Intro to Programming with Java

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Goals

- Understand computational thinking and programming logic
- Learn the basics of programming with Java
- Prepare for the next Android class

Installation

Installing a JDK:

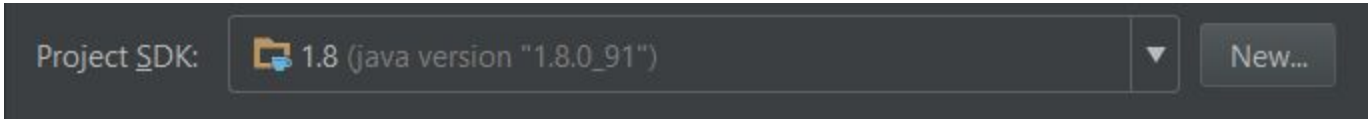
- Go to the follwing URL to download the JDK: http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html
  - Choose the download for your operating system
- Click on the download and follow the installation instructions. Take note of the installation folder - you will need to know this information when you set up an IntelliJ project.

Installing the IntelliJ IDE:

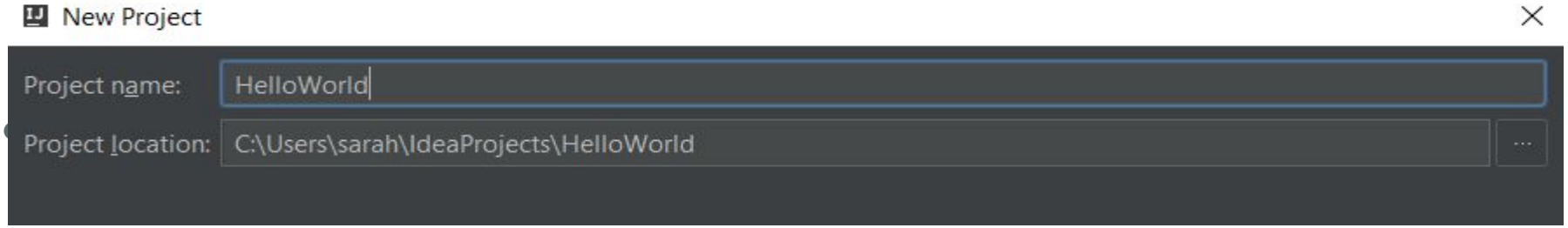
- Go to the following URL to download IntelliJ (select the community edition): https://www.jetbrains.com/idea/#chooseYourEdition
  - Select the correct download type for your operating system.
- Click on the download and follow the installation instructions.

Let’s write “Hello World”

- Run IntelliJ - You can use the default options
- When it asks you to choose an SDK, choose the JDK from your Java install location



- Start a new project! (File >> New >> Project)
- Name it “HelloWorld”



Let’s write “Hello World”

- Make a class! (File >> New >> Java class)
- Write the following code between the two brackets indicating the beginning and end of the class

```
Public static void main(String[] args) {

    System.out.println(“Hello World”);

}
```

- Run the code! (Run >> run)

Nice program! Let's try some new stuff...

- Objects
  - How do you represent a thing?
- Variables
  - How do you 'remember' information?
- Functions
  - How do you define an action?
- Loops
  - How do you do something multiple times?
- Conditionals
  - How do you make a decision?

What's an Object? A Practical Example

- How would you represent a playing card in Java?
- If you wanted to have multiple playing cards, would you want to write that code multiple times?
- What objects would you need to play a card game?

-Download and unzip GDIProject_IntroToJava

-Open with IntelliJ using File >> Open, and select the project

- Let's look at 'Deck' and 'Player'

Anatomy of a variable

```
<Type> <name> = <value>;
```

- What types of variables are there?
  - int
  - double
  - String
  - boolean
  - char
  - array
  - and more!
- Any object can be a variable type
- What is scope?

Anatomy of a function

```
<public/private> <return type> <name>(<parameters>) {

    <Body>

}
```

Anatomy of an object

- A class will use variables and functions to create the blueprint for an object
- You will also need a constructor - which is used every time you want to create an instance of a class

```
public <Class name>(<Parameters>) {

    <Body>

}
```

- What's the difference between a class and an instance?
- Let's write a 'Card' class!
- Look at how 'Card' is used in other classes

The ‘Driver’ class

- So far, we have looked at classes as a way to define objects
- Now, we will use a class to run a program!
- The driver class is identified by the following:

```
public static void main(String[] args) {

    <Body>

}
```

- Only code that is in ‘main’ will be run

Anatomy of a conditional

```
if(<condition>) {
    <Body>
}
else if(<condition>) {
}
else {
}
```

- Let’s practice in ‘compareCards’

Anatomy of a loop

```
for(<initialize>; <condition>; <action>) {

    <body>

}
```

- Let’s practice in ‘playWar’

What else can you do?

- Use variables to keep track of players' scores!
- Write a function to play a different card game!
- Change the way we compare cards!
- What else can you think of? Have fun experimenting !