuity Management
- Fraud/Forensics Investigation
- IT Security Consulting
- Research
- IS security management for business
- Network Penetration Testing
- Database/Network Administration
- Network Hardening
- Policy Formulation
thorough knowledge of computer networking, various programming languages and the flaws that may exist while programming in these languages.

**Final words**

Staffing agency Robert Half Technology in its recent Salary Guide report revealed that compensation for security pros was expected to increase by 4.5%. “Data security and protection, especially in industries such as banking and healthcare, will continue to be an in-demand area within technology,” according to the report. “In fact, 24% of CIOs polled by our firm cited security as their top professional concern.”

The sector was not even adversely affected by the economic downturn. On the contrary, 51.4% of employees in the Asia Pacific region received salary increases in 2009. This career presents several international opportunities in the Asia Pacific region as well as the western world. This is because the shortage of IS professionals abroad is even more acute. Besides, the public sector in India is also a great source of employment.
Chapter #11

DESIGNING CAREERS

If you have a creative bent of mind, a career in Industrial Design might be just the right path for you.

Case study House #8 was designed in the ‘40s, when we as Indians hadn’t witnessed our tryst with destiny. A glance at it and you’ll find it hard to believe it has been standing as a symbol of modern design for the past six decades. Upon a request by the Indian government, American designer couple Charles and Ray Eames presented the India Report in 1958 that resulted in the first design institute popularly known as the National Institute of Design located in Ahmedabad, Gujarat.
A neglected branch till recently, design has received the much needed fillip in India with several well known brands setting up local design studios and employing design engineers and/or product designers in India. According to PayScale, an international employee compensation watchdog, a User Interface Designer with anywhere between one to three years of work experience draws an average annual salary of Rs. 3,50,000 compared to Rs. 2,00,000 for a software programmer with the same experience – that’s a 57 per cent hike in salary. You’d probably not get that much even after your first salary hike. We’d like to add here — there’s no limit for talented designers in this country (some designers we spoke to earn much more than these figures).

**Where we stand**

We spoke to academicians and administrators who shared their insight on design. Primarily, India has a long road ahead. Prof. Balaram has been among the founding faculty at NID, Ahmedabad and is currently the Dean of DJ Academy of Design (DJAD), Coimbatore. With decades of experience as a designer, he feels there’s more we need to do as a nation. When asked where India stood in terms of design globally and what scope lied ahead for someone interested in pursuing a career in design, he said, “There are, not more than, 20 design institutes across India. With the number of students per class averaging to 15, the number of designers graduating each year is not more than 500. Compare this to China that has over 500 design schools, whereas Korea that produces 36,000 designers every year. So we as a nation definitely have a lot to work in terms of infrastructure.” This also means we are terribly short of skilled designers and so employment opportunities are high after completing a course in design from a design school of repute.

**What it takes**

According to Prof. Sekhar Mukherjee from NID, Ahmedabad, “Design is nothing, but setting in order all the elements of life to make life more meaningful. Design is a tool to solve a problem, and effectively, a designer is someone who thinks and cares to improve our life with the intervention of design solutions, be it communication or product.”

Certainly, companies are on yare on the lookout for creative designers and design schools will let you in if you show traits of a designer. “Every human being is a designer by birth. But to specialise in this profession, you need to go through a bit of design process and experience the old design
education environment. Anyone who loves to think, create, doodle and introspect ideally are better!”

That’s interesting, anyone who thinks, creates or doodles. So effectively, if you were a back-bencher in school and were always picked on for sketching in your notes, you might just have it in you to make it to one of the best design institutes in the world. But this just shows being the studious one alone doesn’t get you there. You’d need the right kind of attitude with aptitude to stand out of the crowd. According to Prof. Balaram, more stress is put on aptitude and attitude rather than academics. “We look for students with a creative bent of mind. The aspirant should also have a strong sense of aesthetics (form and colour) with a broad outlook. Divergence is most important for design and so is team work. We try to gauge all these qualities in the probable student by way of aptitude tests prior to admission. Before offering admission we also conduct a personal interview to confirm (as much as possible) he/she is genuinely talented.”

The road ahead
After graduating from design school, the obvious route is to design studios that most MNCs have set up. In fact, several Indian companies such as Onida, Videocon and TI Cycles are also setting up design studios in India
and have realised the need for scientifically designed products. D J Academy of Design alumni have successfully been placed in popular companies such as Infosys, Wipro Lighting, Tata Solar, Mahindra Tech and Onida.

If you want to pursue courses abroad, institutes such as Rhode Island School of Design (Rhode Island, USA), California Institute of the Arts (California, USA), Royal College of Art (London, UK) are options you could consider. Prof. Mukherjee advises you try the best design school in the country, work for some time and then think of going abroad for a course in design. This way, he says, “you’ll be sure of your decision and have a better understanding of the subject rather than walking blindly on a lane”.

Design schools, in addition to imparting skills to students, perform the function of sorting probable designers. With enormous rush for admissions to design courses and the limited infrastructure in the nation, selection criteria need to be stringent and based on quality (read creativity and innovation) alone.

Deputy Registrar of MIT Vinayak Kulkarni adds, “The admission process begins in the month of November. The last date for submission of forms is January 31. This is followed by an All India test in the month of April. This is known as Design Aptitude Test. The next step is a studio test and personal interview in May, where further elimination is done. Finally classes begin in the month of July.”

Placement assistance
officer at MIT, the focus is always on innovation and new design. Last year, from over 750 applications, admissions were offered to only 200. Seats are limited to 15 per discipline.”

Khanna adds, “I target manufacturing and design houses as well as MNCs, as they tend to focus more on design. Additionally, there are entrepreneurial students and internships that need to be arranged. Post graduate students have a six-week summer internship for which we assist our students. In fact, last year 100 per cent of our students were placed.”

Companies that have hired MIT students include Godrej and Boyce, Philips Design, John Deere, Ogilvy & Mather, Daimler, BIG Animation and Whirlpool. The Future Group interviewed nine students and hired six of them, informs Khanna.

“If the world were to be measured by the number of skilled people, India would be the first world”

— Prof. S. Balaram
## FEE STRUCTURE

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### LIST OF DESIGN COURSES

You’d be surprised to know the number of categories under design, offered as a course, by premier design schools in the country. Some of the most sought after courses are as follows:

- Product Design
- Transportation & Automobile Design
- Furniture and Interior Design
- Ceramic & glass Design
- Toy & game Design
- Textile Design
- New media Design
- Apparel Design & merchandising
- Lifestyle Accessory Design
- Graphic Design
- Animation film Design
- Film & video Communication
- Photography Design
- Strategic Design management
- Information & Interface Design
- Design for Retail Experience
- Design for Digital Experience

* One time charges
  - Registration, jury, student amenities, modernisation, transcripts
  # Monthly charges, RF Refundable

Most design schools hint at an expected fee hike of 10 per cent every year. Effectively, summing all your expenses, your study at NID would cost you around Rs. 1,50,000 per annum, with an increase of between 15 to 20 per cent every year. Typical under-graduate programmes are for 4 years, while the duration of post graduate courses are typically two and half years. Similarly, a course at DJ Academy of Design appears slightly costlier, but the option to pay your yearly fees in two half-yearly instalments would be a relief to many. In addition, The Ford Foundation, Government of India and NID offer fee waivers, scholarships and grants to needy and deserving students. Also, the tuition fees for Srishti School of Art, Design and Technology, Bangalore is Rs. 1.25 lakhs per annum in addition to a non-refundable registration fee of Rs. 10,000 and a refundable deposit of Rs. 50,000.
Living it up

Overall, Indians have tremendous potential according to Prof. Balaram, “There is no third world. There should be nothing to stop us. Calling us a poor nation may be politically correct to some extent, but in no way is it acceptable to be called the “third world”. If the world is measured by the number of people in it, we should be the first world (referring to skilled population) while the so-called developed nations would be the third world. Indians are making a mark internationally.”

If you’ve been brooding over a career in Design, but have held yourself back why not give it a try. We’ve provided you with information to get you started. Let go of your doubts. If you don’t have it in you, these institutions would let you know for sure and you won’t sit down later in life with regret at not having tried your hand at design. Either way, you win!
CAREERS IN FLASH AND HTML5

The demand for this dual proficiency is going sky high, while the scarcity is driving up salaries considerably. There couldn’t be a better time to look at these as viable career options.
When someone talks about Flash what is the first thing that comes to your mind? Our guess would be “moving images, animation, and Flashy Stuff”. If your thoughts hover in that area, you’re not wrong but you’re not completely right either. In reality, Flash has now grown from a mere animation tool that it was, into a platform. The word platform is being thrown about loosely these days, so we’ll come to that in a bit and explain what makes Flash a platform. But first, let’s take a step back and understand how Flash has evolved. “Initially when Flash started off as an animation tool, people looked at it simply as something that can help creating animations for the web – things like banners and ads. But there’s a huge interactive angle to it that made the adoption of Flash so rampant,” says Himanshu Mody, CEO Tekno Point Multimedia, one of the leading Flash Training institutes in the country. Speaking of adoption, a 2013 study pegged the software developer workforce in India at 2.75 million developers and projected a growth of 90 per cent by 2018. Though impressive by itself, the actual figures may go way above these projections.

Lay of the land
At the very broad level we can classify two distinct streams that these technologies allow you to pursue in terms of a career. There’s the creative side involving design, that’s now increasingly being termed as Digital Content Creation. “For a designer it’s always Photoshop first. Then we take our design, import it in Flash and bring it to life. Flash gives you the ability to bring motion into still images and that’s what attracted me. It gives your website/animation/movie a sleekness. That’s how I started out”, says Abhilash Krishnan, Creative Director, UFO Digital. You have story telling mediums like film, television, or even advertising who use it for storyboarding and advertising companies that use it for creating rich media interactive banners. In the current scenario the digital content designer is in the next stage of evolution. Such designers will eventually have capabilities to create content in Print, Web and Mobile as well. “In the future I don’t see companies hiring print, web and mobile designers separately,” said Himanshu. “These next generation designers will be able to service any of these segments”.

Then there’s the programming-heavy development side of these web technologies that entail everything from RIAs (Rich Internet Applications) and Web Development to Gaming, to eLearing and Enterprise Level applications. Gaming companies leverage it for casual as well as high end MMORPGs
games, while at the enterprise level there are consulting companies such as Accenture and Deloitte besides system integration companies such as Wipro and Infosys that use Flex to build solutions for their customers. These streams are not mutually exclusive. There are a lot of overlaps and that’s where things start to get interesting.

When it was just Flash, good interactive programmers or developers stayed a little shy off it, because the environment was not supportive of the best programming practices that were available in some of the other tools like Java. With the inclusion of Adobe Flex and other tools it transformed into a true platform for creating some of the most robust apps complete with interactivity, business logic, server side communication, data linkages et al. The best of the programmers got attracted to Flash and because everyone wanted to have rich, good looking interfaces for their applications the natural progression was to go with Adobe Flash. The programming side evolved with time to an object oriented approach, starting with Actionscript 1.0 to now Actionscript 3.0. A lot of flexibility was added for development of widgets as well. “The recent development of Papervision 3D (incorporates 3D into Flash) and the ability to simulate augmented reality in Flash gives it a lot of scope for both experience based advertising, gaming and online availability,” says Abhilash. When it comes to HTML5, being an open standard which undergoes revision on a frequent basis has different platforms moving towards making HTML5 the prime focus for when the standard becomes prevalent in all medium. Currently websites make use of tools like Modernizr to detect if a device or a browser has support for HTML5 and CSS3 but once these protocols get adopted on a larger scale the need to use these will become inexistent. Also, Adobe themselves released a tool that allows conversion of flash files to the HTML standard.

Certifications and training

Both career oriented and tool specific courses are available from various training institutes across the country and they offer both design as well as development/programming tailored courses. Even online certification courses exist which only require you to pass a certification exam at the end of the course to be conducted by reputed organisations like Prometric so the credibility of such courses aren’t under question. The Career courses are usually the best choice and are structured towards an objective. For instance there are four courses at Tekno Point that offer training in both HTML5
Careers in Flash and HTML5

These kind of courses are not tool specific i.e. learning either Flash or Flex or Illustrator. Instead they will help you get familiar with whatever tools you need to learn to achieve your desired skill be it Acrobat, ActionScript, Flex or Core HTML5 scripting. There are also short courses for working professionals that last no more than 10 days. These short courses help you transition from other programming backgrounds to Flex.

As for certification, there are two main accreditations offered by Adobe in this field. Adobe Certified Associate is an entry level qualification. It’s for people who use Adobe products, usually as students as part of a college curriculum, and want an official certification to qualify their abilities. Adobe Certified Expert is for working professionals who are into Adobe products already and want to enhance their career. While ACA is general, ACE on the other hand is specific to a particular tool from Adobe. You can become an ACE Master in Flash, Photoshop and Illustrator. “It gives you a distinct identity if you’ve cleared these certifications. There are several Adobe training partners such as Tekno Point that offer training for these exams, while to actually take the exams you have to go to any of the testing centers in India,” adds Mody.

Let the games begin

Game development in HTML5 and Flash are some of the most exciting and high paying verticals in this sector. Anyone who has learnt these technologies from the development standpoint would most certainly be interested

“Though industry requires professionals with certifications it also gives importance to individuals with strong portfolios. So it would be good for budding enthusiasts to work on creating their portfolios”

— Abhilash Krishnan
Creative Director, UFO Digital
in game development. Most of the developers in India are into e-learning – which is a more simplistic from a development standpoint. Their coding logic is very linear. In gaming you have to use physics and more complex algorithms to make a fun game.

There’s a lot of opportunity across the gaming industry for qualified developers, supported by an acute shortage resulting in a lot of competition to get the best people. “The opportunities for game development are not just casual gaming which are PC based or browser / downloadable games, there are larger scale games such as virtual worlds and massively multiplayer online games also being done in Flash. The backends often end up being PHP with the programming done in Java. But the entire front end is handled in Flash.” says Robin Alter, CTO and Founder, Kreeda Games India Pvt. Ltd.

Flash and Flex make it easy to make games and applications but at the international level, companies such as Kreeda look at the quality of code, the re-usability of the code, and whether a person optimises the game. Emphasis is laid on the efficiency of the code as well as the performance. Candidates are given simple tasks to ascertain whether they think in an object oriented manner and see if “their code is elegant.” People who have come from Java into Flash and then into HTML5 often come with a good set of skills. People with good Flash programming skills can pick up Flex more easily than vice versa. “Apart from having a good academic record a person needs to have a good eye for details and logical reasoning. This helps in working on the game concept and to visualize the game before getting down to actual development”, says Deepak Abbot, VP-Product, Zapak Digital Entertainment.

As a game developer you would generally start as a junior developer and then progress to

**CERTIFICATION HELP**

- Find a training partner at [http://partners.adobe.com/public/partnerfinder/tp/show_find.do](http://partners.adobe.com/public/partnerfinder/tp/show_find.do) (Look for Product for eg “Adobe Flex” and country as “India”)
- To look at the various steps involved in ACE Certifications go to [http://www.adobe.com/support/certification/ace_certify.html](http://www.adobe.com/support/certification/ace_certify.html)
- To locate a testing center near you head over to [http://www.pearsonvue.com/Adobe/locate/](http://www.pearsonvue.com/Adobe/locate/)
developer, then senior developer, next comes project lead and then a tech lead. A junior developer with say a year and a half of experience on Flash can get anywhere from `3.5 to 4.5 lakhs per annum. It goes up considerably after each level. “I’ve interviewed people that are in the 20 lakhs range. People with around ten years of experience are in the 30 lakhs range. These high pay scales are for tech leads doing multiple projects and doing very complex stuff like large scale social games” says Robin.

One would think game designing would require a high degree of creativity. “You know what, I don’t stress so much on creativity from a game development or programming standpoint because a game developer is not required to be a game designer. They’re separate roles. But creativity does help”. To be a good game developer also requires you to do R&D. The gaming environment is ever changing – there’s always new technology, there are always new challenges therefore you need to be constantly interacting with the international community, constantly finding out how to do new things. Gaming is about new innovations.

**“I suggest building a two player game on any of the multiplayer engines that exist, to see how messages, and interactivity are done between two cross clients, how media can be dynamically served into a flash file to create an ever changing virtual world. Learning these kinds of things is where everyone is going”**

— Robin Alter  
CTO and Founder, Kreeda Games India Pvt. Ltd.

**Enterprise level**

At the enterprise level Flash and Flex are being used to create engaging client-server applications, web applications, CRM applications and financial services applications that help businesses bring a new level of interactivity
for their customers. “Almost everyone is talking about creating compelling user experiences. Companies themselves are investing a lot in generating this kind of a user experience for their customers – take for instance Harley Davidson or Allen Solly – they’ve made their web experience fully in line with their brand and what it stands for. Flash is indeed letting them engage better with their customers.” says Prabhjeet Singh, Country Marketing Head, Adobe Systems India.

Adobe Flash is the front end for these applications while you have a lot of application logic code sitting behind the animation or motion you see on your screen. Flex takes care of this server side communication and loading data from databases etc. Designing at the enterprise level happens at three levels. First is the usability and interface design side, which requires a person with knowledge of data architecture on the web, someone who can create a good menu layout and pageflow etc. The second part is designing the prototypes which requires Photoshop and Flash based animation designers who create movable designs. The third is writing of the business code, connecting it to the server side, working with the database logic etc which is done by the Flex developers. Different organisations use different sets of people or they use one person for all three. Companies, usually outsourcing units, who are into building these kinds of applications require people with an Engineering or MCA type of background with good programming ability. “For Flex candidates, we have a written test for assessing knowledge and programming ability, and we also look at previous work, if they have any. Then technical interviews follow where problems on Business Logic are asked and candidates have to come up with the thought process for a solution. Similarly we test creativity for Flash candidates by giving them a particular component and ask them how they could make it look better,” said Sandeep Dasgupta, Director-Engineering, Tavant Technologies.

Freshers can expect anywhere between two to five lakhs per annum. At the Architect or Technology Lead level it’s even more difficult to find the right people, so the premium goes as high as 50 to 100 percent over a similar Java person. So when you’re asking for an Architect with 10 plus years of experience, you’re assuming that at least five would be spent on Flash or Flex and about two with HTML5. Not many companies or individuals made the switch in the early days. Architects oversee design, program architecture, ensure code quality is good, and mentor programmers. The take away at this level ranges from ₹14 lacs pa all the way upto ₹30 lacs p.a.
The HTML5 debate

Reams have been written about this subject and everyone is waiting with bated breath to see the outcome. If indeed HTML5 will let you do many of the things Flash can, it’s not a stretch of imagination to think of the eventual questions – Will Flash be phased out? Will Flash developers be left redundant? If so, can they transition to the new standard? – The industry opinion seems to be unanimously similar. “It is a step in the right direction. HTML 4 didn't support a lot of functions, you had a lot of add on components being done like XML, XHTML, XForms etc. So HTML5 is a right step towards taking everything back into the standard hyper text model. Having said that it is still evolving,” said Sandeep. It is still an evolving technology standard. Besides, each of these tools are meant for different things. So in the future you’ll see a proper position for each of these. It’s more likely to work in conjunction.

“Take for instance YouTube - They’ve come out with HTML5 videos, but they’re yet to completely move to it.

Events in the past few years have led to a gradual shift towards HTML5 being adopted on a much larger scale and we’ll go into some of these incidents. The first would be when Steve Jobs wrote an entire blog post criticising the implementation of flash and subsequently had gotten flash support removed from iOS which at that time had the dominant share of tablets and smartphone sales. Even the Redmont Giant has consciously decided against supporting Flash in the Windows Phone environment and initially on the WindowsRT operating system which is what they’ve got on their ARM based tablets. Earlier this year, they decided on adding flash support
on WindowsRT though not to the extent that they have on the desktop operating system. Android which is currently the most popular operating system on smart phones as well as tablets stopped Flash support since Android 4.1 and they recently released the last update on their roadmap. This comes a few months after Adobe culled 10% of their workforce and shutdown development of Flash on their mobile platform. It can be safely said that the end of flash is near but with the current penetration that it enjoys in the desktop segment there is no way that this transition is going to happen over a time frame of even ten years. Which means there is still the need for skilled professionals who can cater to a technology that enjoys a presence on 99% of all browsers out there. Even Adobe is helping towards this transition from Flash to HTML5 with the release of CreateJS which allows the conversion of Flash content to HTML5.

So to conclude, since so many industry experts we spoke to believe in a coexistence perhaps it would be beneficial to dabble in both technologies. Diversification after all can only add value. Who knows, maybe in five years you might be one of those rare and multi-faceted professionals who are much sought after. double edged sword. 

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