CS102A Introduction to Computer Programming
Fall 2020 Lab 2

Objective

1. Learn how to use an Integrated Development Environment (IDE).
2. Practice using input and output statements.
3. Practice storing values with primitive types

1 Software Installation

In this course, we will use IDEA as our reference IDE. You can download IDEA (community version) at the following link: `https://www.jetbrains.com/idea/download/`.

> **Note**
> Or you can download IDEA from Sakai.

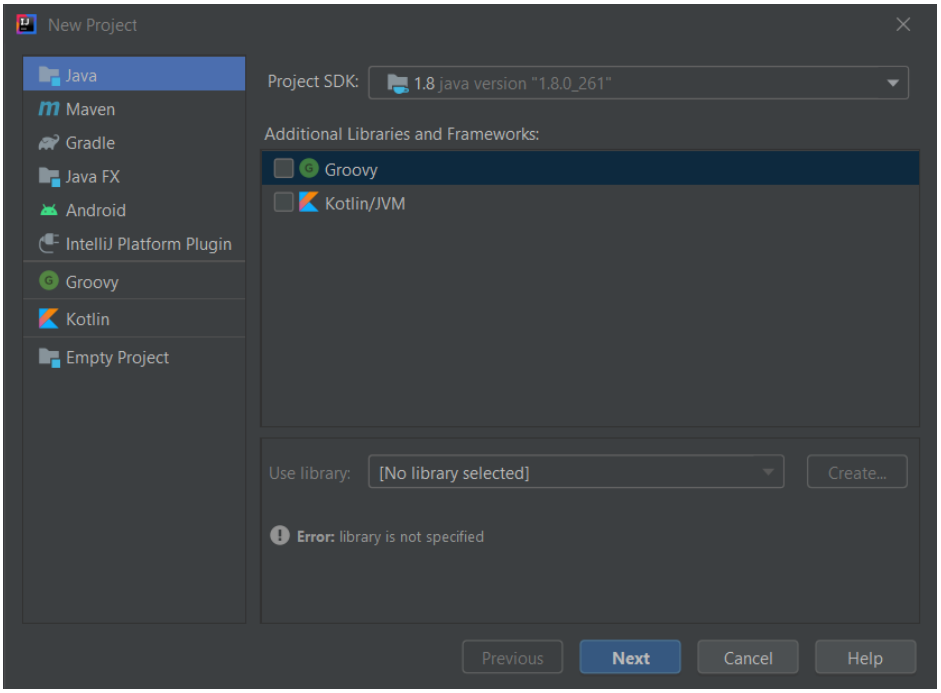
Once downloaded, run the executable. Follow the prompts to install IDEA, tick **Add launchers dir to the PATH** and **.java** in **Create Associations**. After the installation, you are suggested to restart your computer.

Find your *IntelliJ IDEA Community Edition* in the Start menu to start IDEA. Confirm the *Privacy Policy*[1] and decide whether you want to send anonymous statistics data to the software developer, i.e., JetBrains. Then choose the theme (dark/light) of the editor and make additional configurations. You can safely use the default. Finally, the following start window prompts:

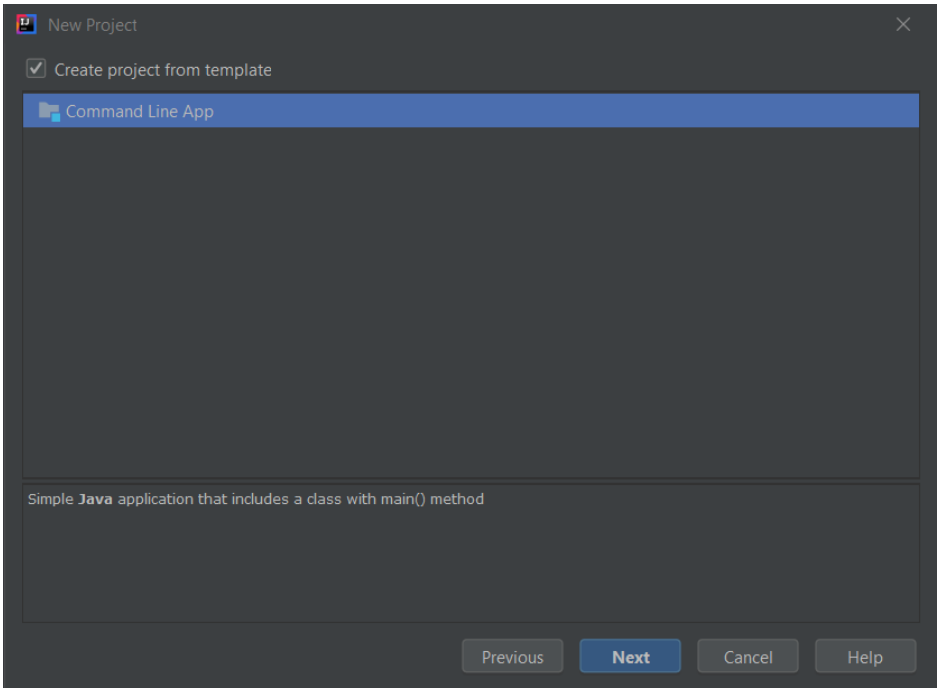
To create a new java program, click *New Project*.

[1] You are recommended to read the policy for this and any other software.

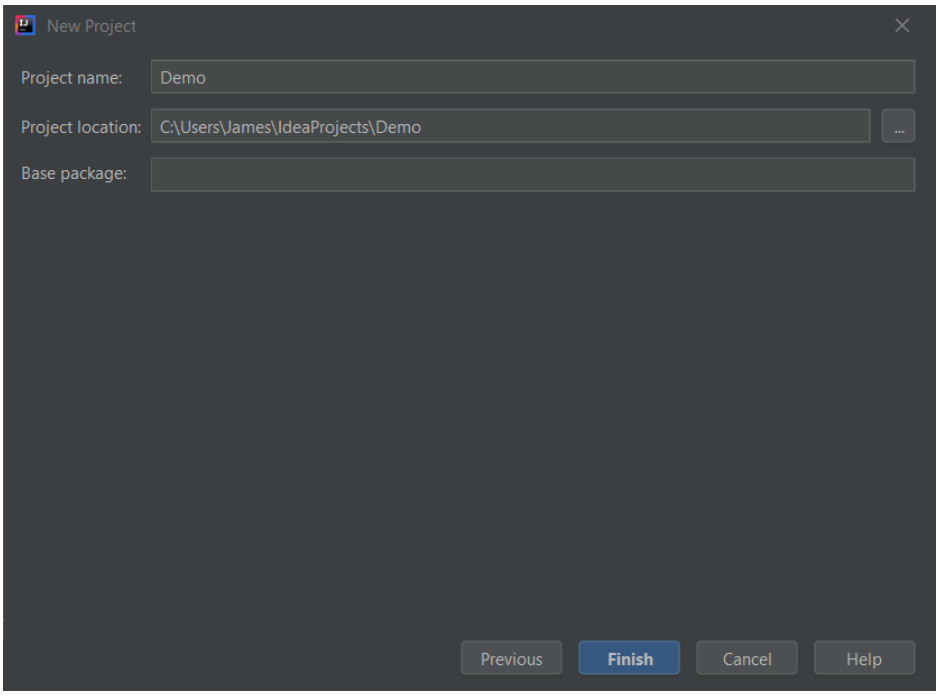
Make sure that the *Project SDK* at the top is set to **1.8** in case multiple JDKs are installed. Then press *Next* with the default setting.



In the next page, click *Create project from template* and make sure that *Command Line App* is selected. Then press *Next*.

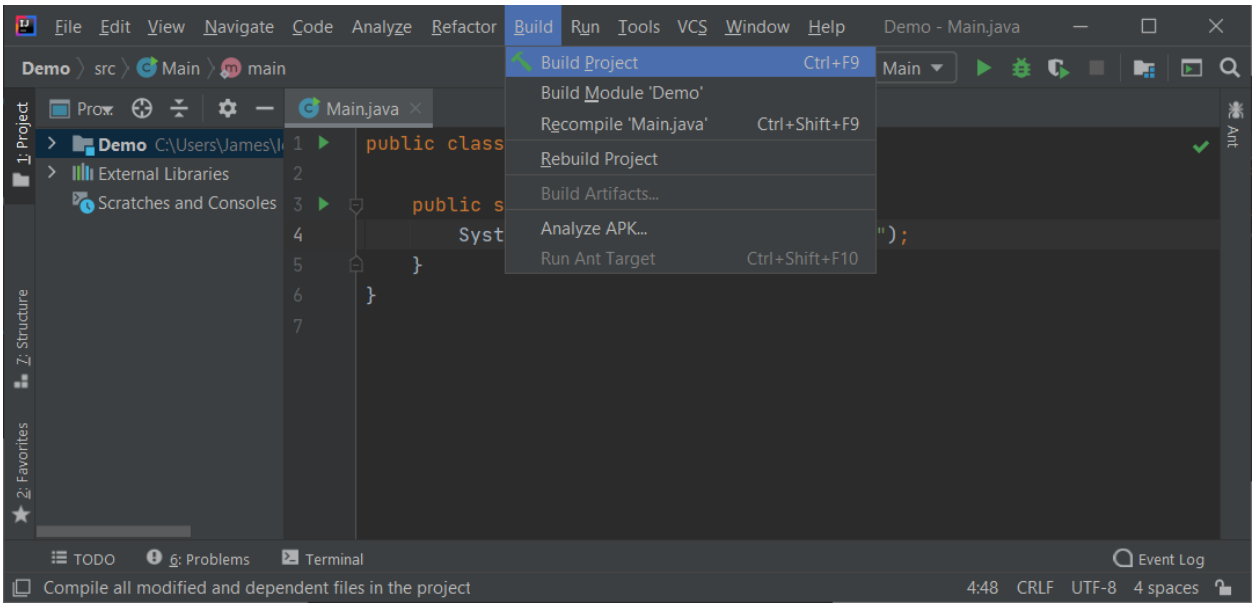


Give the project a name (this is the name of the project, not the class). Then **remove the default base package name**. Click *Finish*.

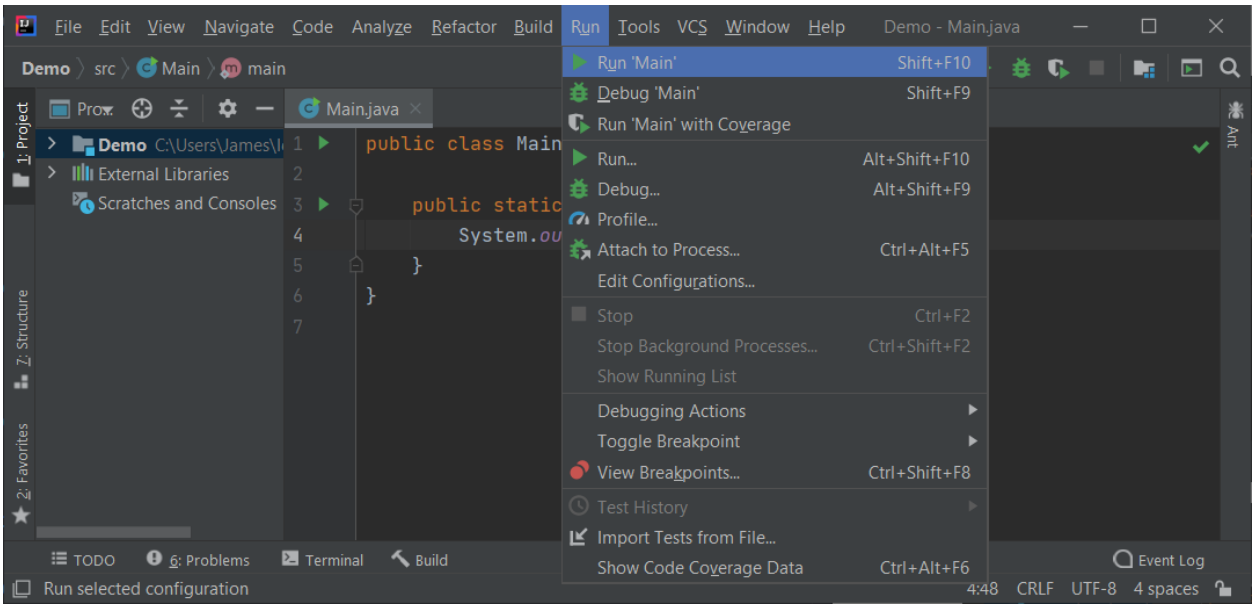


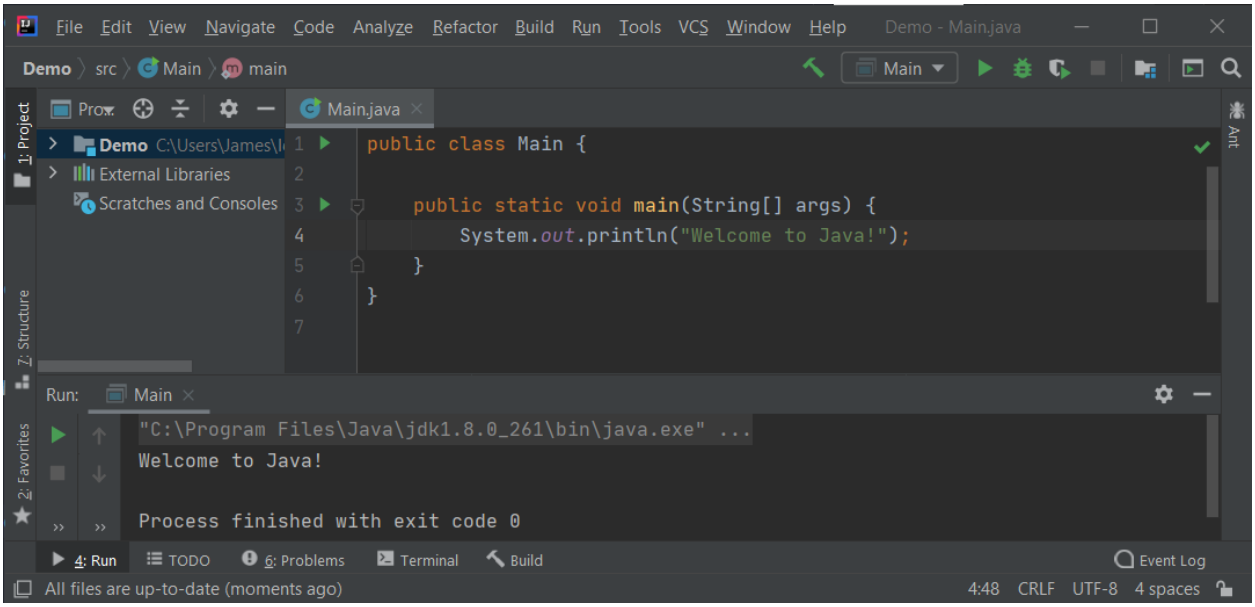
The template code is given as follows:

Add a printout string that prints `"Welcome to Java!"` and compile this `Main.java` file.



Run the `Main` class after compilation. The output should look like in the output box as follows:





2 Exercise

2.1 Exercise 1

Write and test the following source code to see how `Scanner` class works.

```
1 import java.util.Scanner;
2
```

```java
public class Sum {
    public static void main(String[] args) {
        System.out.println("Welcome to CS102A!");

        Scanner input = new Scanner(System.in);

        int number1, number2, sum;

        System.out.print("Enter the first integer: ");
        number1 = input.nextInt();
        System.out.print("Enter the second integer: ");
        number2 = input.nextInt();

        sum = number1 + number2;
        System.out.printf("Sum is %d\n", sum);
    }
}
```

2.2 Exercise 2

Write a program that prompts the user to enter his information, and then prints out in a specific format.

```java
import java.util.Scanner;

public class Information {
    public static void main(String[] args) {
        String name;
        int age;
        float weight;
        char grade;

        // Creating object of Scanner class
        Scanner input = new Scanner(System.in);

        System.out.print("Enter your name: ");
        name = input.next();
        System.out.print("Enter your age: ");
```

```
        age = input.nextInt();
        System.out.print("Enter your weight in KG: ");
        weight = input.nextFloat();
        System.out.print("Enter your highest grade in last semester: ");
        grade = input.next().charAt(0);

        System.out.printf("You are %s.\nYou are %d years old.\n", name,
           age);
        System.out.printf("You weigh %.1f KG.\nThe highest grade you got
           is %c\n", weight, grade);
    }
}
```

The output looks like this:

```
Enter your name: Jack
Enter your age: 20
Enter your weight in KG: 60.5
Enter your highest grade in last semester: A
You are Jack.
You are 20 years old.
You weigh 60.5 KG.
The highest grade you got is A
```

What happens if you enter `21.5` to the age? Try it out.

Note

We will talk about exception handling later in this course.

2.3 Exercise 3

Write a program that prompts the user to enter the height and width of a rectangle then prints the area and perimeter of the rectangle. The area and perimeter should be printed to the nearest two decimal place. The output looks like this:

```
Enter the width of a rectangle: 1.7
Enter the height of a rectangle: 2.4
The area is 4.08
The perimeter is 8.20
```

2.4 Exercise 4

Write a time converter that prompts the user to enter the number of seconds then prints the equivalent time in hours, minutes and seconds. The output looks like this:

```
Enter the number of seconds: 7402
The equivalent time is 2 hours 3 minutes and 22 seconds.
```

2.5 Exercise 5

Write an application that displays a box, an oval, an arrow, and a diamond using asterisks (*) as follows:

```
*********     ***       *        *
*       *   *     *    ***      * *
*       *  *       *  *****    *   *
*       *  *       *    *     *     *
*       *  *       *    *    *       *
*       *  *       *    *     *     *
*       *  *       *    *      *   *
*       *   *     *     *       * *
*********     ***       *        *
```