

JAVA FULL STACK DEVELOPMENT PROGRAM

Session 1: Introduction

Topics

- Java SE
- Database
- Java EE
- Hibernate
- JavaScript/Angular/React
- Spring
- Spring Cloud

SCHEDULE(10 weeks)

- Week1: OOP, Java Core
- Week2: Database, JDBC
- Week3: Tomcat, Servlet, Maven, Hibernate
- Week4: Hibernate, Spring IoC, Spring MVC
- Week5: JSP, Git, Agile, Personal Project
- Week6: Spring Boot, JavaScript, Angular

SCHEDULE(10 weeks)

- Week7: Angular, Team Project 1
- Week8: Team Project 1 presentation, Spring AOP, Logging, Unit Test
- Week9: Message Queue, Thread Pool, Microservice, Mongo DB
- Week10: React, Jira, Team Project 2, Team project 2 presentation

MOCK INTERVIEWS

- Every Monday
- 3 algorithm questions(medium and easy), select 2 of them
- Short answer questions
- Each coding question and short answer question are 4 to 5 points

Weekly Routine

- Monday
 - 9.00 A.M. ~10.15 A.M. : Coding Mock
 - 10.30 A.M. ~ 12.00 A.M. : Short Answer Mock
 - 3.00 P.M. : Meeting
- Tuesday - Friday
 - 10.00 A.M. ~12.00 P.M. : Lecture
 - The slides/homework will be given before the lecture
 - After 5.20 P.M. : Homework Check

ASSIGNMENT BREAKDOWN

- Short answer questions
- Coding question
- Assignment is designed to be like interviews, interviews usually consist of short answer questions and coding questions

Short Answer:

Answer the following questions with complete sentences in your own words. You are encouraged to conduct your own research online or through other methods before answering the questions. If you research online, please consult multiple sources before you write down your answers. You are expected to be able to explain your answers in detail (Provide examples to each question).

1. What is Java variables and How to declare Java variables?
2. What are Java data types?
3. What are Primitive data types in Java?
4. What is wrapper class in Java and Why we need wrapper class?
5. What is the differences between passing by value and passing be reference?
6. What is an Immutable class in Java?
7. What is String pool in Java and why we need String pool?
8. What are the results of following expressions? Please include the calculation process.
 - $5 \& 6$
 - $5 | 6$
 - $5 \wedge 6$
9. Why we need to use break statement in Switch statement?
10. What are access modifiers and their scopes in Java?
11. What is static field, static method and static class?
12. Explain the main method in Java.

Coding Questions:

Write code in Java to solve following problems. Please write your own answers. You are highly encouraged to present more than one way to answer the questions. Please follow best practice when you write the code so that it would be easily readable, maintainable, and efficient. Clearly state your assumptions if you have any. You may discuss with others on the questions, but please write your own code.

DataTypes & Operators

1. Convert Rupee to USD,Pound
2. Convert USD to Pound,Rupee
3. Develop a mathematical Calculator
 - a. (2 Variables -- $X=5, Y=7$) -->> Add, Sub, Mul, Div
 - b. (3 Variables -- $X=5, Y=6, Z=7$) -->> Add, Sub, Mul, Div
4. Write a Java program to convert minutes into a number of years and days.

Test Data
Input the number of minutes: 3456789
Expected Output :
3456789 minutes is approximately 6 years and 210 days

ASSIGNMENT CHECK

- After 5.00 P.M.
- Homework Q&A
- Separate into 4 groups
 - Kyle, Jack, Landon, Dany

ASSIGNMENT SUBMISSION

- Turn in a .zip file with file name followed by the pattern “Week1Day1 - Your Name”
- Turn in your assignment by email, email me(zgao@beaconfireinc.com) and Jack(jshi@beaconfireinc.com)the next day before 9 A.M.
- If, sometimes, sending a zip file is forbidden, you can upload to the google drive and share the link

YOUR KPI

- Homework: 10%
- Project: 40%
- Mock Interview : 50%

STIPEND BREAKDOWN

- Each month you will be ranked according to your KPI
- Top 25% gets \$1000 stipend; next 25% gets \$900; next 25% gets \$800; last 25% gets \$700
- Check in each morning in the WeChat group before 9:00 am
- 3 lateness will result in a deduction of your stipend by \$100

PROFESSIONALISM

- Be Self-Motivated
 - We cover almost everything that will appear in an interview, but you need to do your own research on topics because we can't cover everything in details. We have too many positions requiring different tech stacks

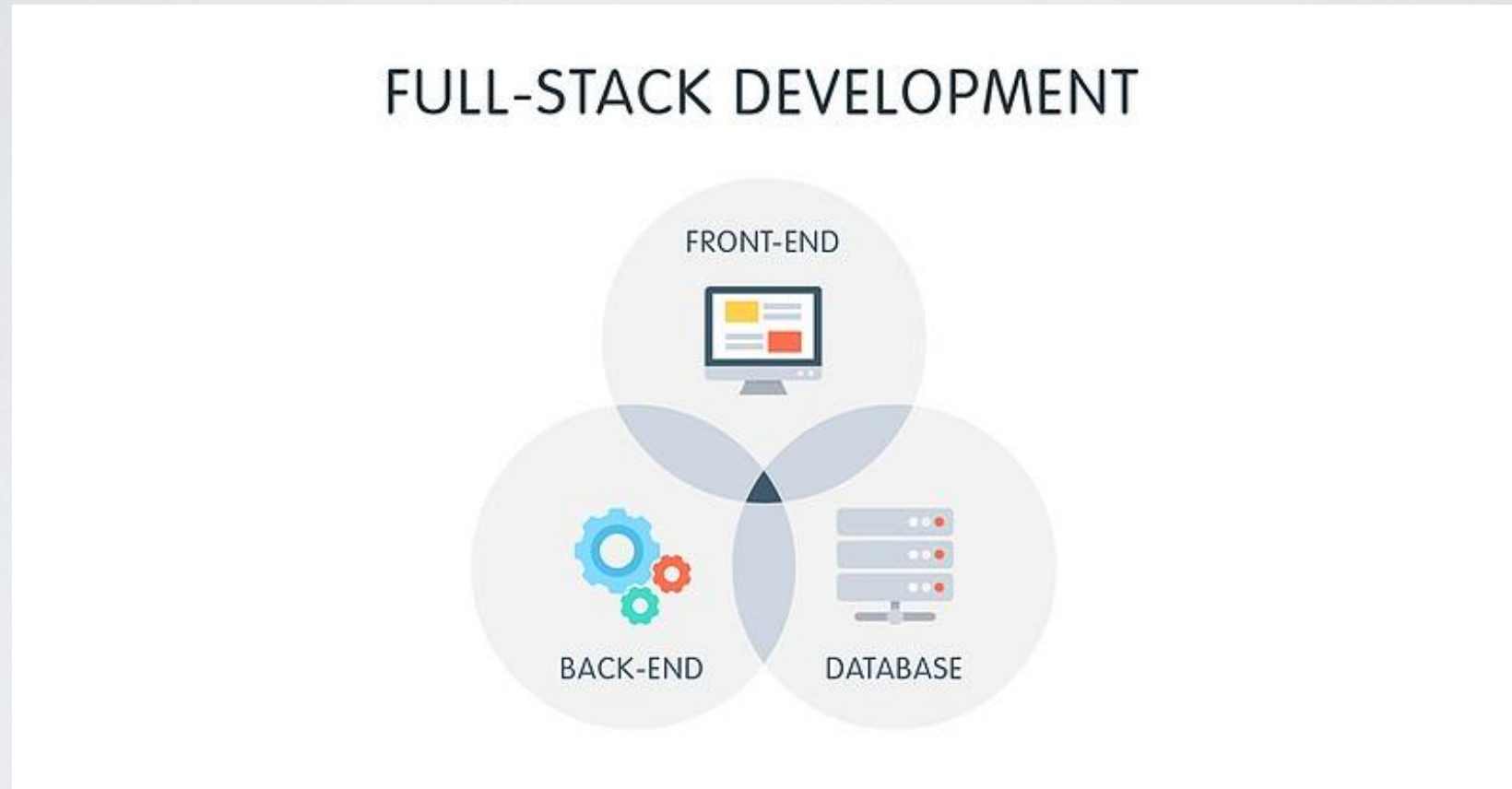
PROFESSIONALISM

- Be Responsible
 - Plagiarism is highly discouraged
 - We are a team trying to achieve the same goal, which is to place each of you onto a good project. We will try to be as helpful as we can

TECH OUTLINE

- Full Stack Development
- Database Introduction
- Java Introduction
- Front end Introduction
- Schedule & Policies

FULL STACK DEVELOPMENT



It refers to the development of both **front end**(client side) and **back end**(server side) portions of web application.

DATABASE

- Database — organized collection of data
- Types of database:
 - Relational Database
 - Structured Query Language(SQL)
 - Eg. SQL Server, Oracle DB, MySQL
 - Non-relational Database
 - NOSQL (Not only SQL)
 - Eg. MongoDB

BACK-END

- It refers to the server-side development of web applications with primary focus on how the website works.
- It is responsible for managing the database through queries and APIs by client-side commands.
- Programing Languages
 - PHP
 - C#
 - NodeJS
 - Python
 - Java

JAVA INTRODUCTION

- What is Java
- Java Version
- Java Virtual Machine(JVM)
- Java Development Kit(JDK)
- Java Runtime Environment(JRE)

WHAT IS JAVA

- Object-oriented programming language
- **W**rite **O**nce **R**un **A**nywhere
- Designed for easy web application development
- Widespread acceptance

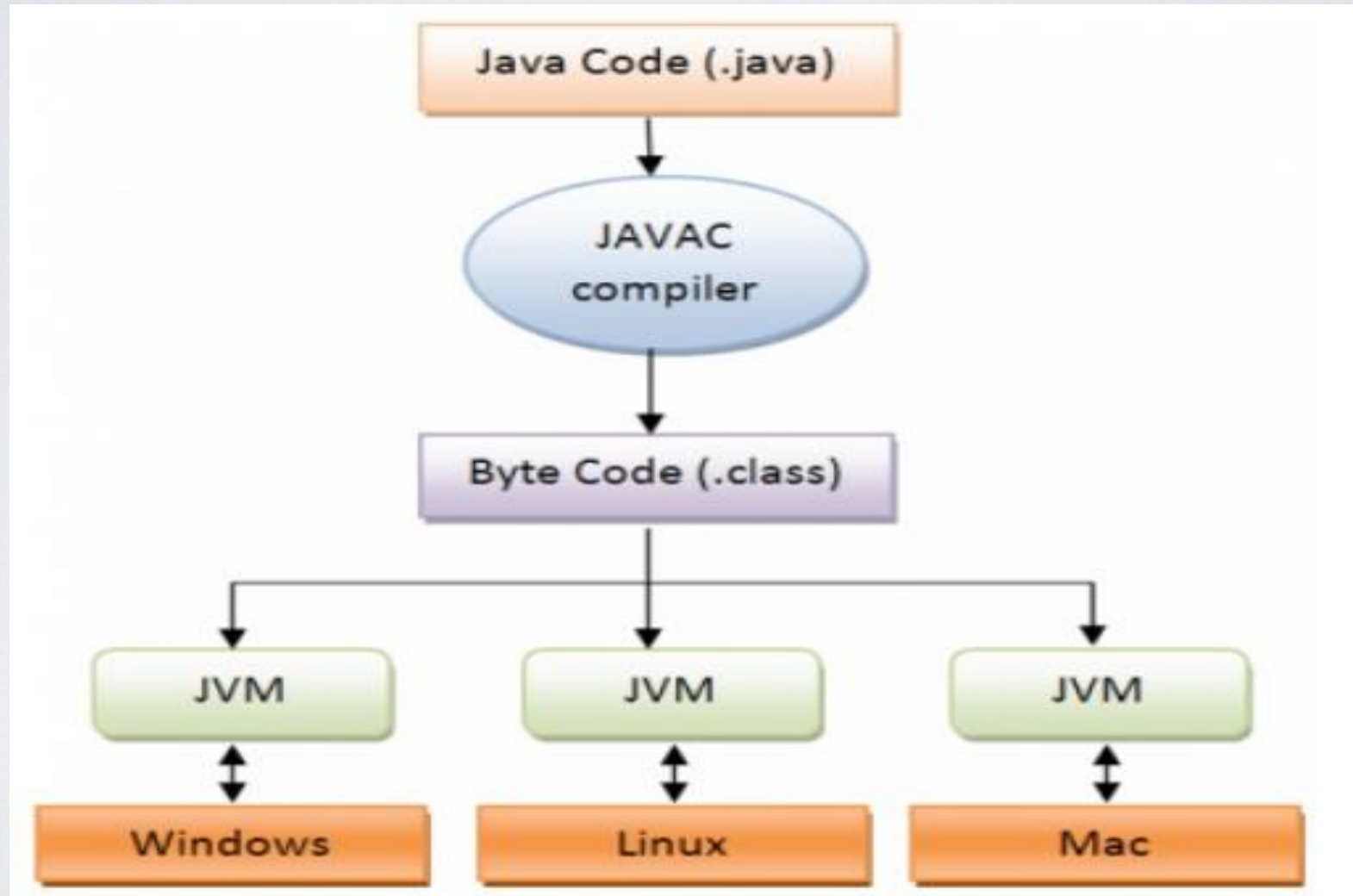
JAVA VERSION

- Java SE (JSE, Standard Edition)
- Java EE (J2EE, Enterprise Edition)
- Java ME (Micro Edition)
- Java FX

JAVA VIRTUAL MACHINE

- A virtual machine that enables a computer to run Java program as well as programs written in other language that are also compiled to **Java Bytecode**.
- Java Bytecode: A compiled file generated by Java compiler

JAVA VIRTUAL MACHINE



JDK & JRE

- Java Runtime Environment(JRE) — A package of everything needed to run a **compiled** Java program. It includes the JVM, the Java Class Library and all Java commands.
- Java Development Kit(JDK) — It has everything JRE has, but also the Compiler and other tools. It is capable of creating and compiling programs.

FRONT END

- The practice of converting data to a graphic interface through HTML, CSS and JavaScript.
- Browsers can only understand HTML, CSS and JavaScript.
- HTML — backbone of any website
- CSS — controls the presentation of any web page
- JavaScript — transform the static HTML page to a dynamic interface
 - jQuery
 - Typescript

TECH STACK

USER INTERFACE



SERVICE



Search



Cache



Message Queue



Database



Cloud/Platforms



POLICIES

- Lecture — Prepare and Review
- Assignment — On time and By yourself
- Project — Work as team and Presentation
- Mock Interview — Every week

QUESTIONS?