# MISM CAREER GUIDE

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This guide was designed specifically to help you prepare for your job and internship search.

Unless otherwise noted, the information in this packet was developed by Heinz Career Services Staff.
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Consider the environment – please print double-sided when possible.
INTRODUCTION TO HEINZ CAREER SERVICES

Office Information

Office location: Suite A002 (on the lower level of Hamburg Hall)
Office email: cs77@andrew.cmu.edu
Office phone: 412-268-2166
Hours of operation: Monday through Friday, 8:30am – 5:00pm

After-hours appointments scheduled by request.

Meet the Staff

Ron Delfine, Director (rdelfine@andrew.cmu.edu)
Advisor for ISPMs and MSITs
Ron is responsible for providing a comprehensive range of services, programs, and materials focusing on career exploration, skill development and placement services to Heinz students. He is also responsible for expanding the base of organizations interested in offering employment opportunities to students graduating from Heinz. He previously worked as an executive recruiter for Crown Advisor Inc. based in Pittsburgh, and has also worked in the Carnegie Mellon Career Center as a Career Consultant for the College of Business Administration and the Mellon College of Science. Ron holds a Bachelor of Science in Secondary Education and a Master of Arts in Student Affairs in Higher Education, both from Indiana University of Pennsylvania.

Terri Alderfer, Assistant Director (terria@andrew.cmu.edu)
Advisor for MISMs
Terri advises and provides career development resources for MISM students, focusing on the summer start, BIDA and Global MISMs. She is also the main point of contact in Heinz Career Services for students at the Adelaide, Australia campus – providing career development support, and developing full-time and internship opportunities abroad. Prior to joining Heinz College, Terri advised international students participating in the cooperative education program at Drexel University in Philadelphia. In that role, she also developed international job opportunities and managed work abroad programs in various countries. Terri obtained her Bachelor of Arts at McGill University in Montreal, Canada, before completing her Master of Science in Higher Education Administration at Drexel University. In between, she spent a year teaching English as a second language in Barcelona, Spain.

Christine Sundry, Career Advisor (christine.sundry@cmu.edu)
Advisor for MISMs
Christine assists the students with the various aspects that encompass the internship and job search such as resume and cover letter writing, interview preparation and counseling in all areas of professional etiquette and development. Christine began her career as a Career Services Director for a technical, proprietary school and later transitioned to CMU, as the MISM Career Advisor from 2003-2005. Before returning to Heinz and MISM, Christine served as a Career Counselor and Internship Coordinator for Saint Vincent College (also her alma mater) and assists CMU’s Engineering and Technology Innovation Management program in a similar capacity. She is happy to once again be serving the Heinz and the MISM population, bringing along her 15 years of experience in higher education.
Maureen May, Associate Director (mm@andrew.cmu.edu)

Advisor for MEIMs and All Heinz Employer Relations

Maureen worked for the CMU main Career Center as the Assistant Director for Employer Relations before coming to Heinz, where she specialized in campus events, sponsorship opportunities, connection with key campus contacts and student organizations. Before that, she worked for the University of Pittsburgh in Career Counseling and Employer Relations as well. She obtained her Bachelor’s degree from Saint Vincent College before attending Indiana University of Pennsylvania for her Masters in Student Affairs in Higher Education.

Anita Nichols, Associate Director (anitanichols@cmu.edu)

Advisor for MSPPMs and MPMs

Anita joined the Heinz College Career Services staff after serving as the Director of Programs for the Local Government Academy. At LGA she was responsible for program coordination, curriculum development, event planning, and the Municipal Intern Program. Anita has also worked as a Community and Economic Development Educator in a joint position with the Penn State Cooperation Extension and Smart Growth Partnership. She graduated from Shippensburg University with a degree in Geography, with concentrations in Regional Planning and Tourism. While at Shippensburg, Anita worked in the Career Education Department advising students on career options.

Jessica Bowser, Assistant Director (jabowser@andrew.cmu.edu)

Advisor for MAMs

Jessica assists MAM students with their internship and job searches including interview preparation, cover letter and resume review. She coordinates events for Heinz Career Services and oversees the Internship Opportunity Fund, which raises financial aid for students to complete their internships. Jessica received her Master of Arts Management from Carnegie Mellon University and her BFA in Theatre from Point Park University. She has over a decade of nonprofit arts administration experience in both the performing and visual arts and has worked for Roundabout Theatre Company, Williamstown Theatre Festival, and the Children’s Museum of Pittsburgh.

Dave Fortna, Assistant Director (dfortna@andrew.cmu.edu)

Advisor for HCPMs, MS-DCs, and MS-POLAs

Dave joined the Heinz College Career Service Staff in August 2014. He provides career development resources and builds employer partnerships for students and alumni in the Master of Science in Public Policy and Management and Master of Science in Healthcare Policy and Management programs at the Heinz College. Prior to joining the Heinz staff, he worked as an Employment Development Specialist for Pitt’s Office of Career Development and Placement Assistance, where he focused on building employer partnerships in the fields of Government, Non-Profit, Healthcare and Business. Before pursuing a career in higher education, he was a Terminal Trainmaster for Norfolk Southern Railroad. He received his Bachelors of Science in Crime, Law and Justice from Penn State and a Masters in Higher Education Management from the University of Pittsburgh.

Rebecca Clarkson, Recruitment Coordinator (rclarkso@andrew.cmu.edu)

Rebecca joined the Heinz career services staff in May 2014. Before coming here, she was an assistant manager at Wal-mart, where she took care of the daily tasks to ensure the proper running of a busy retail environment while also teaching and training her associates throughout the store. Rebecca is in charge of all the recruiting aspects here at Heinz. She comes to us with a Bachelor's degree in Business Administration with a concentration in Human Resources.

Lisa Everett, Office Coordinator (ls2y@andrew.cmu.edu)

Lisa is in charge of maintaining the office's daily operations. She comes to the Heinz College with significant experience in several offices at Carnegie Mellon University, most recently as Program Manager for the Undergraduate Research Office. In this role she developed and implemented programs, advised and counseled students, and oversaw all administrative details for the program. Lisa holds a Bachelor of Arts degree in Psychology from Chatham College.
Heinz CareerNavigator

Heinz CareerNavigator is the online database for career-related events, on-campus interviews and info sessions, resume drops, and job postings. Below are a few key things to remember; more information about how to use CareerNavigator can be found on the Heinz website.

- **CREATE AN ACCOUNT**  
  Go to [https://heinz-cmu-csm.symplicity.com/students/](https://heinz-cmu-csm.symplicity.com/students/) and register for a new account. Use your andrew email as your user name. You should receive a confirmation email within 72 hours. Use the same link to log in after you are approved.

- **UPLOAD YOUR RESUME**  
  Click on the “Documents” tab at the top of the screen. Click the “Add New” button to upload a new document to your personal account. Use this same process to upload cover letters, writing samples, etc., that can then be sent to employers.

- **SEARCH FOR JOBS/INTERNSHIPS**  
  Go to the “Jobs I Qualify For” link on the Home page under “Shortcuts” to go to the screen where you can enter keywords or Job ID numbers to search for posted positions. Use the other links on the Home page to view upcoming events such as on-campus interviews, workshops, and employer info sessions.

- **SEARCH THE DOCUMENT LIBRARY**  
  Go to the “Documents” tab and then select the “Document Library” tab. Many documents and forms are stored here, such as links to think-tank organizations and the Heinz business card template.
PREPARING FOR YOUR JOB SEARCH

Values & Skills Assessments

Before you begin your job or internship search, it is important to identify what your strengths are and what you value in the workplace. One good way to do this is to conduct a personal value and skill assessment. This can be especially important if a) you don’t have much prior work experience or b) you aren’t sure what you are looking for in your next job move.

Know the answer to questions such as:

1. Do you like jobs that require logic rather than creativity?
2. Do you like jobs that involve travelling and the outdoors rather than an indoor office?
3. What news topics usually catch your attention?
4. Are you comfortable being the center of attention?
5. Would you prefer to work in a large corporate business rather than in a small business or alone?
6. Would you prefer a high paying stressful job over a lower paying less stressful job?
7. Would you like a job where you were held responsible for the overall success of a project?

Once you can articulate to yourself what it is you are looking for in a job or career, you will then be ready to conduct a meaningful job search. Knowing this information will also help you explain to employers why you are interested in a position, or why you would be a good fit with their organization.

Doing Your Research

The first step to a successful job hunt is to do your research. Research the employer, the nature of the work, the career paths available, and what kinds of skills and qualifications are desired.

The following two sections of this guide will break down common types of jobs and employers for people in your degree program. This is not a comprehensive list, but it will give you an idea of what is reasonable to expect after Heinz.

Additional publications with employer and job information are available in the Career Services library, as well as in the Document Library in CareerNavigator. To learn more about a specific type of job or type of employer, see a career advisor to discuss how you can contact alumni to ask specific questions about your desired career path.

Common Job Roles

Systems Analyst

Nature of Work: Computer systems analysts study an organization’s current computer systems and procedures and make recommendations to management to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both. Analysts use a variety of techniques to design computer systems such as data-modeling systems, which create rules for the computer to follow when presenting data, thereby allowing analysts to make faster decisions. They also do information engineering, designing and setting up information systems to improve efficiency and communication.
Because analysts work closely with an organization’s business leaders, they help the IT team understand how its computer systems can best serve the organization.

Analysts determine requirements for how much memory and speed the computer system needs, as well as other necessary features. They prepare flowcharts or diagrams for programmers or engineers to use when building the system. Analysts also work with these people to solve problems that arise after the initial system is set up.

Most systems analysts specialize in certain types of computer systems that are specific to the organization they work with. For example, an analyst might work predominantly with financial computer systems or engineering systems.

In some cases, analysts who supervise the initial installation or upgrade of IT systems from start to finish may be called IT project managers. They monitor a project’s progress to ensure that deadlines, standards, and cost targets are met. IT project managers who plan and direct an organization’s IT department or IT policies are included in the profile on computer and information systems managers.

**Locations/Industries:** Computer systems analysts work in offices or computer labs. Some analysts telecommute, using computers to work from remote locations. Many work about 40 hours a week, but some work more than 50 hours a week. Sometimes, these workers work long hours to get a project done on time, and analysts usually work as part of a team.

In 2012, there were 520,600 computer systems analysts. Many worked for computer consulting companies. Others were self-employed. They often moved from place to place working on different projects. Analysts also worked for governments, universities, internet companies, and financial institutions.

**Qualifications:** Many computer systems analysts have a college degree in computer science, information science, or management information systems. When hiring computer systems analysts, employers usually prefer applicants who have at least a bachelor’s degree. For more technically complex jobs, people with graduate degrees are preferred. For jobs in a business environment, employers often seek applicants with at least a bachelor’s degree in a business-related field such as management information systems (MIS). Increasingly, employers are seeking individuals who have a master’s degree in business administration (MBA) with a concentration in information systems.

Employers usually look for people who have broad knowledge and experience related to computer systems and technologies, strong problem-solving and analytical skills, and the ability to think logically. In addition, the ability to concentrate and pay close attention to detail is important because computer systems analysts often deal with many tasks simultaneously. Although these workers sometimes work independently, they frequently work in teams on large projects. Therefore, they must have good interpersonal skills and be able to communicate effectively with computer personnel, users, and other staff who may have no technical background.

Employers generally look for people with expertise relevant to the job. For example, systems analysts who wish to work for a bank may need some expertise in finance, and systems analysts who wish to work for a hospital may need some knowledge of health management. Furthermore, business enterprises generally prefer individuals with information technology, business, and accounting skills and frequently assist employees in obtaining these skills.

With experience, systems analysts may be promoted to senior or lead analyst. Those who possess leadership ability and good business skills also can become computer and information systems managers or can advance into executive positions such as chief information officer. Those with work experience and considerable expertise in a particular subject or application may find lucrative opportunities as independent consultants, or they may choose to start their own computer consulting firms.

**Employment Change:** Employment of computer systems analysts is expected to grow 25 percent from 2012 to 2022, faster than the average of all occupations. As organizations across the economy increase their reliance on information technology (IT), workers in this occupation will be hired to design and install new computer systems. Growth in wireless and mobile networks will create a need for new systems that work well with these networks. Additional job growth is expected in healthcare fields. A large increase is expected in electronic medical records, e-prescribing, and other forms
of healthcare IT, and analysts will be needed to design computer systems to accommodate the increase. There is also expected to be an increase in the number of systems analysts working at IT consulting firms. These analysts, who will be hired by organizations in a variety of industries to design computer systems, will move on to another business when they are finished. As more small and medium-size firms demand advanced systems, this practice is expected to grow. Systems analysts are expected to grow 35 percent in the computer systems design and related services industry from 2012-2022.

**Earnings:** In May 2010, average yearly wages for computer systems analysts were $77,740.

*The above information is excerpted from the U.S. Department of Labor, Bureau of Labor Statistics’ website.*

**Recommended Electives:**

- Operations Research
- Internet Technologies
- Algorithms & Data Structures for Information Processing
- J2EE Programming
- IT Project Management
- Introduction to Data Structures
- Effective Programming in C and Unix
- Web Application Development
- Measurement & Analysis of Social Media Initiatives
- E-Commerce Technologies

**Project Management**

**Nature of Work:** Project management is the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives. It is sometimes conflated with program management; however, technically a program is actually a group of related and somehow interdependent projects.

Project managers can have the responsibility of the planning, execution, and closing of any project, typically relating to the construction industry, engineering, architecture, computing, or telecommunications. Many other fields in the production, design and service industries also have project managers. A project manager is often a client representative and has to determine and implement the exact needs of the client, based on knowledge of the firm they are representing. The ability to adapt to the various internal procedures of the contracting party, and to form close links with the nominated representatives, is essential in ensuring that the key issues of cost, time, quality and above all, client satisfaction, can be realized.

An increasing number of organizations are using, what is referred to as, project portfolio management (PPM) as a means of selecting the right projects and then using project management techniques as the means for delivering the outcomes in the form of benefits to the performing private or not-for-profit organization. Project management methods are used ‘to do projects right’ and the methods used in PPM are used ‘to do the right projects’. In effect PPM is becoming the method of choice for selection and prioritizing among resource inter-related projects in many industries and sectors.

**Qualifications:** Experience managing teams to accomplish projects is highly desirable for this position. In addition, taking courses in project management, risk analysis, budgeting, financial management techniques, and strategic planning could be beneficial in building skills desirable in project managers. Many firms use specific project management software such as Microsoft Project, Oracle Project Portfolio Management, or Merlin.

Excellent communication is essential for a project manager, as they are responsible for coordinating the client, supervisor or sponsor, external stakeholders, and team members. Both written and oral communication are very important, as well as an attention to detail and an ability to negotiate and adapt to problems quickly.

**Locations/Industries:** Many consulting firms use project managers to manage teams for multiple clients, and large organizations may staff project managers if they are continuously starting new projects. The federal government is also known for hiring many project managers, and The Office of Federal Procurement Policy (OFPP) policy memorandum dated April 25, 2007 announced the establishment of a structured development program for program and project managers identified as the Federal Acquisition Certification for Program and Project Managers (FAC-P/PM).
The Federal Acquisition Institute provides a special certification program for Project Managers for civilian agencies to manage the acquisition-related aspects of projects.

**Earnings:** BLS does not collect data on project managers, but industry sources suggest that earnings for project managers depend on education, experience, and geographic location—the same factors that affect earnings for most workers. Project managers in urban areas often earn considerably more than those in rural areas. Industry sources also suggest that most project managers receive bonuses in addition to their salary, especially at the end of a successful project. According to a 2006 survey commissioned by the Project Management Institute, full-time project managers in the United States reported median annual earnings of $96,000, including salary and bonuses. That means than half of the project managers surveyed earned more than that amount, and half earned less. The survey also confirmed that experience is one of the most important determinants of earnings; entry-level project managers should expect lower earnings while they are learning to lead.


**Recommended Electives:**
- Project Management
- IT Project Management
- Advanced IT Project Management
- Web Application Development
- Measurement & Analysis of Social Media
- Global IT Sourcing
- Technology Consulting in the Community
- Global E-business Strategy
- IT Business Leadership
- Management Consulting

**IT or Technical Consultant**

**Nature of Work:** Firms that offer management, scientific, and technical consulting services influence how businesses, governments, and institutions make decisions. Often working behind the scenes, these firms offer technical expertise, information, contacts, and tools that clients cannot provide themselves. They then work with their clients to provide a service or solve a problem.

Scientific and technical consulting services firms provide services similar to those offered by management consulting firms, but the information is not management related. Security consulting, by contrast, seeks to ensure the safety and security of an organization’s physical and human assets that may be threatened by natural or human-made disasters. The rapid spread of computers and information technology has generated a need for highly trained computer specialists to design and develop new hardware and software systems and to incorporate new technologies. Systems analysts design new computer systems or redesign old systems for new applications. They solve computer problems and enable computer technology to meet their organization’s particular needs. For example, a systems analyst from a management consulting firm might be hired by a wholesale firm to implement an online inventory database.

Computer software engineers, by contrast, can be involved in the design and development of software systems for the control and automation of manufacturing, business, and management processes. Other computer specialists include computer support specialists, who provide technical assistance, support, and advice to customers and users, and database administrators, who work with database management systems software and determine ways to organize and store data. Computer specialists such as systems analysts, computer scientists, and computer engineers sometimes are referred to simply as “consultants.”

Technical workers also include computer programmers, who write programs and create software, often in close conjunction with systems analysts. Like systems analysts, computer programmers are found primarily in the business and management consulting segments of the industry.

However, many consultants must meet hurried deadlines, a requirement that frequently entails working long hours in stressful environments. Occasionally, weekend work also is necessary, depending upon the job that is being performed. In addition, some projects might require many executives and consultants to travel extensively or to live away from home for extended periods.
Locations/Industries: Clients include large and small companies in the private sector; Federal, state, and local government agencies; institutions, such as hospitals, universities, unions, and nonprofit organizations; and foreign governments or businesses. Although employees in this industry work in all parts of the country, many workers are concentrated near large urban centers. The vast majority of establishments in the industry were fairly small, employing fewer than five workers. Self-employed individuals operated many of these small firms. Despite the prevalence of small firms and self-employed workers, large firms tend to dominate the industry. Approximately 41 percent of jobs are found in establishments with 50 or more employees, and some of the largest firms in the industry employ several thousand people.

Qualifications: Compared with other industries, the management, scientific, and technical consulting services industry has a relatively high proportion of highly educated workers. About 73 percent have a bachelor’s degree, compared with 32 percent of workers throughout the economy. Around 32 percent have a master’s or higher degree, compared with 11 percent of workers throughout the economy. Many individuals move into consulting after gaining experience in their field by working in an industry in that field. As a result, the average age in the consulting industry is higher than in all industries.

Some schools offer programs in logistics and safety that relate directly to consulting jobs in those areas. Some college graduates with a bachelor’s or master’s degree and no previous work experience are hired right out of school by consulting firms and go through extensive on-the-job training. The method and extent of training can vary with the type of consulting involved and the nature of the firm. Some college students might have an advantage over other candidates if they complete an internship with a consulting firm during their studies.

To a large extent, a college degree is only one desired qualification; workers also must possess proven analytical and problem-solving abilities, excellent written and verbal communications skills, experience in a particular specialty, assertiveness and motivation, strong attention to detail, and a willingness to work long hours if necessary. Many consultants undergo training to learn these and related skills, such as project management and building relationships with clients. Consultants must also possess high ethical standards, because most consulting firms and clients will contact references and former clients to make sure that the quality of their work was of the highest standard.

Employment Change: Management, scientific, and technical consulting services is projected to be the fastest growing industry over the next decade. Wage and salary employment in the management, scientific, and technical consulting services industry is expected to grow by 83 percent between 2008 and 2018. All areas of consulting should experience strong growth. Despite the projected growth in the industry, there will be keen competition for jobs because the prestigious and independent nature of the work and the generous salary and benefits generally attract more jobseekers than openings every year. Individuals with the most education and job experience will likely have the best job prospects.

The increasing use of new technology and computer software is a major factor contributing to growth in all areas of consulting. Consulting firms might help design new computer systems or online distribution systems. One of the biggest areas upon which technology has had an impact is logistics consulting. The Internet has greatly increased the ability of businesses to link to and communicate with their suppliers and customers, increasing productivity and decreasing costs. Technology-related consulting projects have become so important that many traditional consulting firms are now merging with or setting up joint ventures with technology companies so that each firm has access to the other’s resources in order to serve clients better.

The trend toward outsourcing and mergers also will create opportunities for consulting firms. In order to cut costs, many firms are outsourcing administrative and human resources functions to consultants specializing in these services. Globalization, too, will continue to provide numerous opportunities for consulting firms wishing to expand their services, or help their clients expand, into foreign markets. The growth of international businesses will create numerous opportunities for logistics consulting firms as businesses seek to improve coordination in the expanding network of suppliers and consumers.
Earnings: Management, scientific, and technical consulting services is one of the highest paying industries. The 2008 median annual wages in the Computer systems and design related services was $82,090 and in the management, scientific, and technical consulting services was $81,670. This data does not reflect earnings for self-employed workers, which are often high.

Besides earning a straight salary, many workers receive additional compensation, such as profit sharing, stock ownership, or performance-based bonuses. In some firms, bonuses can constitute one-third or more of annual pay. Only about 1 percent of workers in management, scientific, and technical consulting services belong to unions or are covered by union contracts, compared with 14 percent of workers in all industries combined.

The above information is excerpted from the U.S. Department of Labor, Bureau of Labor Statistics’ website.

Recommended Electives:

- Negotiation
- IT Project Management
- Corporate Finance
- Data Warehousing
- Investment Management
- Internet Security
- Management Consulting
- Consulting Communications
- Business Process Modeling
- Enterprise Architecture

Software Engineer

Nature of Work: Computer software engineers can generally be divided into two categories: applications engineers and systems engineers. Applications software engineers analyze end users' needs and design, construct, deploy, and maintain general computer applications software or specialized utility programs. These workers use different programming languages, depending on the purpose of the program and the environment in which the program runs. The programming languages most often used are C, C++, Java, and Python. Some software engineers develop packaged computer applications, but most create or adapt customized applications for business and other organizations. Some of these workers also develop databases.

Systems software engineers coordinate the construction, maintenance, and expansion of an organization's computer systems. Working with the organization, they coordinate each department's computer needs, for example: ordering, inventory, billing, and payroll/recordkeeping. They may also make suggestions about its technical direction and set up the organization's intranets—networks that link computers within the organization and ease communication among various departments. Often, they are also responsible for the design and implementation of system security and data assurance.

Systems software engineers also work for companies that configure, implement, and install the computer systems of other organizations. These workers may be members of the marketing or sales staff, serve as the primary technical resource for sales workers, or provide logistical and technical support. Since the selling of complex computer systems often requires substantial customization to meet the needs of the purchaser, software engineers help to identify and explain needed changes. In addition, systems software engineers are responsible for ensuring security across the systems they are configuring.

Locations/Industries: Although computer software engineers and computer programmers can be found in a wide range of industries about 32 percent were employed in computer systems design and related services. Many also worked for software publishers, manufacturers of computers and related electronic equipment, financial institutions, and insurance providers.

Software engineers who work for software vendors and consulting firms frequently travel to meet with customers. Telecommuting is becoming more common as technological advances allow more work to be done from remote locations.
locations. Most software engineers and programmers work 40 hours a week, but more than a quarter worked more than 40 hours per week in 2012.

Qualifications: A bachelor’s degree is commonly required for software engineering jobs, although a master’s degree is preferred for some positions. A bachelor’s degree is also required for many computer programming jobs, although a 2-year degree or certificate may be adequate in some cases. Employers favor applicants who already have relevant skills and experience. Workers who keep up to date with the latest technology usually have good opportunities for advancement.

For software engineering positions, most employers prefer applicants who have at least a bachelor’s degree and broad knowledge of, and experience with, a variety of computer systems and technologies. The usual college majors for applications software engineers are computer science, software engineering, or mathematics. Systems software engineers often study computer science or computer information systems. Graduate degrees are preferred for some of the more complex jobs.

In addition to educational attainment, employers highly value relevant programming skills and experience. Students seeking software engineering or programming jobs can enhance their employment opportunities by participating in internships. Some employers, such as large computer and consulting firms, train new employees in intensive, company-based programs.

Computer software engineers also need skills related to the industry in which they work. Engineers working for a bank, for example, should have some expertise in finance so that they understand banks' computing needs. For skilled workers who keep up to date with the latest technology, prospects for advancement are good. Eventually, they may become a project manager, manager of information systems, or chief information officer, especially if they have business skills and training. Some computer software engineers with several years of experience or expertise can find lucrative opportunities working as systems designers or independent consultants, particularly in specialized fields such as business-to-business transactions or security and data assurance.

Employment Change: Employment of software developers is projected to grow 22 percent from 2012 to 2022, much faster than the average for all occupations. Employment of applications developers is projected to grow 23 percent, and employment of systems developers is projected to grow 20 percent.

The main reason for the rapid growth is a large increase in the demand for computer software. Mobile technology requires new applications. The healthcare industry is greatly increasing its use of computer systems and applications. Also, concerns over threats to computer security could result in more investment in security software to protect computer networks and electronic infrastructure.

Systems developers are likely to see new opportunities because of an increase in the number of products that use software. For example, computer systems are built into consumer electronics, such as cell phones, and into other products that are becoming computerized, such as appliances. In addition, an increase in software offered over the Internet should lower costs and allow more customization for businesses, also increasing demand for software developers.

Some outsourcing to foreign countries with lower wages may occur. However, because software developers should be close to their customers, the offshoring of this occupation is expected to be limited.

Earnings: In May 2012, the median annual wage for applications software developers was $90,060. The median annual wage for systems software developers was $99,000 in May 2012.

The above information is excerpted from the U.S. Department of Labor, Bureau of Labor Statistics’ website.
Recommended Electives:

- J2EE Programming
- IT Project Management
- Introduction to Data Structures
- Effective Programming in C and Unix
- Web Application Development
- Measurement & Analysis of Social Media Initiatives
- Internet Security
- Service Oriented Architectures
- Software Engineering for Information Technology: I
- Software Engineering for Information Technology: II

Data Strategy and Management

Nature of Work: In today’s increasingly globalized economy, data has become a vital business asset. So the people responsible for the processes and systems used to organize, manage and control access to information have become critical resources.

“How an organization uses its data can be the difference between average performance and competitive advantage,” notes Teradata magazine. “For this reason, it is vital to have a data management strategy that focuses on the creation of accurate, consistent and transparent data content that can be integrated into the business applications and business processes.”

That means it’s necessary for companies to come up with data management strategies that support their goals and objectives. With the exception of very large corporations, most organizations are struggling with the complexity surrounding data management and strategy. The area takes on even more importance for companies dealing with mergers and acquisitions, evolving market tactics and dynamic regulatory requirements.

As Teradata says, data-driven processes help companies make decisions with confidence. IT maintains the enterprise data warehouse (EDW) architecture, which provides an “ecosystem that serves new data management processes while accommodating future needs.”

It follows, then, that database managers, data/information architects, modelers, analysts and administrators are becoming increasingly crucial to firms as they attempt to get a handle on this dynamic and evolving area. Develop an expertise in this sweet spot and you could find yourself in high demand, particularly if you also develop a business sense that can help C-level executives align data with business goals.

“There’s a lot of data out there, and there are a lot of people who do programming,” says Sanjay Bhandari, an independent consultant professional who works in data management. "They may know how to manipulate the data out of a system, but they are not always able to extract the business meaning of the data. That creates a gap."

One of the more strategic jobs in the area is that of data/information architect, who’s typically responsible for the overall design of the enterprise-wide data/information architecture. Mapped to the enterprise’s overall IT architecture, the information approach must balance the need for access against security and performance requirements. In addition, architects must anticipate needs for enterprise-wide data modeling and database designs. They may have the opportunity to take on a deeper leadership role, as the architect is the person who defines data and information architecture standards, policies and procedures.

A person targeting this type of position – which generally requires a bachelor’s or master’s degree in computer science, information systems or related field – should be knowledgeable in most aspects of designing and constructing data architectures, operational data stores and data marts.

Those who want to attain a more middle-level position could consider a job as database manager. These folks are responsible for ensuring the design, maintenance and implementation of database management systems. They should possess the technical expertise to manage the design and development of their organization’s database environment.
Data modelers serve in a more intermediate-level role, responsible for analyzing and developing complex but logical database designs, data models and relational data definitions to support the corporate and customer information systems.

Another intermediate-level role is that of database analyst. They’re responsible not only for designing and developing database management systems, but are in charge of analyzing data requirements, application and processing architectures, data dictionaries and database plans. The job requires a bachelor’s degree in computer science, information systems or a related field.

Database administrators manage and maintain all production and non-production databases and are responsible for standards and design of data storage, maintenance, access and security.

Security is taking on a more prominent role in IT operations, which is giving rise to a newer role called the database security analyst, says Noel Yuhanna, principal analyst at Forrester Research. These professionals should be well-versed in Oracle, IBM and SQL Server databases, but also understand best practices around, and the technologies used to improve, database security. The job requires a high-level understanding of the government regulations and how applications, operating systems, firewalls and networks interact.

"People have ignored database security for many years," says Yuhanna. "Typically, database administrators have other things to do. But there is a gap we started to see two years ago, and now we are seeing this role emerging in the industry. This should be a separate role and it could be a career path for any database administrator. This area continues to be important, despite the economy."

The above information is excerpted from The Official Dice Technology Job Search Guide.

Business Intelligence Systems

Businesses produce and capture incredible amounts of data. Sales figures pour in from one system, purchasing numbers come in from another, and HR metrics roll in from yet a third. Out of these vast and disjointed streams, executives are expected to gain the insight and context needed to not only run their business day to day, but also develop the strategies that will steer the business toward continued success. The technology professionals working in the business intelligence sector help provide that insight by leveraging technology to turn raw data into usable information.

Business intelligence (BI) is about distilling and presenting relevant and timely data to the end use for analysis and action. By creating systems that gather the appropriate slices of data from disparate sources, BI provides decision makers with the tools to sift through mountains of facts and measurements to find actionable meaning. Using historical data, business leader can use BI systems to measure the achievement and current health of their company, or look to the future using predictive analytics. If you’ve ever had Amazon make a particularly prescient suggestion based on your historical buying baits, you’ve seen the power of the predictive analytics side of BI.

After several rounds of buyouts and consolidations in the industry over the last few years, the biggest players in this market are Oracle, SAP, IBM, and Microsoft. Many BI systems are implemented using software products from one of these vendors, or a combination best-of-breed, using a mix of solutions from the big four. Each of the major software vendors, and smaller tier providers as well, have strong consulting and services divisions that employs hundreds of BI professionals.

While the recession hasn’t hit the BI sector as heavily as other areas of IT, the job market has softened. The 2010 Magic Quadrant for Business Intelligence Platforms report from researcher Gartner offers some reasoning hind this trend saying, "The market for BI platforms will remain one of the fastest growing software markets despite the
economic downturn. In tough economic times, the competitiveness deepened on the optimization of strategy and execution, organizations continue to turn to BI as a vital tool for smarter, more agile, and efficient business.

While the report goes on to caution that the double digit growth of 2008 could cool to about 7 percent in 2009, it predicts growth will continue steadily through 2012. As businesses implement BI systems, there will be steady demand for the analysts, developers, and data warehouse professionals that are involved with both large and small implementations.

In addition to the steady maintenance of the early BI adopters in national restaurant chains and large retailers, there are two new bright sports for BI: Both the healthcare and energy industries are currently investigation in large intelligence initiatives. While not recession-proof, organizations in these areas currently have the revenue to spend, and an increasing need for BI systems.

Companies are also trending away from consultants toward full time employees. "Some of the trends right now are that organizations that have money to invest in BI are rolling off their consultants and bringing on full-time employees because it’s much more cost effective," says Matt Mueller, president of CBIG Recruiting and Staffing in Chicago. "Instead of paying a consultant at $100 an hour, or in many cases a lot more, they can find someone at $100,000 and save themselves $60,000 – $70,000 per year."

Roles and Career Paths

Jobs in BI fall into three categories: analysis, data warehouse and reporting/presentation. In analysis, the business analyst’s role is to walk between the worlds of business and technology. Analysts interview the business domain experts to gather the business requirements that need to be met. They then write functional specification documents that the technical teams use to design and construct necessary solutions.

Individuals working in the data warehouse are involved in building, populating, maintaining, and managing data structures and databases. Data architects and modelers design both rational and multidimensional structures to accomplish the goals set out in the technical specification. Developers generally work in the “Extract Transform and Load” (ETL) portion of the data warehouse. They create systems to extract data from different sources, transform it into the desired format, and load it into the data warehouse.

The BI professionals working in reporting and presentation create the tools that allow the business decision makers to consume the data in a format that has context for them. Developers working in this area work with analysts and business domain knowledge experts to create dashboards, scorecards, and reports from the extracted data residing in the data warehouse. Other professionals in this area include report developers, reporting analysts, and BI Architects.

The above information is excerpted from The Official Dice Technology Job Search Guide.

Common Employers

MISM placement with employers is tracked twice a year in December and May. Details including employer name, job title, and location as well as salary and industry statistics are posted to the website.

You can view previous employment information here.
Internship Information

A full-time internship, completed during the summer between the first and second years of the program, will provide you with the opportunity to apply the management and technical skills learned during the first year of the program, gain further professional experience and develop a strong context for the second-year concentration coursework.

As a 16-month MISM or Global MISM student, you are required to complete an internship in the summer between your first and second years to gain first-hand, real-world experience. Students may conduct internships in many different industries, including finance, consulting, technology, and government agencies. You are encouraged to intern with an organization that corresponds to your individual area of interest and career goals. You will not receive academic credit for your internship, but it will be reflected on your transcript as a course with a Pass/Fail grade.

Internship Requirements

- Fill out the Internship Reporting Form for approval from your career advisor.
- The internship should be for a minimum of 7 weeks full-time (280 hours).
- The internship should allow you to apply skills you have acquired in your first year of study.

For International F1 Visa Students: You must apply for Curricular Practical Training (CPT) employment authorization for your summer internship. CPT authorization is required regardless of the internship paid or unpaid. CPT is only available to F-1 students who have not graduated and who have been enrolled on a full-time basis for one full academic year (i.e. fall and spring.) If your degree program requires you to do a summer internship, you can qualify for CPT. Processing CPT may take up to 1 week and you cannot begin employment until you receive authorization. CPT guidelines, forms and instructions can be found at the CMU Office of International Education’s website.

Internship Resources

There are several resources available on the Career Services website for MISM students to find internships and job postings.
APPLYING FOR JOBS

Internship Search Timeline

We strongly encourage you to begin your research and prepare for your internship search in the fall. By starting your search early, you won’t miss out on potential opportunities. Career Services will assist you with your internship search, but please remember we do not match students with employers; obtaining an internship is your responsibility. We encourage you to take the following steps to ensure a successful internship outcome.

AUGUST
- Order business cards. After meeting someone, they are the best way to guarantee that you will be remembered. You can order business cards through CMU Printing and Mailing Services here.
- Update your resume
- Gather your interview clothes from home for the fall job fairs
- Research your chosen industry

SEPTEMBER
- Have your resume reviewed by your career advisor
- Participate in a mock interview
- Upload your resume into CareerNavigator/TartanTRAK
- Attend the Business Opportunities Conference (BOC) and Technical Opportunities Conference (TOC)
- Attend relevant workshops and events

OCTOBER AND NOVEMBER
- Attend the Fall Employment Opportunities Conference (EOC)
- Follow-up on leads from the BOC and TOC
- Attend relevant networking events
- Attend relevant Information Sessions, which can be found in CareerNavigator/TartanTRAK
- Attend relevant workshops and events
- Follow-up on leads from the EOC

DECEMBER AND JANUARY
- Update your resume with your new GPA, relevant academic projects, coursework, etc.
- Have your resume reviewed by your career advisor
- Upload your revised resume in CareerNavigator/TartanTRAK
- Start to look closely in CareerNavigator/TartanTRAK for internship postings and begin applying
- Begin utilizing your personal network for internship leads as well as checking company websites
- Attend relevant workshops and events

FEBRUARY
- Continue to apply to internships through CareerNavigator/TartanTRAK, company websites and personal network
- Continue to interview for internships
- Attend relevant networking events
- Attend the Employment Opportunity Conference (EOC)
- Attend relevant Information Sessions, which can be found in CareerNavigator/TartanTRAK
- Attend relevant workshops and events

**MARCH**
- Continue to apply to internships through CareerNavigator/TartanTRAK, company websites and personal network
- Continue to interview for internships
- Attend relevant networking events

**APRIL**
- Continue to apply to internships through CareerNavigator/TartanTRAK, company websites and personal network
- Continue to interview for internships
- If you are ready to make a decision on your offers, don’t forget to utilize your career advisor
- If you have accepted your offer, please professionally decline your other offers
- Connect with other interns relocating to your new city to share housing

**MAY**
- If you are an F-1 Visa student, you must apply for CPT.
- Submit your internship reporting form once your internship is secured.

**JUNE – AUGUST**
- Look for Heinz and Carnegie Mellon events your city and attend to network with other interns
- Schedule an exit interview with your supervisor so that they can give you feedback about your performance

**Job Search Timeline**

**AUGUST**
- Update your resume including GPA, new relevant courses and experiences
- Upload your revised resume in CareerNavigator/TartanTRAK
- Start to look closely in CareerNavigator/TartanTRAK for postings and begin applying
- Begin utilizing your personal network for leads as well as checking company websites
- Gather your interview clothes from home for the fall job fairs
- Continue to research your chosen industry

**SEPTEMBER**
- Have your resume reviewed by your career advisor
- Participate in a mock interview
- Attend the Business Opportunities Conference (BOC) and Technical Opportunities Conference (TOC)
- Follow-up on leads from the BOC and TOC
- Continue to apply for positions through CareerNavigator/TartanTRAK, company websites and personal network
- Attend relevant workshops
- Fill out paperwork if you are seeking OPT.

**OCTOBER AND NOVEMBER**
- Attend the Fall Employment Opportunities Conference (EOC)
- Attend relevant networking events
· Continue to apply to positions through CareerNavigator/TartanTRAK, company websites and personal network
· Interview for those positions and companies which interest you
· Attend relevant Information Sessions, which can be found in CareerNavigator/TartanTRAK
· Attend relevant workshops and case challenges
· Follow-up on leads from the EOC

**DECEMBER**
· Continue to apply for positions through CareerNavigator/TartanTRAK, company websites and personal network
· Interview for those positions and companies which interest you
· Attend relevant Information Sessions, which can be found in CareerNavigator/TartanTRAK
· If you are ready to make a decision on your offers, don’t forget to utilize your career advisor for negotiating advice
· If you have accepted your offer, please professionally decline your other offers
· Connect with other new graduates relocating to your new city to share housing
· Congratulations if you are graduating! Don’t forget to report your full time job to the Career Services.

**JANUARY**
· Update your resume with your new GPA, relevant academic projects, coursework, etc.
· Have your resume reviewed by your career advisor
· Upload your revised resume in CareerNavigator/TartanTRAK
· Start to look closely in CareerNavigator/TartanTRAK for posting and begin applying
· Begin utilizing your personal network for leads as well as checking company websites
· Attend relevant workshops and events

**FEBRUARY**
· Continue to apply for positions through CareerNavigator/TartanTRAK, company websites and personal network
· Continue to interview
· Attend relevant networking events
· Attend the Employment Opportunity Conference (EOC)
· Attend relevant Information Sessions, which can be found in CareerNavigator/TartanTRAK
· Attend relevant workshops and events

**MARCH**
· Continue to apply for positions through CareerNavigator/TartanTRAK, company websites and personal network
· Continue to interview
· Attend relevant networking events

**APRIL**
· Continue to apply for positions through CareerNavigator/TartanTRAK, company websites and personal network
· Continue to interview
· If you are ready to make a decision on your offers, don’t forget to utilize your career advisor for negotiating advice
· If you have accepted your offer, please professionally decline your other offers
· Connect with other new graduates relocating to your new city to share housing

**MAY**
· If you are seeking OPT, paperwork will be due
Congratulations if you are graduating! Don’t forget to report your full time job to Career Services.

JUNE – AUGUST

- Look for Heinz and Carnegie Mellon events your city and attend to network with other alumni

Job Search Assistance Fund

The Heinz College will provide each master’s student with up to $300 in assistance for reasonable costs of travel associated with job interviews and/or conference attendance with public sector or non-profit organizations.

This fund is to assist you with your job search and receipts must be submitted within 21 days of the interview. In order to qualify, you must first inquire with the interviewing organization to see if they have funds available to assist you with interview-related travel expenses and document their response. Please view the guidelines and application on the website or in the CareerNavigator Document Library for details and instructions.

Tips for Writing Resumes

Get the interview
A resume is a tool which highlights your past experience to demonstrate your ability to perform a job. A resume’s function is not to get you the job; it is to get you the interview. It does this by structuring the reader’s thinking, communicating your strengths and abilities, and grabbing the attention and motivating the reader to take action.

Make it easy to read
A prospective employer will scan your resume for no longer than 30 seconds on average. In order for this to work in your favor, your resume must deliver job-relevant information quickly by being easy to skim and extract interesting information.

Make it relevant to the employer
To gain a competitive edge in the job market, your resume must be well written, error-free, and as quantitative and objective as possible in order to convey a clear and concise image of yourself.

Many of the skills and characteristics listed below relate to how employees work, indicating the importance employers place on work style. Your ability to demonstrate to an employer that you have these qualities and skills is just as important as actually possessing them. When you can, point to specific activities or course work that demonstrate these qualities:

- Communication skills, verbal and written
- Teamwork skills
- Interpersonal skills/works well with others
- Motivation/initiative
- Strong work ethic
- Analytical skills
- Flexibility/adaptability
- Computer/technical skills
- Organizational skills
- Leadership

Source: Job Outlook 2006, National Association of Colleges and Employers

DO:
- Make sure everything on your resume supports your job objective.
- Focus on the employer’s needs for the position.
- Emphasize what you got done, do not simply list your job duties.
- Show results, and quantify. When possible, use numbers, percentages, frequency, volume, etc.
✓ Be relevant – mention the specific skills you have to do the job.
✓ Use action verbs to describe your work. (See the list that follows).
✓ Limit length to one page. After you have a couple of years of experience, then go to two.
✓ Be visually appealing and easy to read.
✓ Use consistent formatting.

**DO NOT:**
× Lie on your resume. The truth will be found out and many employers will terminate an employee if false information was provided during the hiring process.
× Have any misspellings, bad grammar, or poor punctuation.
× Use lengthy phrases, sentences or paragraphs.
× Include your birth date, marital status, religious affiliation, and personal philosophies.
× Include salary information; save it for the interview. If you are required to give that information, reveal it in the cover letter.
× Include a photograph of yourself.
× List exact dates (months and years are sufficient).
× List your high school information.
× List references on the resume – those will be asked for later if needed.
× Use pronouns, abbreviations, conjunctions, jargon or buzzwords unless terms are widely known and accepted (as in the case of AFL-CIO or UNICEF).
× Be too repetitive with your action words.
× Have someone else write your resume. You can ask for advice, but you know yourself best and will have to defend the contents in the interview.

**415 Action Words for Describing Your Experience**

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EDUCATION

CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA
Master of Information Systems Management, GPA: 3.97/4.00, December 2010
Master of Science in Electrical and Computer Engineering, GPA: 3.88/4.00, December 2008
Bachelor of Science in Electrical and Computer Engineering, GPA: 3.53/4.00, May 2007

RELEVANT EXPERIENCE

CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA
Graduate Teaching Assistant, MISM Department, August 2010 – December 2010
· Taught a graduate level course, Organizational Communications and Distributed Object Technologies, which introduces students to the principles underlying distributed computing and the design of distributed systems
· Arranged office hours to reinforce concepts and assist students in their project assignments that use technologies such as XML, SOAP, Web Services, and J2EE/.Net based application servers

INFOSYS TECHNOLOGIES, Bangalore, India
Intern, Software Engineering and Technologies Laboratory, SETLAB, June 2008 – August 2009
· Researched methods for improving TCP performance in wireless networks
· Designed and implemented a new protocol through modifications in the MAC layer and cross layer signaling
· (protocol was simulated on a network simulator, ns2 using tcl/Otcl and C++)

ACADEMIC PROJECTS

Embedded Systems [C, ARM, XScale Instruction Set], August 200010 – December 20010
· Working on projects involving the XScale processor, developing major portions of the embedded OS, including interrupt handling, memory management, concurrency, serial I/O and a mini-OS employing real time scheduling and bounded priority inversion protocols

Secure Software Systems [C, Linux, VMware, Fortify, TaintCheck], August 20010 – December 20010
· Analyzed and studied techniques to ensure that software is robust and secure
· Performed testing methods such as dynamic and static analysis to examine software for vulnerabilities

Information Systems Management Project, August 2007 – December 2009
· Conducting research for Elliance, an eMarketing firm specializing in online customer acquisition and retention
· Researched, defined and benchmarked the most important metrics for online activities in major industries

· Implemented a UNIX shell that performs job processing and I/O redirection
· Implemented an efficient dynamic memory allocation utility (malloc)

Organizational Communication Technologies [Java, SQL, XML, CORBA], January 2008 – May 2008
· Implemented distributed computing applications and web services using technologies such as XML, SOAP, EJB’s, RMI and utilized the J2EE/.NET architectures

COMPUTER SKILLS

Programming: C, C++, C#, Java, SQL, Intel x86, XScale Assembly, Verilog, Perl, tcl/Otcl, HTML, XML, UML
Platforms/Architectures: Unix, Linux, Windows, Mac OS X, ARM-XScale
Applications/Technologies: J2EE, .NET, Apache Tomcat, Oracle, Matlab, Minitab, NS2, VMware
Foreign Languages: Malay, Mandarin, Tamil (proficient). Russian, Japanese (academic background)
NAME FIRST LAST
(412) 222-6945
myresume@andrew.cmu.edu
5000 S. Alderson Street #222, Pittsburgh, PA 15222

EDUCATION
Carnegie Mellon University

Master of Information Systems Management (Accelerated Program) December 2011
Bachelor of Science in Information Systems May 2011
Minors: Public Policy & Management and Business Administration GPA: 3.86

EXPERIENCE

Business Analysis Intern, Allstate, Chicago, IL May – August 2011

• Orchestrated communications between business users and data administrators in a large scope data warehouse project
• Gathered requirements and created functional designs for data strategy related projects
• Conducted an analysis on high-level estimation process and tools used, and presented the findings and recommendations to the leadership team

eCommerce Product Planning Intern, Bank of America, Charlotte, NC June – August 2010

• Generated process maps and screen capture analysis to support the process of streamlining consumer products’ sub-sites on BankofAmerica.com website
• Worked with planning team to update and manage projects in e-Commerce
• Conducted competitor analysis for the student banking team of six

ACADEMIC PROJECTS
TATA Consultancy Services, Project Manager September – December 2011

MISM IS Project, Carnegie Mellon University

• Study different Global Delivery Management models used in the industry
• Analyze trends and features of futuristic models proposed by industry researchers

Pittsburgh Penguins Hockey Club September – December 2011

Management Consulting, Carnegie Mellon University

• Analyze Pittsburgh Penguins’ economic value to the Region

Hearing & Deaf Services, Client Advocate September – December 2010

Information Systems Applications, Carnegie Mellon University

• Scheduled client meetings and coordinated client communications
• Represented client’s interest and point of view in the client’s absence
• Developed a new interpreter scheduling system to replace client’s outdated system

SKILLS

Technical: PHP, MySQL, UML, Java, HTML, ASP.NET, C#, SQL, Microsoft Suite, Dreamweaver, MS Access, VISIO, Minitab, Business Objects

Foreign Languages: Mandarin

Leadership: Community Committee Chair of IS.Net, 2008 – 2009

IS.Net, Carnegie Mellon University

Honors: Johnson & Johnson Case Competition champion

Member of Phi Kappa Phi Honor Society

Carnegie Mellon Dean’s List for Fall & Spring semester 2007 – 2009

Life Membership of National Honor Society
First Name ‘Nick Name’ Last Name
Address: Fifth Ave, Apt 1, Pittsburgh PA 15232 Telephone: 444-555-2222 (mobile) Email: myresume@andrew.cmu.edu

EDUCATION  
Carnegie Mellon University, Pittsburgh, PA  
Master of Science Information Security and Policy Management, May 2010  
Overall GPA: 3.88/4.00

Punjab Engineering College, Chandigarh, India  
Bachelor of Engineering, Computer Science & Engineering, July 2003  
Summa Cum Laude

RELEVANT COURSEWORK  

EXPERIENCE
IBM, Austin, TX  
Intern, Websphere Product Development, June 2009-August 2009  
• Developed and deployed a solution to reduce product testing time from 150 mins to 10 mins  
• Negotiated timelines and scope of project with 3 remote teams in different time zones

Software Engineering Institute (SEI-CERT), Pittsburgh, PA  
Information Security Consultant, September 2009-December 2009  
• Performed a systems security and survivability study on a client system to establish security requirements and recommendations  
• Performed security risk assessment and modeled the threat environment using Attack Trees and Misuse Cases

Infosys Technologies Ltd., (Asia’s largest IT Consulting Firm), Bangalore, India  
IT Consultant – Asia Pacific Operations, September 2003-July 2005  
• Worked in a development team to devise a global customer solution for the client, Global Transport and Logistics Firm across 228 countries  
• Led a 3 member team to streamline customer queries resulting in 20% lower cost per transaction  
• Identified and wrote business requirements, functional specifications and design documents for an enterprise solution that resulted in increased customer base and revenue for the client

SECURITY PROJECTS

Vulnerability Testing Suite: Created a web-based tool to automate IP-Enumeration and vulnerability testing of a network.

Systems Survivability Analysis: Currently working on a survivability analysis for a local client’s information systems and networks.

Hidden Data in Electronic Documents: Researched the privacy implications of hidden data in electronic documents and ways to eliminate it.

TECHNICAL SKILLS
Security Tools: Ethereal, Nmap, NetCat, SuperScan, L0phtCrack, Cain & Abel

Service Oriented Architecture: XML, Web Services; Programming Languages: Java, J2EE, C/C++

Databases: Oracle, MS Access; Applications: IBM Websphere Business Integration, Rational Rose, MS Office

PUBLICATIONS

HONORS & ACTIVITIES
President, College Editorial Board  
Conducted literacy camps as an active member of the National Service Scheme (NSS)  
Lead Guitarist in the high school orchestra and vocalist in the school choir
Tips for Writing Cover Letters

The Goals of a Cover Letter

a. Identifies the position for which you are applying and how you learned of it.
b. Indicates why you are applying.
c. Describes how your skills match the position requirements.
d. Provides an attractive self-portrait and subliminal reasons why they should interview you.
e. Requests information on next steps and repeats your availability, phone, and email.

Style Guidelines

· **Be Targeted**: Be specific. If possible, indicate a special reason for wanting to work for that particular employer. Discuss your interest and skills for the industry or career field.

· **Be Persuasive**: The letter should be problem-solving oriented and refer to how you can meet the employer or job needs rather than simply listing accomplishments or your desires.

· **Tone**: Be clear and concise. The letter should expand upon the resume and add personal flavor. Give the impression of confidence, but not conceit. It is best not to be clever or cute, but you may choose to be creative, depending on the type of employer to whom you wish to appeal.

· **Be Accurate**: Use correct grammar, punctuation and spelling. Make certain there are no mistakes. Have career counselors and/or individuals you know critique your letters.

· **Be Specific**: Address the letter to an individual rather than to Dear Sir/Madam whenever possible.

· **Paragraphs**: Be brief; keep them short enough to encourage reading.

· **Paper**: Use high quality bond paper with matching envelopes.

· **Print**: Type or laser-print your letter using block or semi-block basic letter styles. The page should be well-balanced.

· **Signature**: Remember to sign your letter by hand after it is printed out, preferably in blue pen.

**Note**: There has been a dramatic increase of letters and resumes sent through email and web application sites. Whenever possible, electronic letters and resumes should be sent as a PDF to decrease the likelihood of formatting issues when it is received by a potential employer. Regardless of the communication mode being used, strong letters will produce a positive first impression. The students who send exceptional letters, on paper or electronically, are noticed and will strongly be considered for job opportunities.
Cover Letter Outline

Your Name
Your Address
City, State, Zip
Your Phone
Your Email

Contact Person
Title
Department
Employer
Address
City State Zip

Date

Dear Mr./Ms./Mrs./Dr. etc (Contact Person)

Paragraph One: Introduction
- Brief
- Mention exact source of job information
- Upbeat and confident tone

Paragraph Two: The Why Paragraph
- Mention three reasons why you are qualified for the job (cross-reference with your resume)
- All three points must awaken the employer’s curiosity
- Prioritize three points strategically (weakest point should go second)
- Keep tone of the sentence fast and smooth – read it aloud to see if it flows

Paragraph Three: The Descriptive Paragraph
- Choose the strongest point from the previous paragraph and provide an in-depth description
- Use quantifiables
- Add information of interest NOT on your resume
- Note a few interesting things about yourself – paint yourself as interesting, likeable, etc.

Paragraph Four: The Closing
- Include next steps – your contact information and plans for follow-up
- Closing – one-sentence recap of the why (don’t repeat yourself) with an emphatic, confident tone without making any demands of the employer outright

Sincerely/Regards,

Your Name Typed

Sample cover letters can be found in the Heinz Career Services document Cover Letter Guide (PDF).
Cover Letter Language

Self-Descriptive Words
Use words like those below to add descriptive personal qualities to your letter.

<table>
<thead>
<tr>
<th>Active</th>
<th>Detail-Oriented</th>
<th>Independent</th>
<th>Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptable</td>
<td>Determined</td>
<td>Logical</td>
<td>Realistic</td>
</tr>
<tr>
<td>Aggressive</td>
<td>Diplomatic</td>
<td>Loyal</td>
<td>Reliable</td>
</tr>
<tr>
<td>Alert</td>
<td>Disciplined</td>
<td>Mature</td>
<td>Resilient</td>
</tr>
<tr>
<td>Ambitious</td>
<td>Discrete</td>
<td>Objective</td>
<td>Resourceful</td>
</tr>
<tr>
<td>Analytical</td>
<td>Economical</td>
<td>Optimistic</td>
<td>Respective</td>
</tr>
<tr>
<td>Attentive</td>
<td>Efficient</td>
<td>Perceptive</td>
<td>Self-reliant</td>
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<tr>
<td>Broad-minded</td>
<td>Energetic</td>
<td>Personable</td>
<td>Sense of Humor</td>
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<tr>
<td>Consistent</td>
<td>Enterprising</td>
<td>Pleasant</td>
<td>Sincere</td>
</tr>
<tr>
<td>Constructive</td>
<td>Enthusiastic</td>
<td>Positive</td>
<td>Sophisticated</td>
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<tr>
<td>Creative</td>
<td>Extroverted</td>
<td>Practical</td>
<td>Systematic</td>
</tr>
<tr>
<td>Dependable</td>
<td>Honest</td>
<td>Productive</td>
<td>Thorough</td>
</tr>
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</table>

Action Words
Use words like those below to connote a “spirited personality” and a “productive work ethic.”

<table>
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<tr>
<th>Accelerated</th>
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<th>Led</th>
<th>Provided</th>
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<td>Adapted</td>
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<td>Managed</td>
<td>Recommended</td>
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<td>Motivated</td>
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<td>Eliminated</td>
<td>Organized</td>
<td>Reinforced</td>
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<td>Established</td>
<td>Originated</td>
<td>Reorganized</td>
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<td>Completed</td>
<td>Expanded</td>
<td>Participated</td>
<td>Revamped</td>
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<td>Conceived</td>
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<td>Pinpointed</td>
<td>Revised</td>
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<td>Supervised</td>
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Preparing for an Interview

The first thing to remember in an interview is that the interviewer does not hold all the power; you need to be interviewing the employer as they are interviewing you. Both you and the employer have to decide if you meet each other’s goals, values and culture. Make sure you know what you are looking for in a company and position.

**Plan for the interview questions in advance.** Think about your strengths and weaknesses, and how you have developed your skills and characteristics during your classroom experiences, activities, internships, volunteerism, etc. Prepare examples from your experiences to support your answers to questions about your skills or work style. Mock interviews are helpful and can be scheduled with career advisors at any time.

Next, you need to **research the employer.** Employers are looking for candidates who have done their homework and have a general understanding of the company’s products and/or services. Most companies will have a web site that is a wealth of information. In addition, alumni contacts can be helpful as well as company-sponsored information sessions. Talk to a career advisor for information on how to connect with alumni.

The Interview Structure

1. Most interviews will start out with an introduction to establish a relationship between you and the interviewer. Often they will try to help you relax by asking simple questions such as how your year is going or if you had trouble finding parking. Even though this may be a time for you to settle in and try to relax, keep in mind that the interviewer is forming his/her first impression of you. You want to make sure you have good eye contact, wait to ask to be seated, and give the interviewer a solid handshake. Remember to have good posture, since the way you carry yourself tells about your self-confidence.

2. The second part is the interviewer’s specific questions. The interviewer will ask a variety of topics that will range from your education, work and internship experiences, activities, career plans and self-assessment. The interviewer will use open-ended questions that will let you describe your background. The interviewer may probe into certain areas to evaluate your knowledge and background.

   Your goal is to communicate clearly how your experiences lend themselves to the position. This is your chance to sell yourself. Certainly one of the goals of the interview is to determine if you have the skills and knowledge needed to do the job. In addition, the interviewer is trying to determine if you are a “fit” for the company and position. They are evaluating how you handle yourself in a stressful situation, and looking at your communication skills, self-confidence, ability to relate to others, and interest in the position.

3. The third phase of the interview is time for your questions. This will give you an opportunity to show you did your homework and to clarify any information that has already been provided. Carefully plan your questions beforehand. Do not ask questions which could be answered from the company website or literature, but rather are a result of what you have read. When developing questions, consider what you need to know to make an informed decision about employment with this company. Remember that you are interviewing them as well as they are interviewing you.

4. The fourth stage of the interview is the close. The interviewer should inform you of the next step in the process. If he/she does not, you may ask in a professional manner. Express your appreciation for the opportunity to speak with him/her and “ask for the position” by making a final statement summing up your good fit and strong interest.

Note: Phone interviews generally follow the same structure as in-person interviews. You should be just as prepared for a phone interview as an in-person interview as they are often used to screen applicants at the beginning of the hiring process. Even though the interviewer cannot see you, it is wise to conduct yourself as though he/she could. Plan to conduct the phone interview in a quiet area so you can hear, and be heard, clearly.
The Behavioral Interview

Behavioral interviewing is a popular interviewing style where the interviewer will ask open-ended questions about your past experience and how you handled them to gauge how you will handle future situations. Your response should be based on the STAR system:

**Situation:** Identify the problem.
**Task:** Define your objective.
**Action:** Describe the steps you took to achieve your objective.
**Results:** Measure your effectiveness.

The Mock Interview

Mock interviews can be scheduled with your career advisor as a way to prepare for an upcoming interview. A mock interview should be treated like a real interview so it creates an authentic environment for practice. Be prepared with questions just like a real interview. Your career advisor will give you feedback after the mock interview that you will be able to integrate into your upcoming interview. If you are able to schedule a mock interview with a professional in the field, treat it just like a real interview but remember that it is also a networking opportunity.
Practice Interview Questions

1. Tell me about yourself?
2. What are you motivations for applying to this position/company?
3. How are you going about your job search?
4. Why do you want to work in this industry?
5. What is your career plan?
6. What are your strengths?
7. What are your areas for improvement?
8. Why did you choose this master's program?
9. Tell me about a time you failed?
10. Tell me about a time you encountered people of different backgrounds?
11. Tell me about a difficult situation you had to overcome?
12. Tell me about a time when you had multiple things to do at the same time, how did you handle it?
13. Tell me about a time when you didn’t get along with a teammate or co-worker?
14. Tell me about a time when your ethics were challenged?
15. Tell me about a time when you learned a new technology quickly?
16. Tell me about a time when you were unable to meet a deadline?
17. Tell me about a time when you had the opportunity to lead a team?
18. Describe a time when you felt it was necessary to modify or change your actions in order to respond to the needs of another person.
19. Give me an example of a problem you faced on the job or in the classroom, and tell me how you solved it.
20. Tell me about a situation in which you had to deal with a very upset customer, coworker or peer.
21. Describe your most recent group effort.
22. Describe your dream job/career.
23. Describe the most creative project you have completed.
24. Give me an example of when you felt you were able to build motivation in your coworkers or peers.
25. Give an example of a time when you had to be relatively quick in coming to an important decision.

Sample Questions to ask the Interviewer

1. Can you tell me in detail about the duties of this position?
2. Why did this position become available?
3. What will the training program be like?
4. How long do people typically stay in the position?
5. Where do people go after they leave the position?
6. What characteristics are you looking for?
7. What major challenges is this organization facing?
8. What are the challenges, negative aspects or positive aspects of this position?
9. What advanced training programs are available for those who demonstrate outstanding ability?
10. What are the organization’s growth plans?
11. What is the next step in the selection process?
12. Where do you see me in five years if I join and succeed with your organization?
13. How will my performance be evaluated?
14. How are employees rewarded for excellent performance?
15. What is the attrition rate of new hires within one/three/five years?
16. How does this position and department fit into the organization as a whole?
17. How would you describe the work atmosphere in the organization?
18. What would I be expected to accomplish in the first six months on the job? In the first year?
19. Does the job require much travel?
20. What are the chances of being relocated after starting the job?

More interview tips and questions can be found in the Heinz Career Services Interview Skills Guide (PDF).