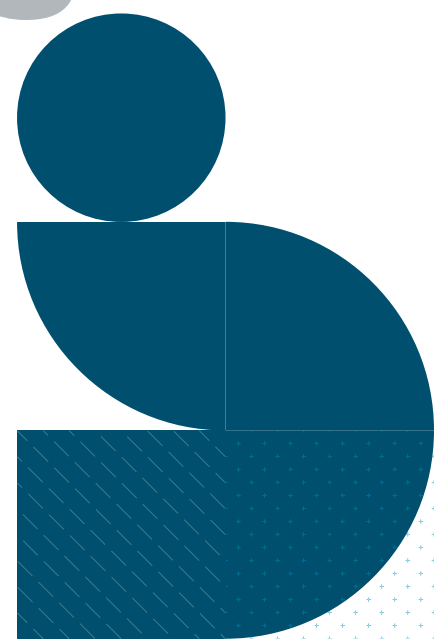




# Guide to Hiring in Information Technology

Ensuring Your IT Team Reflects  
the World Around It



**With more than half a million IT jobs open in just the U.S. alone at any point in the year, the tech industry struggles to find enough skilled workers for open positions. Often, tech companies resort to poaching—hiring talent away from each other—instead of finding new talent to bring into the industry.**

As you compete for talent, it helps to widen the scope of who you consider a qualified candidate, but when recruiting new talent, you don't want to inadvertently discourage applicants from a variety of backgrounds because your position descriptions contain biased language.

Unconscious bias around race, age, ability status, and gender can limit your company's appeal to potential candidates. As an employer, you can take steps to recognize and reduce biases during recruitment. But where should you start? How can you help others on your team do the same?

This guide answers these and other questions about recruiting for a more diverse and inclusive workplace. In it, you'll find information about:

- The ROI your company gains by mindfully employing a more diverse workforce
- Why you should take a chance on “untapped” talent, and how to discard hiring misconceptions that limit your candidate pool
- How to minimize bias during those now ever-present virtual meetings
- Why remote workers expand your talent pool
- Dos and don'ts of IT hiring without bias
- Writing inclusive job descriptions
- Resources for connecting with diverse job candidates looking for tech employment

Finally, we list the top 10 technology-sector jobs as compiled by CompTIA market research and provide job descriptions you can use during your own IT talent acquisition process.

# 1 \_\_\_\_\_ Creating a Workplace Where People Belong—Not Just ‘Be’

Diversity isn't simply a matter of recruitment. If your company isn't a workplace where employees from all backgrounds feel they *belong*—not just “be”—then they will leave.

Helping small tech companies create truly inclusive workplaces is a primary goal of [CompTIA's Advancing Tech Talent and Diversity Community](#). Our community offers a number of free and helpful resources. We also developed a [step-by-step plan](#) for tech leaders who want to make their businesses more inclusive but aren't sure how to start. Learn more about our mission and check out all of our resources.

## 2 The ROI of a Diversified Workforce

Diversity and inclusion is the right thing for companies to do. It's also profitable. Data from McKinsey's May 2020 report, [Diversity Wins](#), shows that:

- Companies with more than 30% women on their executive teams are significantly more likely to outperform those with between 10 and 30%, and these companies in turn, are more likely to outperform those with fewer or no women executives.
- There is a 48% performance differential between the most and least gender-diverse companies.
- Companies in the top quartile of diversity outperformed those in the bottom quartile by 36% in terms of profitability in 2019, slightly up from 33% in 2017 and 35% in 2014.
- There continues to be a higher likelihood of outperformance with ethnically diverse workforces than ones only diverse by gender.
- Companies with the least diverse workplaces are 29% less likely to achieve above-average profitability.

DIVERSIFYING YOUR WORKFORCE—IN ALL THE WAYS THAT LOOKS LIKE—GIVES YOU A REAL COMPETITIVE ADVANTAGE TO:

- Make better business decisions, thanks to fresh ideas and a fuller understanding of your market.
- Improve your corporate culture, with happier and more productive employees.
- Enhance your organizational image, by building a more loyal customer base and attracting top talent.
- Increase your market share, by reaching more diverse markets and better serving your current customers.

## 3 Finding the Untapped Talent of Career Switchers

Today, more people are entering the tech industry to pursue second careers—often emigrating from service, retail and hospitality industries. Chances are they don't possess a college degree, or have much—if any—formal tech experience. But if they have desired IT industry certifications, you should consider them for your job vacancies:

- [95% of tech employers](#) agree IT certifications provide a baseline set of knowledge for certain positions.
- 93% of tech employers said finding the right IT pro to fill job vacancies is a major challenge.
- [91% of tech employers](#) believe IT certifications are a reliable predictor of success.

Moreover, service-industry workers already possess a strong emotional intelligence (EQ). Sometimes called soft skills, EQ includes strategic thinking, teamwork, problem-solving ability, respect, cooperation, knowing how to diffuse a difficult situation, and collaboration.

Technical skills can be taught. But people skills? Those are harder. According to the [World Economic Forum](#), 90% of top job performers have high EQ, whereas just 20% of bottom performers do.

Also, service-industry veterans work while mindfully taking good care of a customer—an attitude critical in technology.

One big misconception many employers have is that gaps in a job candidate's employment history automatically indicates something amiss. This isn't true—especially with service-industry veterans, who likely will have gaps in employment history. It's the nature of that work. Here are [some tips](#) and [some more tips](#) for learning about those gaps in an impartial way.

## 4 Minimizing Bias During Video Interviews

As more professionals work from home, virtual job interviews have become the norm. And despite Zoom's omnipresence, it's important to recognize how virtual interviews can inadvertently introduce bias.

First, remember the days when a job candidate physically came into an office. They were dressed appropriately. They often carried a portfolio bearing resumes or questions for the interviewer or references. They looked their best and were on their best behavior. Today, your candidate likely will be dressed appropriately still, and be prepared to ask and answer questions

But perhaps they will call in from a smart phone, instead of a desktop or PC. There may be background noises on their end, like running water or a TV. Children may yell in the background or come in and out of frame to interrupt their parent.

None of these noises or interruptions reflects that candidate's ability to perform the actual work. So it's important to keep in mind the work involved with the open position and that candidate's ability to perform it – and discounting the non-work-related distractions. Here's an [article](#) from Forbes detailing more.

## 5 Expand Your Talent Pool With Remote Workers

According to [CompTIA's Tech Town Index 2020](#), workplace options for tech pros are expanding.

During COVID-19, the demand for remote IT workers has increased—with the number of job postings nearly doubling. From August 2018 to July 2019, about 10% of IT jobs were labeled as “remote” or “work from home.” But from August 2019 to July 2020, that number jumped to 21%.

That means thousands of IT jobs can be conducted remotely. Expanding your job ads to include remote candidates opens up your hiring search nationwide—which, in turn, will provide you with more diverse applicants.



## 6 Do's and Don'ts on IT Hiring Without Bias

Amy Kardel, VP strategic workforce relationships with CompTIA, offers the following suggestions for employers trying to diversify their job candidate pool:

- **QUIT LOOKING FOR SOMEONE PERFECT. LOOK FOR SOMEONE RIGHT.**

Too many times, employers use a vacancy as an opportunity to look for someone perfect—listing in the job description a veritable “wish list” of all the characteristics and talents the ideal person would have.

The truth is no job candidate is perfect—just as no job is perfect, either. Instead of creating an impossible “wish list,” craft a more generic description of what the work actually entails and identify three or four must-have skills needed for that job. Then see which qualified applicants rise to the top.

- **BROADEN WHERE YOU LOOK FOR CANDIDATES**

When you fish in the same pond, you catch the same fish. To find more diverse hires, look in places other than where you usually do. Grow your network, state you are looking for diverse candidates and ask for help finding them. Further down in this guide, we provide leads to diverse and inclusive recruiting pools.

- **KNOW THAT EVERY NEW HIRE FACES A LEARNING CURVE. EVERY. SINGLE. ONE.**

Onboarding a new employee requires employers to invest time, money and effort. Many hiring managers hope to minimize that onboarding learning curve by hiring an overly qualified individual. But the truth is every new employee experiences a learning curve—regardless of qualifications. While some previous job experience is helpful, a candidate's aptitude for continuous learning usually is far more important. Decide what's the bare minimum required in previous job experience, and ask applicants to detail how they keep learning on the job and outside of work.

- RECRUIT ANOTHER PERSON TO HELP SCREEN JOB APPLICATIONS.

Sometimes employers inadvertently or unknowingly allow personal biases to creep into the recruitment and hiring process. Perhaps an applicant attended a school that just happened to be your alma mater's fiercest rival—or worked at a company from which you previously made a bad hire. By involving a second or third person to review applications, you can weave more objectivity into the process.

- IF TESTING IS PART OF YOUR EMPLOYMENT PROCESS, PLACE IT TOWARD THE END, AND NOT THE BEGINNING.

If personality tests or other standardized screenings are part of your employment process, move them toward the end and use them as a way of vetting a potential new employee—as opposed to eliminating a prospective job candidate.

- KNOW THAT ACCOMMODATING A DIFFERENTLY ABLED JOB CANDIDATE MAY BE EASIER AND LESS EXPENSIVE THAN YOU THINK.

Employers sometimes hesitate to interview differently abled candidates for fear that the accommodation(s) needed to apply and perform the job's work will be expensive and difficult to arrange. That isn't necessarily so. Each state has government-funded vocational rehabilitation resources that can help employers recruit and provide jobs to differently abled individuals. Research shows that differently abled employees tend to be the most loyal in the workforce.

## 7 Writing Inclusive Job Descriptions

Without even meaning to, the language used in help-wanted ads that describes your company can unwittingly influence different groups to apply for your open positions.

For example, if you describe your company as a “family” and being empathetic, research shows that description will appeal more to women. If you describe your company as competitive and fast-paced, that description will appeal more to men. Indicating you’re looking for “a young, energetic go-getter” will likely deter candidates 50 years of age or older—a demographic that represents 35% of the entire tech workforce.

Textio has found that the language used in job posts tells candidates what a company’s culture is really like. Uber, for instance, uses “whatever it takes” 30 times more often than the rest of the industry when describing its culture. That pattern attracts more men to apply. Conversely, according to Textio’s research, words like “building alliances” attract more women to apply.

You can check your descriptions for possible gender biases in Textio’s software online at [Textio.com](https://textio.com). Learn more tips and tricks for writing job positions that will attract the broadest range of qualified candidates possible [here](#) and [here](#).

## 8 Fishing in Other Ponds Yields Other Fish

These online resources can help you identify qualified and diverse job candidates.

### TO SEEK A BROAD SPECTRUM OF JOB CANDIDATES:

- CompTIA Tech Career Academy. Within 8 to 16 weeks, [CompTIA Tech](#) trains candidates for entry-level tech roles and prepares them for CompTIA A+ certification. All CompTIA Tech students are new to the tech field, enlarging the tech industry pipeline. CompTIA Tech's peer, [Per Scholas](#), engages in similar work.
- Breezy.com's "[20 Top Job Boards for Diversity Hiring.](#)"
- Medium.com's "[...Connecting Employers to Diverse Pools of Talent](#)"

TO REACH OUT TO WOMEN CANDIDATES: Women face unique challenges in the tech industry, described in detail [here](#) and [here](#). There also are some organizations that can help you find the right fit.

- [National Center for Women & Information Technology](#)
- [PowerToFly](#)
- [Tech Ladies](#)
- [Women Who Code](#)

### TO SEEK OUT BLACK CANDIDATES:

- [Black Career Network](#)
- [Black Jobs](#)
- [Black Tech Jobs](#)
- Some 230,000 students are enrolled at Historically Black Colleges and Universities (HBCUs). [Partnering with an HBCU](#) near you is a great way to establish a candidate pipeline.

## TO ATTRACT LATINX CANDIDATES:

- [Association of Latino Professionals for America](#)
- [Latinos in Information Sciences and Technology Association](#)
- [Techqueria](#)
- Nearly 2.6 million Latinx students are enrolled at Hispanic-Serving Institutions (HSIs) throughout the United States, most of them community colleges. Partnering with a nearby [HSI](#) can create a talent pipeline for years to come. (HSIs also are a great place to recruit for Black and Native American talent as well.)

## TO REACH OUT TO LGBTQ+ CANDIDATES:

- [Lesbians Who Tech](#)
- [Out in Tech](#)
- [StartOut](#)

## TO SEEK OUT DIFFERENTLY ABLED CANDIDATES:

- [Employer Assistance and Resource Network on Disability Inclusion](#)
- [Workforce Recruitment Program](#)
- The Campaign for Disability Employment offers a [number of resources](#) for employers who want to make their workplaces more inclusive and actively recruit for disabled workers.

## 9 --- Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

The first step in the IT recruiting process is posting a job description. While job descriptions are not glamorous, they set the tone for what you want in a candidate.

Decide which tasks need to be handled within the job. Below are job descriptions for the top 10 roles within the tech industry that include key tasks for each job. Choose no more than 10 tasks within each description.

Next, list which skills are needed to handle those specific job tasks. For instance, the computer user support specialist will need excellent customer service skills, calm and clear communication, problem-solving, conflict resolution and teamwork. A business analyst may need additional skills in organization and problem probing.

Then list how candidates can validate those skills either via education, certification or experience. Be open to non-traditional routes to IT careers; a college degree isn't always necessary.

Finally, check your company descriptions online. How you describe your company online can influence which people want to work for your company.

By centering on the tasks that the job requires and the skills needed, you're more likely to post ads that are inclusive—and that don't automatically eliminate qualified candidates because of potentially biased language.

The job descriptions below simply focus on the tasks required for that job, not what type of education is necessary. These jobs tasks are pulled from the U.S. Department of Labor's O\*NET Online Career Exploration Tool.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Software Developer, Applications

### DESIGN AND DELIVER

- Analyze information to determine, recommend and plan computer specifications and layouts, and peripheral equipment modifications.
- Modify existing software to correct errors, adapt it to new hardware, or improve performance.
- Store, retrieve and manipulate data for analysis of system capabilities and requirements.
- Design, develop and modify software systems using scientific analysis and mathematical models to predict and measure outcome and consequences of design.
- Develop and direct software system testing and validation procedures, programming and documentation.
- Determine system performance standards.
- Coordinate software system installation and monitor equipment functioning to ensure specifications are met.

### END-USER/CUSTOMER INTERACTIONS

- Analyze user needs and software requirement to determine feasibility of design within time and cost constraints.
- Consult with customers about software system design and maintenance.

### MANAGE AND COMMUNICATE

- Confer with systems analysts, engineers, programmers and others to design system and to obtain information on project limitations and capabilities, performance requirements and interfaces.
- Supervise the work of programmers, technologists, technicians and other personnel.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Computer User Support Specialist

### COMMUNICATION

- Answer user inquiries regarding computer software or hardware operation to resolve problems.
- Develop training materials and procedures, or train users in the proper use of hardware or software.
- Maintain records of daily data communication transactions, problems and remedial actions taken, or installation activities.
- Confer with staff, users and management to establish requirements for new systems or modifications.

### EQUIPMENT MAINTENANCE

- Oversee the daily performance of computer systems.
- Set up equipment for employee use, performing or ensuring proper installation of cables, operating systems or appropriate software.
- Refer major hardware or software problems or defective products to vendors or technicians for service.
- Enter commands and observe system functioning to verify correct operations and detect errors.
- Inspect equipment and read order sheets to prepare for delivery to users.
- Prepare evaluations of hardware or software and recommend improvements or upgrades.
- Modify and customize commercial programs for internal needs.
- Install and perform minor repairs to hardware, software or peripheral equipment, following design or installation specifications.

### PROBLEM-SOLVING

- Read technical manuals, confer with users, or conduct computer diagnostics to investigate and resolve problems or to provide technical assistance and support.
- Conduct office automation feasibility studies, including workflow analysis, space design or cost comparison analysis.



Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Computer Systems Engineer / Architect

### PROBLEM-SOLVING AND TESTING

- Identify system data, hardware, or software components required to meet user needs.
- Evaluate current or emerging technologies to consider factors such as cost, portability, compatibility, or usability.
- Perform ongoing hardware and software maintenance operations, including installing or upgrading hardware or software.
- Research, test, or verify proper functioning of software patches and fixes.
- Verify stability, interoperability, portability, security, or scalability of system architecture.
- Investigate system component suitability for specified purposes and make recommendations regarding component use.
- Monitor system operation to detect potential problems.
- Perform security analyses of developed or packaged software components.

### COMMUNICATION

- Collaborate with engineers or software developers to select appropriate design solutions or ensure the compatibility of system components.
- Communicate with staff or clients to understand specific system requirements.
- Provide advice on project costs, design concepts, or design changes.
- Document design specifications, installation instructions, and other system-related information.
- Provide technical guidance or support for the development or troubleshooting of systems.
- Communicate project information through presentations, technical reports, or white papers.
- Provide customers or installation teams guidelines for implementing secure systems.
- Train system users in system operation or maintenance.

## DESIGN AND DELIVER

- Develop system engineering, software engineering, system integration, or distributed system architectures.
- Define and analyze objectives, scope, issues, or organizational impact of information systems.
- Design and conduct hardware or software tests.
- Establish functional or system standards to address operational requirements, quality requirements, and design constraints.
- Complete models and simulations, using manual or automated tools, to analyze or predict system performance under different operating conditions.
- Develop or approve project plans, schedules, or budgets.
- Develop efficient and effective system controllers.
- Evaluate existing systems to determine effectiveness and suggest changes to meet organizational requirements.
- Configure servers to meet functional specifications.
- Direct the analysis, development, and operation of complete computer systems.
- Develop application-specific software.
- Direct the installation of operating systems, network or application software, or computer or network hardware.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Computer Systems Analyst

### ANALYSIS AND TESTING

- Test, maintain, and monitor computer programs and systems, including coordinating the installation of computer programs and systems.
- Troubleshoot program and system malfunctions to restore normal functioning.
- Use the computer in the analysis and solution of business problems, such as development of integrated production and inventory control and cost analysis systems.
- Assess the usefulness of pre-developed application packages and adapt them to a user environment.
- Review and analyze computer printouts and performance indicators to locate code problems, and correct errors by correcting codes.
- Read manuals, periodicals, and technical reports to learn how to develop programs that meet staff and user requirements.
- Determine computer software or hardware needed to set up or alter system.
- Analyze information processing or computation needs and plan and design computer systems, using techniques such as structured analysis, data modeling and information engineering.
- Specify inputs accessed by the system and plan the distribution and use of the results.
- Prepare cost-benefit and return-on-investment analyses to aid in decisions on system implementation.
- Recommend new equipment or software packages.

### EXECUTION

- Coordinate and link the computer systems within an organization to increase compatibility and so information can be shared.
- Use object-oriented programming languages, as well as client and server applications development processes and multimedia and Internet technology.
- Define the goals of the system and devise flow charts and diagrams describing logical operational steps of programs.
- Develop, document and revise system design procedures, test procedures, and quality standards.
- Expand or modify system to serve new purposes or improve workflow.

## SUPERVISING

- Train staff and users to work with computer systems and programs.
- Supervise computer programmers or other systems analysts or serve as project leaders for particular system projects.
- Interview or survey workers, observe job performance or perform the job to determine what information is processed and how it is processed.

## COMMUNICATION

- Confer with clients regarding the nature of the information processing or computation needs a computer program is to address.
- Consult with management to ensure agreement on system principles.
- Provide staff and users with assistance solving computer-related problems, such as malfunctions and program problems.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Information Technology Project Manager

### MANAGEMENT

- Develop or update project plans for information technology projects including information such as project objectives, technologies, systems, information specifications, schedules, funding, and staffing.
- Manage project execution to ensure adherence to budget, schedule, and scope.
- Assign duties, responsibilities, and spans of authority to project personnel.
- Schedule and facilitate meetings related to information technology projects.
- Initiate, review or approve modifications to project plans.
- Develop and manage annual budgets for information technology projects.
- Develop implementation plans that include analyses such as cost benefit or return on investment (ROI).
- Direct or coordinate activities of project personnel.
- Coordinate recruitment or selection of project personnel.
- Identify, review, or select vendors or consultants to meet project needs.
- Develop and manage work breakdown structure (WBS) of information technology projects.
- Submit project deliverables, ensuring adherence to quality standards.

### ANALYSIS

- Perform risk assessments to develop response strategies.
- Identify need for initial or supplemental project resources.
- Monitor the performance of project team members, providing and documenting performance feedback.
- Monitor or track project milestones and deliverables.

### COMMUNICATION

- Assess current or future customer needs and priorities by communicating directly with customers, conducting surveys, or other methods.
- Establish and execute a project communication plan.
- Negotiate with project stakeholders or suppliers to obtain resources or materials.
- Confer with project personnel to identify and resolve problems.
- Prepare project status reports by collecting, analyzing, and summarizing information and trends.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Web Developer

### COMMUNICATION

- Analyze user needs to determine technical requirements.
- Respond to user email inquiries or set up automated systems to send responses.
- Confer with management or development teams to prioritize needs, resolve conflicts, develop content criteria, or choose solutions.
- Communicate with network personnel or website hosting agencies to address hardware or software issues affecting websites.
- Collaborate with management or users to develop e-commerce strategies and to integrate these strategies websites.
- Document test plans, testing procedures, or test results.
- Provide clear, detailed descriptions of website specifications, such as product features, activities, software, communication protocols, programming languages, and operating systems software and hardware.

### DESIGN AND DELIVER

- Design, build, or maintain websites, using authoring or scripting languages, content creation tools, management tools, and digital media.
- Write supporting code for web applications or websites.
- Write, design, or edit web page content, or direct others producing content.
- Select programming languages, design tools, or applications.
- Develop databases that support web applications and websites.
- Design and implement website security measures, such as firewalls or message encryption.
- Incorporate technical considerations into website design plans, such as budgets, equipment, performance requirements, or legal issues including accessibility and privacy.
- Develop website maps, application models, image templates, or page templates that meet project goals, user needs or industry standards.
- Develop and document style guidelines for website content.
- Develop or validate test routines and schedules to ensure that test cases mimic external interfaces and address all browser and device types.
- Create searchable indices for web page content.
- Create web models or prototypes that include physical, interface, logical, or data models.

## MAINTENANCE

- Perform or direct websites updates.
- Back up files from websites to local directories for instant recovery in case of problems.
- Evaluate code to ensure that it is valid, is properly structured, meets industry standards, and is compatible with browsers, devices, or operating systems.
- Identify problems uncovered by testing or customer feedback, and correct problems or refer problems to appropriate personnel for correction.
- Perform website tests according to planned schedules, or after any website or product revision.
- Maintain understanding of current web technologies or programming practices through continuing education, reading, or participation in professional conferences, workshops, or groups.
- Renew domain name registrations.
- Identify or maintain links to and from other websites and check links to ensure proper functioning.
- Establish appropriate server directory trees.
- Recommend and implement performance improvements.
- Register websites with search engines to increase website traffic.
- Document technical factors such as server load, bandwidth, database performance, and browser and device types.
- Develop or implement procedures for ongoing website revision.
- Evaluate or recommend server hardware or software.
- Monitor security system performance logs to identify problems and notify security specialists when problems occur.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Information Security Analyst

- Develop plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure and to meet emergency data processing needs.
- Monitor current reports of computer viruses to determine when to update virus protection systems.
- Encrypt data transmissions and erect firewalls to conceal confidential information as it is being transmitted and to keep out tainted digital transfers.
- Perform risk assessments and execute tests of data processing system to ensure functioning of data processing activities and security measures.
- Modify computer security files to incorporate new software, correct errors, or change individual access status.
- Review violations of computer security procedures and discuss procedures with violators to ensure violations are not repeated.
- Document computer security and emergency measures policies, procedures, and tests.
- Confer with users to discuss issues such as computer data access needs, security violations, and programming changes.
- Monitor use of data files and regulate access to safeguard information in computer files.
- Coordinate implementation of computer system plan with establishment personnel and outside vendors.
- Train users and promote security awareness to ensure system security and to improve server and network efficiency.
- Maintain permanent fleet cryptologic and carry-on direct support systems required in special land, sea surface and subsurface operations.



Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Business Intelligence Analyst

### DESIGN AND RESEARCH

- Create business intelligence tools or systems, including design of related databases, spreadsheets, or outputs.
- Maintain or update business intelligence tools, databases, dashboards, systems, or methods.
- Maintain library of model documents, templates, or other reusable knowledge assets.
- Identify and analyze industry or geographic trends with business strategy implications.
- Identify or monitor current and potential customers, using business intelligence tools.

### ANALYSIS

- Analyze competitive market strategies through analysis of related product, market, or share trends.
- Synthesize current business intelligence or trend data to support recommendations for action.
- Analyze technology trends to identify markets for future product development or to improve sales of existing products.
- Conduct or coordinate tests to ensure that intelligence is consistent with defined needs.

### COMMUNICATION

- Communicate with customers, competitors, suppliers, professional organizations, or others to stay abreast of industry or business trends.
- Disseminate information regarding tools, reports, or metadata enhancements.
- Manage timely flow of business intelligence information to users.
- Generate standard or custom reports summarizing business, financial, or economic data for review by executives, managers, clients, and other stakeholders.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Database Administrator

### PLANNING AND TESTING

- Plan, coordinate and implement security measures to safeguard information in computer files against accidental or unauthorized damage, modification or disclosure.
- Test programs or databases, correct errors, and make necessary modifications.
- Develop methods for integrating different products so they work properly together such as customizing commercial databases to fit specific needs.
- Identify and evaluate industry trends in database systems to serve as a source of information and advice for upper management.
- Approve, schedule, plan, and supervise the installation and testing of new products and improvements to computer systems, such as the installation of new databases.
- Review procedures in database management system manuals for making changes to database.
- Revise company definition of data as defined in data dictionary.
- Review project requests describing database user needs to estimate time and cost required to accomplish project.
- Review workflow charts developed by programmer analyst to understand tasks computer will perform, such as updating records.

## DESIGN AND DELIVER

- Modify existing databases and database management systems or direct programmers and analysts to make changes.
- Specify users and user access levels for each segment of database.
- Write and code logical and physical database descriptions and specify identifiers of database to management system or direct others in coding descriptions.
- Develop standards and guidelines to guide the use and acquisition of software and to protect vulnerable information.
- Develop data model describing data elements and how they are used, following procedures and using pen, template or computer software.
- Select and enter codes to monitor database performance and to create production database.
- Establish and calculate optimum values for database parameters, using manuals and calculator.

## TEAMWORK AND TRAINING

- Train users and answer questions.
- Work as part of a project team to coordinate database development and determine project scope and limitations.

Avoiding Unconscious Bias: Top 10 IT Jobs and Job Descriptions

## Network and Computer Systems Administrator

### MAINTENANCE

- Maintain and administer computer networks and related computing environments including computer hardware, systems software, applications software, and all configurations.
- Perform data backups and disaster recovery operations.
- Configure, monitor, and maintain email applications or virus protection software.
- Operate master consoles to monitor the performance of computer systems and networks, and to coordinate computer network access and use.
- Monitor network performance to determine whether adjustments need to be made, and to determine where changes will need to be made in the future.
- Perform routine network startup and shutdown procedures and maintain control records.
- Maintain an inventory of parts for emergency repairs.
- Implement and provide technical support for voice services and equipment, such as private branch exchange, voice mail system, and telecom system.
- Load computer tapes and disks and install software and printer paper or forms.

### PROBLEM-SOLVING AND DESIGN

- Design, configure, and test computer hardware, networking software and operating system software.
- Diagnose, troubleshoot, and resolve hardware, software, or other network and system problems, and replace defective components when necessary.
- Analyze equipment performance records to determine the need for repair or replacement.
- Plan, coordinate, and implement network security measures to protect data, software, and hardware.
- Recommend changes to improve systems and network configurations and determine hardware or software requirements related to such changes.

## COMMUNICATION AND TRAINING

- Gather data pertaining to customer needs, and use the information to identify, predict, interpret, and evaluate system and network requirements.
- Train people in computer system use.
- Maintain logs related to network functions, as well as maintenance and repair records.
- Coordinate with vendors and with company personnel to facilitate purchase.
- Research new technologies by attending seminars, reading trade articles, or taking classes, and implement or recommend the implementation of new technologies.
- Confer with network users about how to solve existing system problems.

# About CompTIA's Advancing Tech Talent and Diversity Community.

If you are not already part of CompTIA's Advancing Tech Talent and Diversity Community, please join us. The community comes together with CompTIA's research and education teams, as well as other CompTIA communities, to support and promote workforce diversity. Learn more at [CompTIA.org/ATTD](https://www.comptia.org/ATTD).