

Programming Merit Badge

November 2018

Tools of the Trade

- Source version control
 - Software system to manage code base and updates
 - CVS, SVN, Git
 - <https://github.com> / <https://bitbucket.org> / <https://gitlab.com>
- Editor / Integrated Development Environment (IDE)
 - Eclipse or IntelliJ for Java, etc., Visual Studio for C/C++/C#/etc.
 - PyCharm for Python
- Tracking systems
 - Jira, Redmine, Bugzilla
 - <https://issues.apache.org/browse>
- Collaboration tools
 - Wikis (MediaWiki, Confluence, Forums, etc.)
 - <https://confluence.dimagi.com/>

Day In the Life of...

- Software Engineer / Programmer
 - Frontend GUI
 - Backend Server
- User Interface Designer
- Quality Assurance / Tester
- Project Manager
- Product Manager
 - Marketing and Sales
- Customer Support

Support Engineer

- Helping customers and end-users with software product
- Gather information that can be relayed to Product management to improve software product (or maybe a new product)
- Triage broken installs
 - Attempting to solve some really hard problems
- Buffer between customer/end-user and Engineering

Product Manager

- Decides what goes into sw product
 - When it goes in
 - How it should look and behave
- Works with Project Manager (PgM) to set requirements, timelines, resources
- Advocate for Marketing, Sales, Customer Support, and Customers

Project Manager

- Works with Product Manager to ensure product success with given resources and timelines
- Sets overall product release timelines within Engineering
- Works with software programmers to determine what can be done and how long things will take
 - Determines requirements feasibility
- Manages software engineers
 - Ensures they have resources necessary
 - Updates Management on progress and any implementations issues
- Can be a technical asset as well for team depending background
- Cheerleader/cat herder/boss(wo)man

Quality Assurance / Tester

- Ensures the requirements mean the expected results set out by Product Manager, Project Manager, software engineer.
- Another Advocate for Customer/end-user
- Buffer between Customer Support and software engineer
 - If customer support cannot help customer then QA is next inline with inhouse reproducibility and testing
- Works with Product Manager and Project Manager to understand requirements and their expected behavior and look.
 - From this comes test cases (manual and automated)

UI Designer

- Works with Product Manager, Project Manager, UI programmers
- Can involve a lot of end-user interactions to determine what users want or like
- Creates the look and feel of the product User Interface (UI)
 - Create sketches (wireframes) of UI pages or views
- Ensure the UI programmers understand the look and feel they are designing

Software Engineer / Programmer

- Document designs for requirements set out by Product Manager and Project Manager
- Implement requirements
 - Ensure that requirements mean QA expectations
 - Test your code
- Fix bugs found in new code
 - Fix bugs found in older versions of product
 - Works with QA and customer support
- Review other programmers designs and code
- Works with QA and Project Manager
- Build cool stuff and is helping someone solve a problem

Typical Day

- Sr Software Programmer
- Check bug tracking system for issues
 - Try to reproduce bugs locally, fix them
 - Call or skype teammembers w/ questions
- More reading code than writing
- Spring / Ant to build Apache tomcat web-server (Java) with MSSQL or MySql databases
- 8-9 hours days

Typical Day

- Technical Lead
- Makes decisions for how software will be written, what technologies we'll be using, and writing code
- Works with programmers in India, Czech Republic
- Review designs and code, discuss problems and find solutions
- Starts day with around 50 emails of which 5 or so need a thought out response
- Interacts with a customer about once every 2 weeks

My Typical Day

- Emails and internal chat rooms
- Check ticketing system for status
 - New tickets with higher priority
 - Continue on current ticket
- Writing code, code review, running code, using scripted utilities to do some of the very repetitive stuff
- Update tickets, documentation
- Setting up and/or configuring Virtual computers for testing

Career Info

- Average salaries: \$107,000
 - \$40,000 - \$150,000
- 3-5 weeks vacation / paid time off (PTO)
- 40 to 60 hour weeks
- Avg tenure at company 2-3 years
- Constant learning
 - new languages, technologies
- Work with programmers from all over the world
- Work schedule flexibility (most companies)

Soft skills

- Communication – written and oral
 - Idea exchanges
- Teamwork
- Concentration / focus / deep work
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Live the Scout Law at Work

- Trustworthy
- Loyal
- Helpful
- Friendly
- Courteous
- Kind
-
- Obedient
- Cheerful
- Thrifty
- Brave
- Clean
- Reverent