

# Java Development

## Contest Overview and Components

Teams will be given the problem statement at the beginning of the contest time. Time will be allowed to read the problem statement and ask any questions in a common session. Once the question & answer time has closed, no further questions will be answered. At the end of the contest period, each team will be asked to submit their solution for judging.

The Java Competition Problem Statement will test for a range of skills without going into too much detail for any one skill in particular. A list of tools and skills are available below to help teams prepare for what may be on the problem statement.

The use of references, such as Java API's, are allowed for the competition.

Teams are expected to have the necessary Tools preloaded on their machines prior to the competition.

## Team Composition

Your team may be made up of 1-2 students.

## Skills

Java, JUnit, Knowledge on how to package a .JAR and/or .WAR file using command line or IDE, Refactoring, Object Oriented Principles

### General Skills

- MVC
- Exception Handling
- UML Knowledge
- Code Documenting
- Unit Testing
- Knowledge on packaging
- Refactoring
- Object Oriented Principles (ex. encapsulation, inheritance, polymorphism)
- Understanding of XML

## Scoring

Will be distributed with the problem statement at the beginning of the contest time slot.

In the event of a tie, Code Documentation and the use of Object Oriented Approach will distinguish differences.

## Schedule

For this contest, contestants will have a total time of 2½ hours for the contest overview, contest work and turn in. See contest schedule for contest time and place. Check in will begin 20 minutes before the contest begins.

# Resources

Platform to be used by judges,

The items listed below are what will be available on the judge's machines for grading. The most current version of the Spring Tool Suite is the recommended development environment because it has Maven support built-in. Please install it on your machines prior to the competition. This will best assure that Judges are able to execute team solutions. Alternative IDE's, servers, and tools may be used but at the teams' risk of not being executable by judges. We strongly encourage you to test downloads and software prior to the competition.

Spring Tool Suite

- Download STS most recent version: <http://spring.io/tools/sts/all>
- Note: Both 64-bit versions and 32-bit versions are acceptable for use.
- None of the problems in the real project will rely on using the Spring framework.

Java Platform (JDK) 11 (JDK must be downloaded prior to downloading and running Spring Tool Suite)

- Download Java Platform (JDK) 11 here:  
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>
- Note: If you downloaded 64-bit STS above, also download the 64-bit JDK

Due to time constraints each team will not need to include their own dependencies so we will approach dependency management using Apache Maven (<http://maven.apache.org>). Instead of needing to download dependencies and spending time setting up your development environment, Maven should now take care of dependencies for you. In order to ensure a smooth competition, we strongly encourage you to download a test project. If this project works, you will have no issues importing the real project the day of the competition.

Git hub also has resources if you cannot get Maven to work - download JUnit (<https://github.com/junit-team/junit/wiki/Download-and-Install>) and import it manually into your environment.

## Tips & Miscellaneous info

Presentation Layer Development

The problem statement may require some User Interface interaction between the application and the user. The ability to develop the UI as a GUI using JSP's/Servlets, JavaFX or Swing is preferred. But teams without GUI development experience will still be able to complete the Problem Statement if they have experience with user interaction through the Command Line.

- JSP's/Servlets
- JavaFX with SceneBuilder (<https://gluonhq.com/products/scene-builder/>)
- Swing
- CSS
- HTML

Data Layer Development

- JDBC (SQL)
- Java File I/O

Frameworks

The following Frameworks will be allowed for the contest to simplify development. The Jars required to develop and execute these frameworks will not be provided by the contest. Teams must bring their own copies of the jars. The version of the Jars used must comply with the Platform Specifications that are supported for Grading.

- JSF (Java Server Faces)
- Spring MVC