

## Live Session: Java-Fundamentals

Welcome to the live session on 'Java-Fundamentals'. The live session length will be 2 hours.

In this session,

the SME will be covering some of the basic concepts of Java.

This session will be mixed of Java and hands-on coding session and will be covering the following topics

in the agenda

- JDK, JRE, and JVM
- IDE setup with above embedded along with Git

Note for the SME:

- Code by sharing the screen and asking learners to code alongside. Throughout the session please do constantly follow up with the learner's progress and make sure everyone is following.

- Before running the code on a sample test case, ask the learners about their outputs.

The code demos will be within IDE on a local machine.

- Please make sure to test run your codes/queries prior to the session to avoid any hick-up during the session.

- For each coding question practice using multiple approaches to help student reach to optimal solution through each approach.

### Part I: Introduction (5 minutes)

Introduce yourself and congratulate the members so far for the learning sessions

Start with few interesting problems statements students would be able to solve by the end of session

### Basics:(20 mins)

Teach them about JDK, JRE, and JVM through interactive diagrams and compile some code using CMD for them to understand code processing. Hence show them why IDE with integrated tools makes things simpler

### IDE: ( 5 mins)

Demo them the IDE you have setup on your system along with plugins installed.

### Compiler functioning(10 minutes):

Demo them how a compiler works using meaningful diagrams for them to clearly understand the internals of a program

### Doubts\_pause: (2-5 mins)

Please check if they have any doubts from the topics covered so far

Time Complexity: (25 minutes)

Demo to the students on:

- What is time and space complexity
- Importance of having lower time and space complexity
- Cover all types of time complexities( $\log(n)$ ,  $O(n)$ ,  $O(n^2)$ ,  $O(n\log(n))$ , exponential)
- Take at least 10 examples to help them understand the same

Arrays: (25 minutes)

Demo to the students on:

- Different form of array declarations
- Arrays for different data types both primitive and user defined
- Solve 3 questions(2 easy and 1 medium)

Strings: (25 minutes)

Demo to the students on:

- String, StringBuffer and StringBuilder( including why strings are idempotent)
- Few common library functions of String and StringBuilder
- Solve 3 questions( 2 easy and 1 medium)