

How to Start a Career in IT— Roles through the Software Development Lifecycle

Practical next steps for students and professionals

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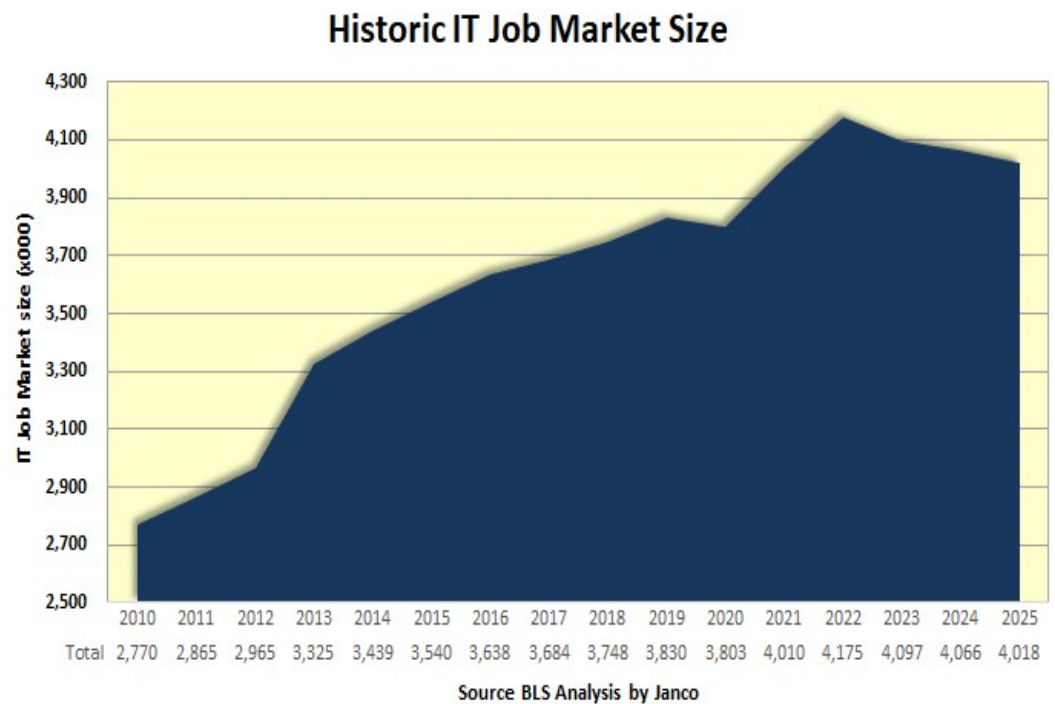


Why Pursue a Career in IT?

Jobs keep growing — tech skills are in demand across every industry.

Many entry paths: bootcamps, internships, self-study — not just 4-year degrees.

In 2025, employment in information technology is projected to grow significantly, with about **317,700** job openings expected each year. The tech workforce is anticipated to *grow at twice the rate* of the overall U.S. workforce.



SDLC Overview: Developing a Video Game

- Planning:** Sketching the game idea, target audience, timeline, and budget to know whether to greenlight development.
- Requirements Analysis:** Interviewing players and producers to list exact features, platforms, and success criteria the game must meet.
- Design:** Drawing the game's storyboard, level blueprints, and art/engine specs so every team member knows how gameplay and visuals should work.
- Implementation:** Programmers building characters, levels, and mechanics from the design blueprints.
- QA/Testing:** A playtest team hunting bugs, checking balance, and verifying the game runs on all supported devices.
- Deployment:** Releasing the finished game to stores and players, packaging builds and applying launch-day patches.
- Maintenance:** Issuing hotfixes, content updates, and community support to keep players happy and the game running.

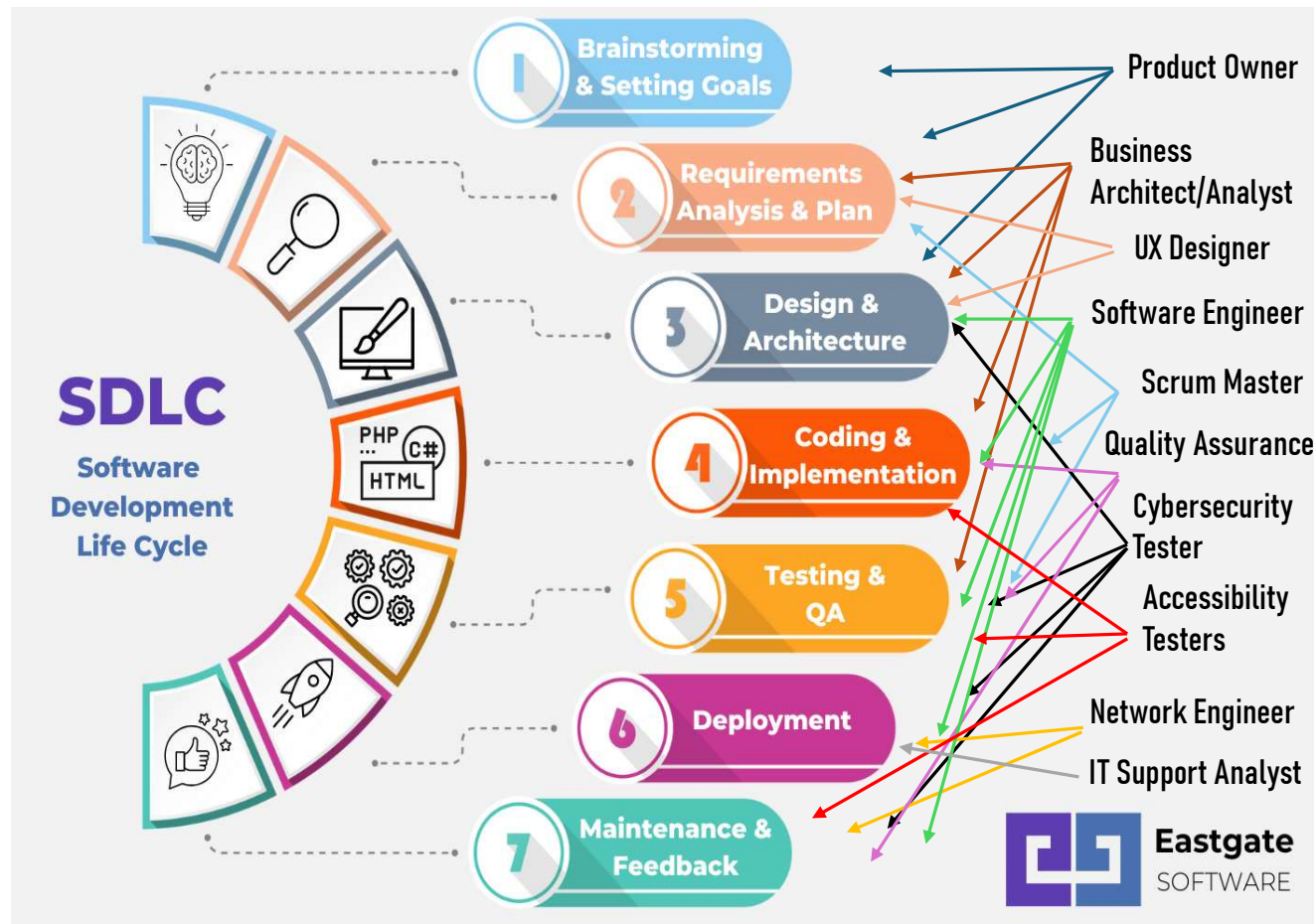
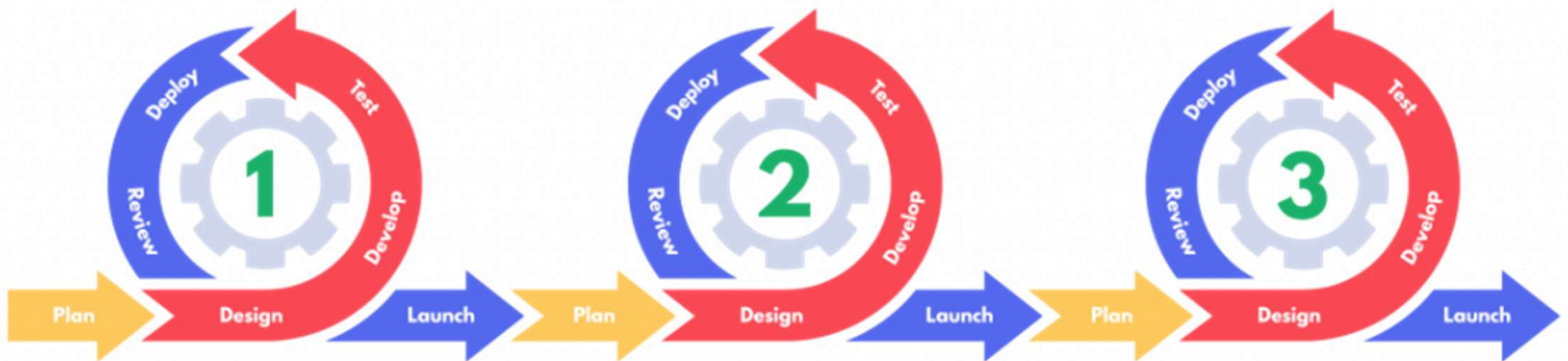


Image Source: Eastgate-Software.com

Agile SDLC

AGILE DEVELOPMENT



Product Owner

- **Responsibilities:**

- Define product vision, prioritize backlog, and set release scope and acceptance criteria.
- Engage stakeholders, gather feedback, and maximize product/business value.
- Accept/reject completed work and keep the roadmap aligned with strategic goals.

- **Career Pathway:**

- Education: relevant bachelor's degree or equivalent experience in business, CS, or product management.
- Certifications: Certified Scrum Product Owner (CSPO), Pragmatic Institute, AIPMM, or PM certifications.
- Training: product management bootcamps, stakeholder management workshops, analytics courses.

- **Ideal skillset:**

- Strong communication, stakeholder management, and prioritization.
- Data-driven decision-making, roadmap planning, and domain knowledge.
- Familiarity with agile tools (Jira, Aha!, Roadmunk) and basic technical literacy.



Business Architect

- **Responsibilities:**

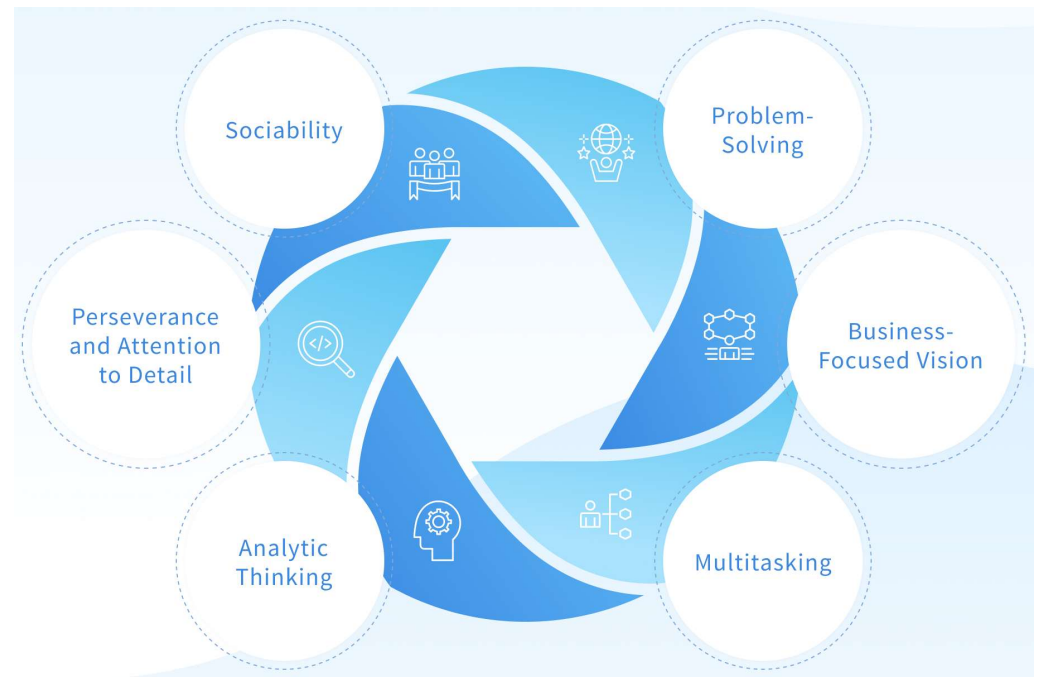
- Elicit and document requirements, model business processes, and map stakeholder needs to solutions.
- Translate business goals into user stories, acceptance criteria, and traceability artifacts.
- Support solution design, gap analysis, and ensure requirements are testable.

- **Career Pathway:**

- Education: bachelor's in business, information systems, or computer science, or equivalent practical experience.
- Certifications: IIBA CBAP/CCBA, PMI-PBA, or BCS Business Analysis certifications.
- Training: UML/BPMN courses, requirements engineering, stakeholder interviewing workshops.

- **Ideal skillset:**

- Analytical thinking, process modeling, and precise requirements writing.
- Strong facilitation and communication for workshops and demos.
- Familiarity with agile ceremonies, user-story mapping, and tools (Confluence, Jira, Visio).



User Experience Designer

• Responsibilities:

- Elicit and document user & business requirements; create personas and empathy maps.
- Design wireframes/prototypes and interaction flows that map stakeholder needs to solutions.
- Support solution design, gap analysis, and ensure requirements are testable.
- Hand off annotated specs and review implementations for fidelity.

• Career Pathway:

- Education: bachelor's in design/HCI/CS/IS or equivalent experience.
- Progression: Junior UX Designer → UX/Product Designer → Senior → Lead/Staff → Manager/Director.
- Specializations: UX Research, Interaction Design, UX Engineering, Accessibility, Design Systems.
- Certifications/Training: NN/g, HCI/UX bootcamps, WCAG/accessibility, prototyping & research courses.

• Ideal skillset:

- Analytical thinking, process modeling, clear requirements writing.
- User research, usability testing, and persona/journey mapping.
- Interaction & visual design (wireframes, prototyping).
- Strong facilitation, stakeholder communication, and storytelling.
- Familiarity with agile, user-story mapping, and tools (Figma, Confluence, Jira, Miro).

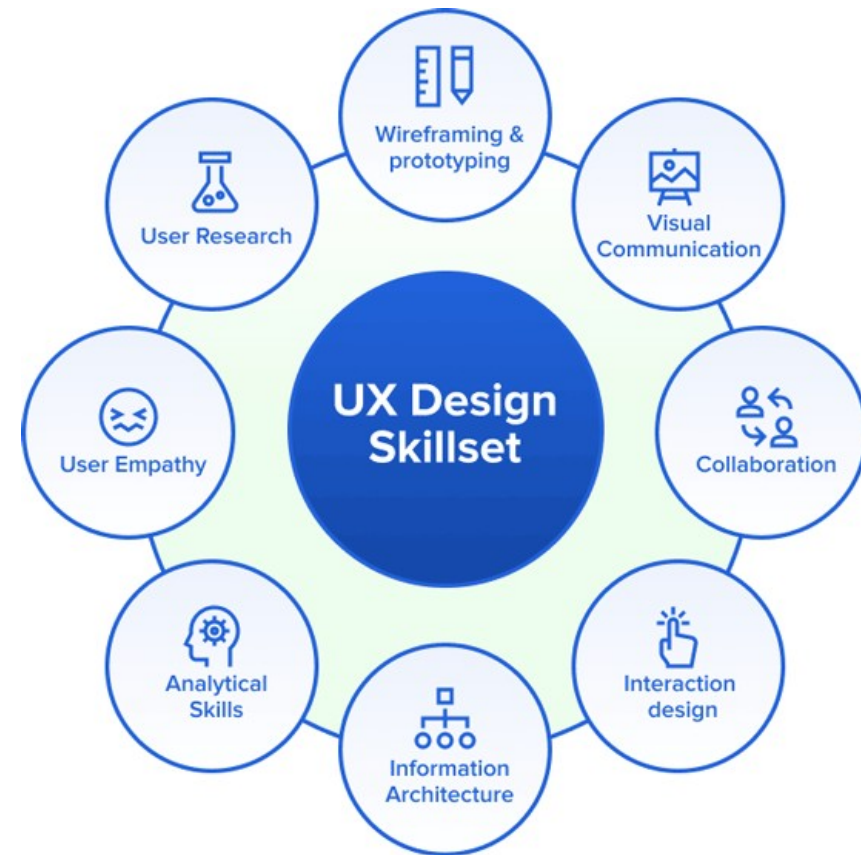


Image Source: SlickPlan.com

Scrum Master

- **Responsibilities:**

- Facilitate Scrum events, remove impediments, and coach the team on agile practices.
- Protect the team from scope creep and help maintain a sustainable delivery pace.
- Foster continuous improvement through retrospectives and metrics-driven coaching.

- **Career Pathway:**

- Education: bachelor's degree in any field plus experience in software teams, or equivalent professional experience.
- Certifications: Certified ScrumMaster (CSM), Professional Scrum Master (PSM), or SAFe Scrum Master.
- Training: agile coaching courses, conflict resolution, servant-leadership workshops.

- **Ideal skillset:**

- Facilitation, coaching, conflict resolution, and servant-leader mindset.
- Knowledge of agile frameworks and metrics (velocity, burndown).
- Empathy, strong communication, and ability to remove blockers.



Software Engineer

- **Responsibilities:**

- Design, implement, and deliver software components per acceptance criteria.
- Collaborate on architecture, code reviews, and CI/CD pipelines; write and maintain tests.
- Debug, optimize, and document code; contribute to technical design decisions.

- **Career Pathway:**

- Education: bachelor's in computer science/software engineering or completion of an intensive coding bootcamp with portfolio.
- Certifications: language/platform certs (optional), cloud developer certs (AWS/GCP/Azure) as relevant.
- Training: data structures & algorithms, system design, frameworks, and hands-on projects.

- **Ideal skillset:**

- Strong programming (one or more languages), problem solving, and system design.
- Version control (Git), testing, CI/CD familiarity, and DevOps basics.
- Collaboration, code-review discipline, and debugging skills.



Quality Assurance/Software Tester

- **Responsibilities:**

- Define and execute test plans, test cases, and regression suites to ensure product quality.
- Identify, document, and track defects; verify fixes and support release criteria.
- Advocate for testability and help automate tests to maintain fast feedback loops.

- **Career Pathway:**

- Education: degree in CS/information systems or vocational QA training; many enter via bootcamps or on-the-job experience.
- Certifications: ISTQB Foundation/Advanced, Certified Agile Tester, or test automation certifications.
- Training: exploratory testing, test automation (Selenium, Cypress), and CI integration.

- **Ideal skillset:**

- Attention to detail, systematic thinking, and test-case design.
- Knowledge of manual and automated testing tools, scripting, and test frameworks.
- Clear reporting, collaboration with developers, and analytical troubleshooting.



Accessibility Tester

- **Responsibilities:**

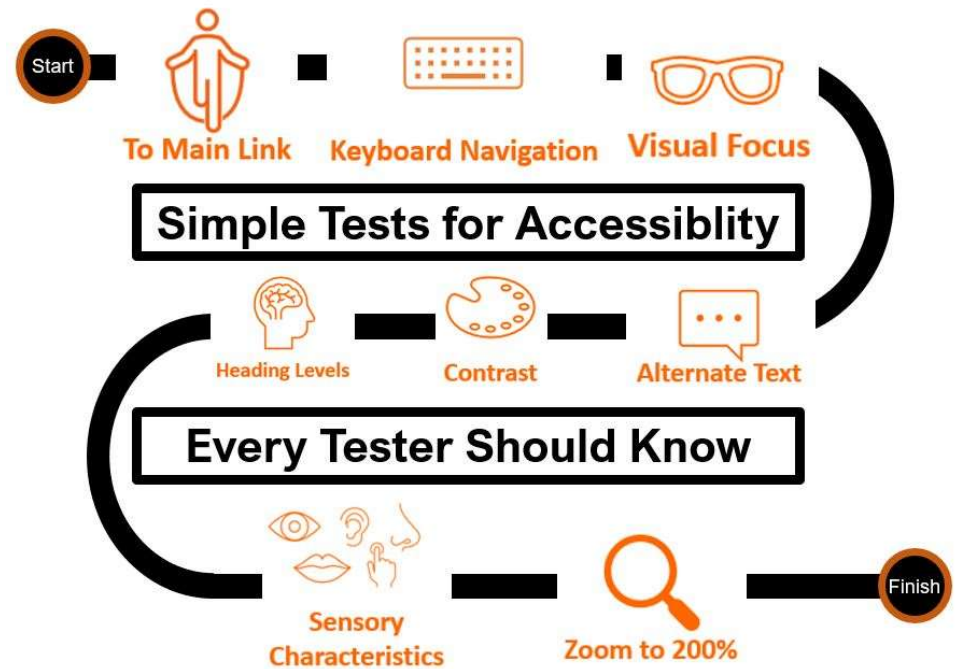
- Assess products for accessibility (WCAG) compliance and perform assistive-technology testing.
- Recommend design/code fixes to improve keyboard navigation, screen-reader support, and visual contrast.
- Collaborate with designers, developers, and QA to prevent regressions and document accessibility requirements.

- **Career Pathway:**

- Education: any undergraduate background; focused accessibility coursework and hands-on practice are key.
- Certifications: IAAP CPACC, WAS, WAS-P, Deque University courses, or accessibility bootcamps.
- Training: WCAG standards, screen-reader (NVDA/VoiceOver) testing, and assistive-technology workshops.

- **Ideal skillset:**

- Knowledge of WCAG guidelines, ARIA semantics, and assistive technologies.
- Empathy for diverse users, meticulous testing, and strong reporting skills.
- Basic HTML/CSS/JS understanding to suggest practical coding fixes.



Cybersecurity Tester/Analyst

- **Responsibilities:**

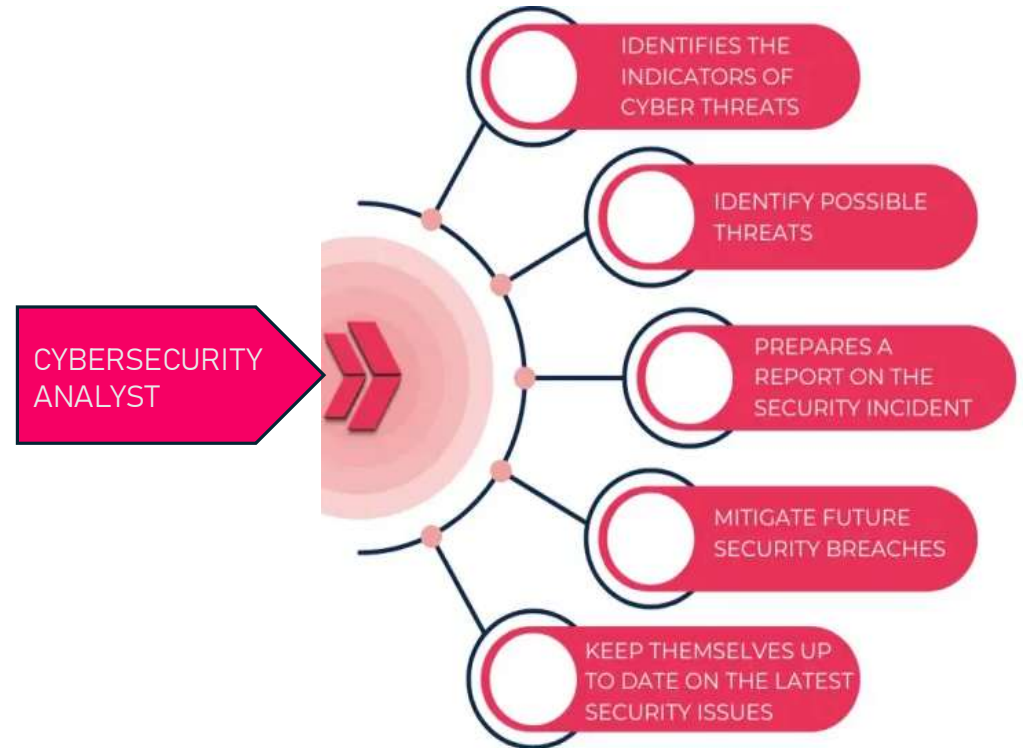
- Perform threat modeling, vulnerability assessments, and penetration testing of applications and infrastructure.
- Validate secure coding practices, review dependencies, and support remediation of security issues.
- Monitor security alerts and contribute to incident response and secure deployment practices.

- **Career Pathway:**

- Education: degree in cybersecurity, computer science, or equivalent hands-on experience and labs.
- Certifications: CompTIA Security+, CEH, OSCP; CISSP for senior/manager roles.
- Training: hands-on platforms (TryHackMe, Hack The Box), SANS courses, secure coding workshops.

- **Ideal skillset:**

- Knowledge of network, application, and cloud security; threat modeling and vulnerability classes.
- Hands-on exploitation/defensive tooling, scripting, and log analysis.
- Strong attention to detail, ethics, and clear reporting skills.



Network/Cloud Engineer

- **Responsibilities:**

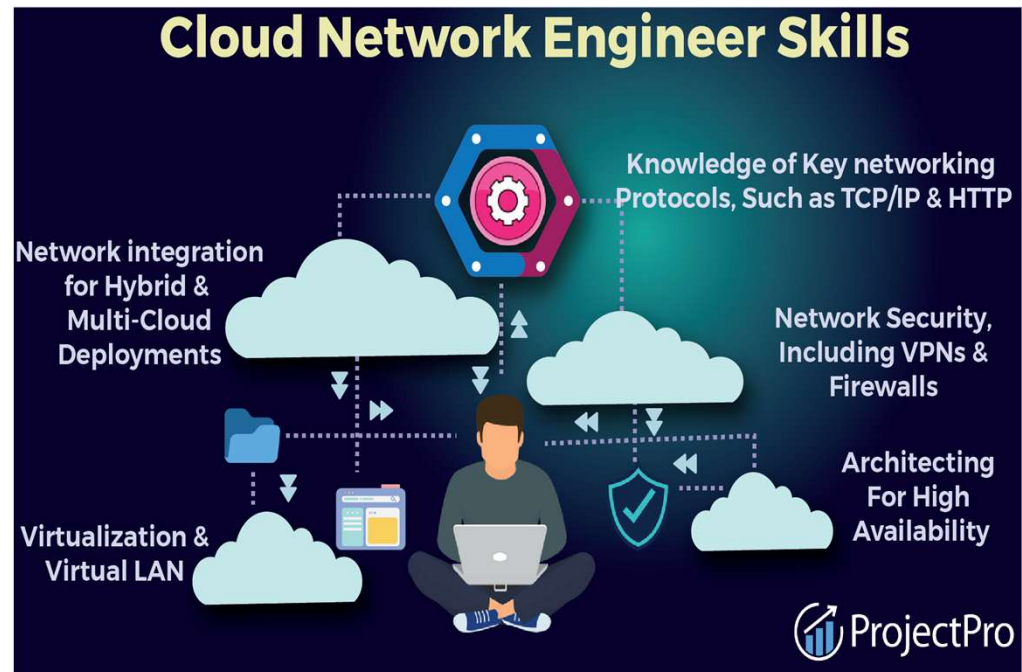
- Design, implement, and maintain network topology, routing, switching, and connectivity for services.
- Monitor performance, troubleshoot connectivity/latency issues, and ensure high availability.
- Configure firewalls, VPNs, load balancers, and coordinate with cloud/network teams.

- **Career Pathway:**

- Education: degree in networking/IT or equivalent hands-on lab experience and internships.
- Certifications: Cisco CCNA/CCNP, CompTIA Network+, Juniper, or cloud networking certifications.
- Training: routing/switching labs, network security, and cloud networking courses.

- **Ideal skillset:**

- Strong understanding of TCP/IP, routing, switching, VLANs, and network diagnostics.
- Experience with network hardware, automation (Ansible), and monitoring tools.
- Problem-solving, documentation, and cross-team communication.



IT Support Analyst

- **Responsibilities:**

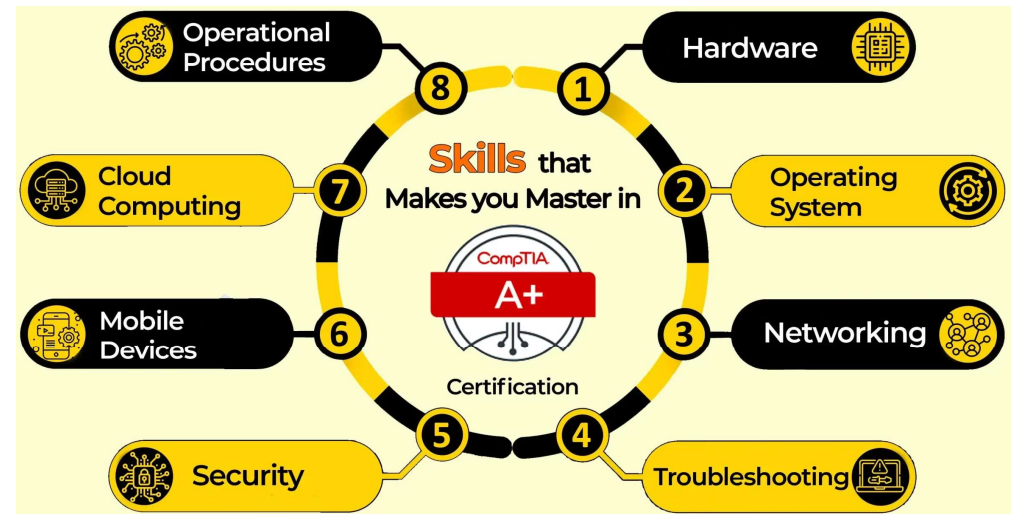
- Provide first- and second-line support for users; troubleshoot hardware/software and manage incidents.
- Maintain documentation, runbooks, user onboarding/offboarding, and escalate complex issues.
- Support deployments, installs, backups, and ensure service availability and uptime.

- **Career Pathway:**

- Education: IT or information-systems diploma/certificate, or equivalent helpdesk experience.
- Certifications: CompTIA A+, Microsoft 365 Certified, ITIL Foundation, Google IT Support.
- Training: customer support skills, OS administration, scripting basics, and ticketing systems.

- **Ideal skillset:**

- Troubleshooting, customer service, and multi-tasking under pressure.
- Knowledge of OS administration, device management, enterprise apps, and remote support tools.
- Clear documentation skills and basic networking/permissions knowledge.



Professional Development

- Intertwine personal goals and aspirations with work responsibilities and tasks.
- How to stand out - **Always Be Curious**
 - Learn the ins and outs of the roles of everyone on your team.
 - Attain an in-depth understanding of the processes that you play a role in.
 - Continuous Improvement – find an opportunity to learn in everything you do.
- Plan to learn for your entire career!



First steps & Resources

- ***Step-by-step starter plan:***

- **Today:**

- Join a coding club, take free courses (Codecademy, freeCodeCamp, W3CSchools).
- Start learning HTML, CSS, and one programming language (e.g. JavaScript, Java, Python)
- Write down your short term and long term career goals

- **3 months:**

- Build 3 mini-projects (Follow step-by-step online tutorials).
- Practice following the same tutorials until you can build the project from memory.
- Brainstorm ideas for applications you would want to build in the future.

- **6 months:**

- Build a portfolio with 5-10 intermediate to advanced level projects on a personal website or GitHub.
- Create a LinkedIn Profile.
- Apply to internships/bootcamps

- **12 months:**

- Acquire an Agile or Scrum certification.
- Be job ready and confident during technical interviews.
- Attend 7-10 industry events and connect with industry professionals.

Tuition-Free Computer Science Programs

- University of the People - <https://www.uopeople.edu/>
- Tufts University - <https://admissions.tufts.edu/>
- Rhode Island School of Design (RISD) - <https://www.risd.edu/>
- Berea College - <https://www.berea.edu/>
- College of the Ozarks - <https://www.cofo.edu/>
- The Cooper Union – <https://cooper.edu/>
- World Quants University – <https://www.wqu.edu/>

