

**To:** Jason Hemann

**From:** Kevin Liang and Marina Karr

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**Subject:** How to Choose a Language and its Ecosystem

We chose to use Java 8 as our language with IntelliJ as our IDE. Java is strongly typed and this forced us to maintain a clear design throughout the course. IntelliJ enabled us to very cleanly and easily standardize our documentation and project organization. From IntelliJ we were also able to build our executables quickly. Java is also a very heavily documented language; we never had problems finding documentation for built-in classes used.

Although JSON parsing and TCP concepts were hard to wrap our heads around at first, we were able to find enough resources to piece it together. We realize that other languages like JavaScript and Python are better equipped to parse JSON, but we were able to find a Java package that worked well for us, Jackson JSON. We used the java.net package for TCP. These packages made it relatively easy to do what we wanted to do.

We used the JUnit testing library to write all of our unit tests. Unit testing for private methods was difficult for us as they were unexposed. Testing for these methods relied on creative ways to gauge effects of the methods or testing individual public parts of the method. Interactive exploration in Java, in general, is more time consuming compared to other languages, due to the need for a creation of a multiple new classes or methods to be able to write exploratory code.

Lastly, handling multiple threads and synchronization was extremely difficult, especially with how many moving parts there were.

Best,

Marina Karr and Kevin Liang