



WEB DEVELOPMENT SUMMIT

MAIN TAKEAWAYS

MARCH 2017

BACKGROUND

On Friday, March 3, 2017, the NYC Tech Talent Pipeline (TTP) held a Web Development Summit at Spotify, bringing together tech education and training providers from eight organizations and 25 industry advisors. In a series of focused conversations, accelerated training providers, as well as faculty and adjuncts from CUNY Computer Science departments, met with engineers from local companies to discuss current web development-focused courses and what industry looks for in entry-level employees.

This document summarizes several high-level takeaways that emerged from those conversations. Many of these takeaways closely mirror TTP's [briefing](#) on key skills and competencies employers look for when they hire for in-demand, entry-level tech jobs in New York.

COMMON THEMES IN FEEDBACK

A number of top-line areas for improvement across the board emerged through these conversations and through direct feedback from industry. These include:

- **FUNDAMENTAL PROGRAMMING SKILLS:** It's important for junior candidates to have a grasp on fundamental programming skills. In particular, industry leaders emphasized the necessity for junior developers to have a clear understanding of how to use "lower-level" languages that have less built-in functionality and not rely too much on frameworks or languages that abstract or package functions for a user. Candidates who can't work with lower-level languages may be less competitive for web development jobs in New York. Industry advisors called out Ruby as a high-level language that can be less useful in a production setting and were particularly emphatic about the need to include JavaScript as part of web development-oriented coursework (see second page, section on "specific languages vs. general understanding," for more context), along with related tools such as Node.js, Angular, and React.
- **FRAMEWORKS:** While candidates for entry-level web development jobs must have a handle on the fundamentals, as described above, they also need to have an understanding of what frameworks are, understand how and when they're most useful to aid in problem-solving or building products, and be able to use them when needed – without relying on them as a crutch. As noted above, some frameworks mentioned by industry advisors include Node.js and Angular; Django (a Python framework) was also mentioned.

- **WORKING IN A REAL-WORLD ENVIRONMENT:** Another major theme that emerged was the need for entry-level developers to have an understanding of – and, ideally, exposure to and practice working in – a real-world business environment and all of the norms and constraints associated with it. Generally, this can be separated into two categories:
 - **Building a product as part of a team:** Industry experts stressed that entry-level candidates need to practice working in a team environment – either a real-world team environment, or an environment that simulates the conditions of a real-world team – to develop comfort with building a product in close coordination with others. This includes the ability to engage in collaborative software development (including pair programming and code merging), as well as creating maintainable code and quickly making sense of unfamiliar codebases created by others.
 - **Understanding of, and practice using, common industry tools and approaches:** In addition to collaborative teamwork, candidates need to develop an understanding of, and practice using, common industry tools and approaches, including:
 - **Version control** (including the use of collaboration tools and code review),
 - **Testing** (including unit testing, integration tests, and testing automation),
 - **Debugging** (including one recommendation to including debugging with Chrome Developer Tools),
 - **Deployment** to a product or product-like environment,
 - **Modern web tooling** (exposure to what frontend infrastructure can entail for larger projects, the purpose of it, and an overview of what options are out there, along with the pros and cons of each),
 - **Continuous integration**, and
 - **DevOps.**
- **SECURITY AWARENESS:** Security awareness also emerged as a theme. Industry experts noted that it's important for developers to consider issues of security when building their products, and understand how to build secure apps and products. Specifics noted include the OWASP Top 10 and WebApp Security Concepts (SQLi, XSS, CSRF).
- **SPECIFIC LANGUAGES VS. GENERAL UNDERSTANDING:** In general, language requirements for front-end development are more specific and stringent than those for back-end development:
 - **Front-end:** For front-end development, it's essential to have a handle on JavaScript, HTML, and CSS.
 - **Back-end:** For back-end development, in general, specific languages aren't as important; what's important is having a strong handle on one powerful language and being able to use that to problem-solve. That said, it's important to be aware that some verticals tend to look for mastery of specific back-end languages (for example, Java knowledge is one common requirement in the finance industry, though individuals interested in working in high frequency trading may find employers looking for specific knowledge of C++). Candidates should research whether their targeted industries or companies have specific language requirements and, if so, work to learn those tools.
- **DEPTH AND BREADTH:** Another theme that emerged was the importance of having both a depth and breadth of knowledge. As one industry professional put it, "We look for a "T-shape": broad knowledge with a specialty."