INFO 5100
Application Engineering and Development

Week 1

Agenda

- Course logistics
- Application Engineering
- Introduction to Java I

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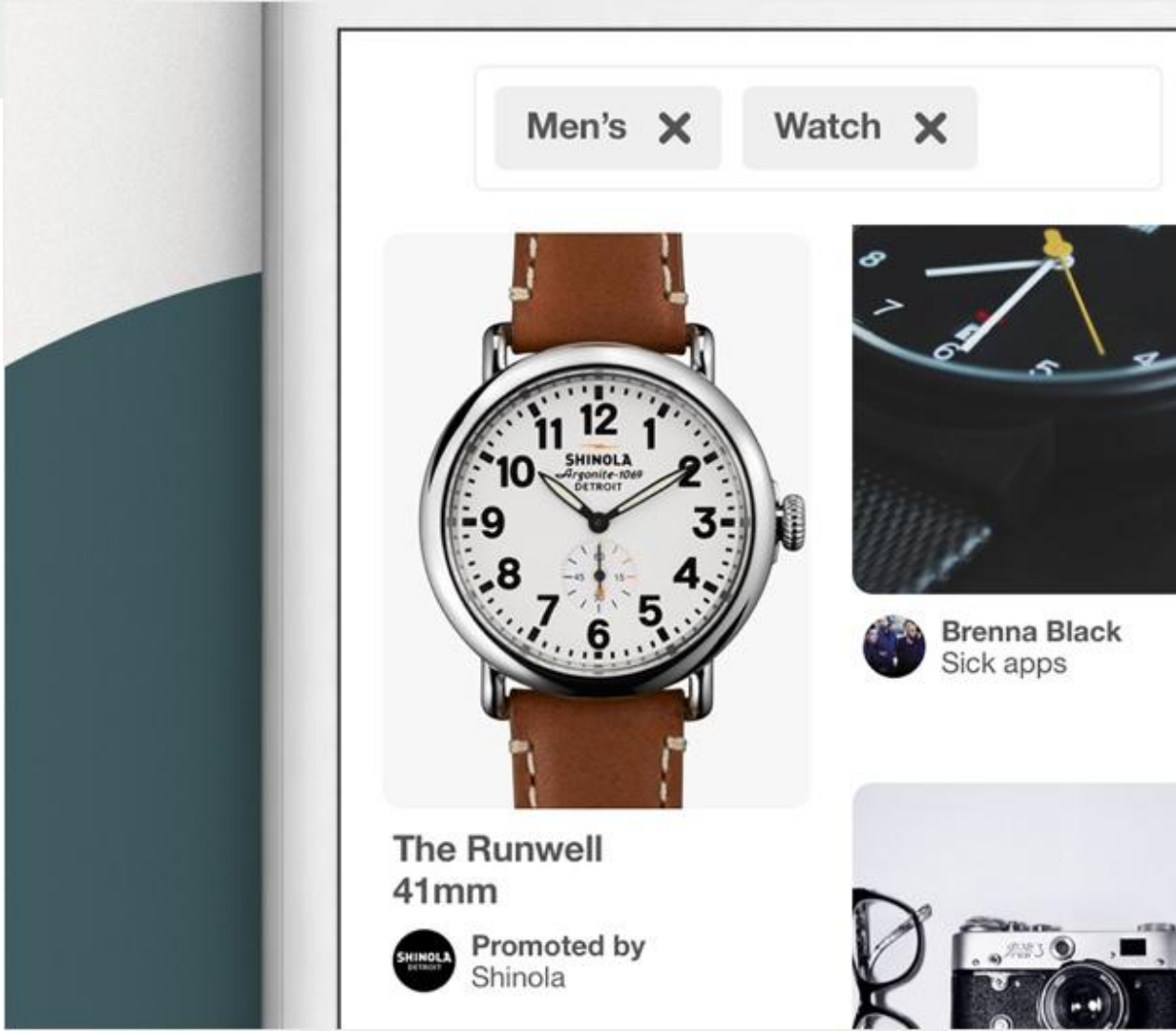
- **Application Engineering**
- Introduction to Java I

Online Merchants

- More efficient way of shopping
- More efficient supply chain

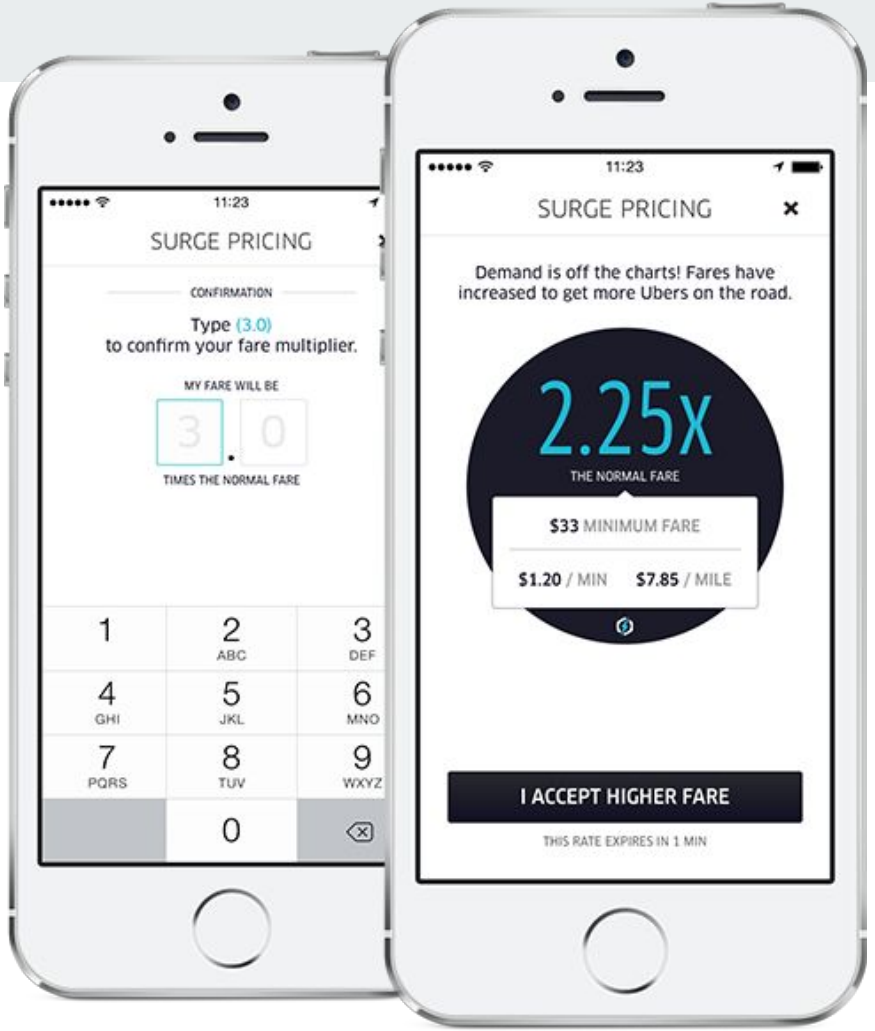
Pinterest Advertisement

- Targeted advertisement
- Real-time bidding



Uber
Surge Pricing

- Change price based on demand/supply



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- **Introduction to Java I**

Introduction to Java I

- Java is a strong typed, compiled, imperative, object-oriented programming language
- Java language provides JDK (Java Developer Kit) which includes awesome functionalities provided by Java developers
- Java code eventually run on an environment with JRE (Java Runtime Environment) and runs on top of JVM (Java Virtual Machine)

Types in Language

- Strong Typed
  - C/C++
  - Java
  - Golang
- None Type
  - JavaScript
  - Ruby
  - Python
- Strong Typed language might require developer type more, but good for team collaboration and maintenance of the code
- None Type language speeds up development, but maintenance is hard
- Strong Typed languages generally have better performance since language runtime can optimize based on the type of data

Types in Java

- There are generally two types of data in Java language
- Primitive Types
  - int
  - boolean
  - Full list here: https://docs.oracle.com/javase/tutorial/java/nutsandbolts/datatypes.html
  - Naming convention of primitive type is to start with lower cases
- Object Types
  - All other types are object types
  - Naming convention of object type is to start with Upper cases and camel casing

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Compilation

- Developer codes in Java syntax
- javac command compiles the code into byte code
- java command runs the byte code on top of JVM

- During the compilation process, java optimizes your code

Java Program Structure

- Java source codes are organized in files with .java extension
- Java file name should reflect the public class name in the file

Java Code Example

```java
import java.util.ArrayList;
import java.io.*;

public class ClassOne {

    public static void main(String[] args) {
        int integer = 0;

        int[] array;
        array = new int[10];
        array[0] = 'a';
        ArrayList<Integer> arrayList = new ArrayList<>();
        arrayList.add(500);

        if (arrayList.size() > 0) {
            System.out.println("array list size is bigger than zero");
        } else {
            System.out.println("array list size is not bigger than zero");
        }

        PrintWriter pw;

        try {
            pw = new PrintWriter(new FileWriter("spending.txt", true));
            for (int i = 0; i < args.length; i++) {
                System.out.println(args[i]);
                pw.print(args[i]);
            }

            pw.close();
        } catch (IOException ioe) {
            System.out.println("something is wrong: " + ioe);
        }

        System.out.println(integer);
        System.out.println(array);
        System.out.println(arrayList);
    }

}
```