CS102A Introduction to Computer Programming
Fall 2020
Lab 2

Objectives

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 IntelliJ IDEA as our reference IDE. You can download IDEA (community version) from the following link: `https://www.jetbrains.com/idea/download/`.

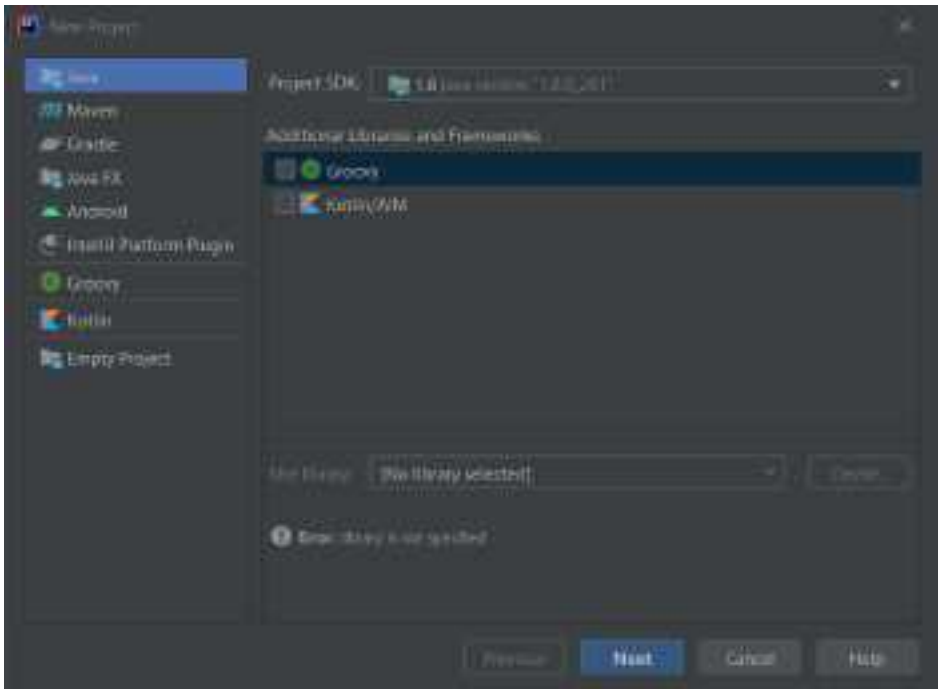
Note
You may also download IDEA from Sakai.

Once the installer has been downloaded, run the executable. Follow the prompts to install IDEA, ticking **Add launchers dir to the PATH** and **.java** in **Create Associations**. After the installation process has finished, it is suggested that you restart your machine.

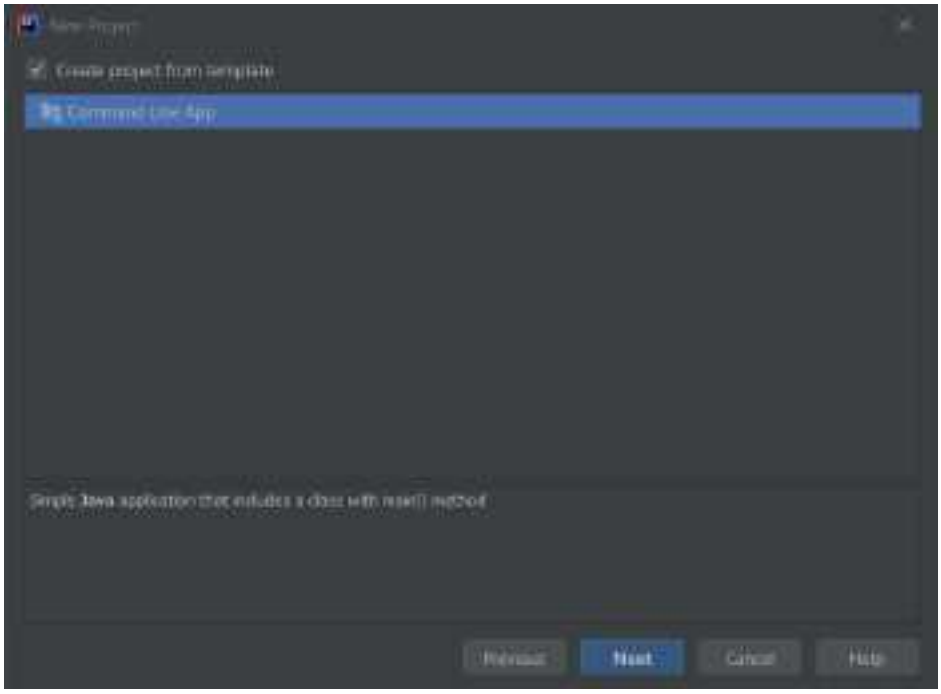
To start IDEA, find and select *IntelliJ IDEA Community Edition* in the Start menu. Accept the *Privacy Policy*[1] and decide whether to automatically send anonymous statistics data to the software developer, i.e., JetBrains. Then, choose the theme (dark/light) of the editor and make any additional configurations according to your preferences (you can safely use the default configuration). Finally, the following window will appear:

[1] It is recommended to read the privacy policy for this and any other software before accepting.

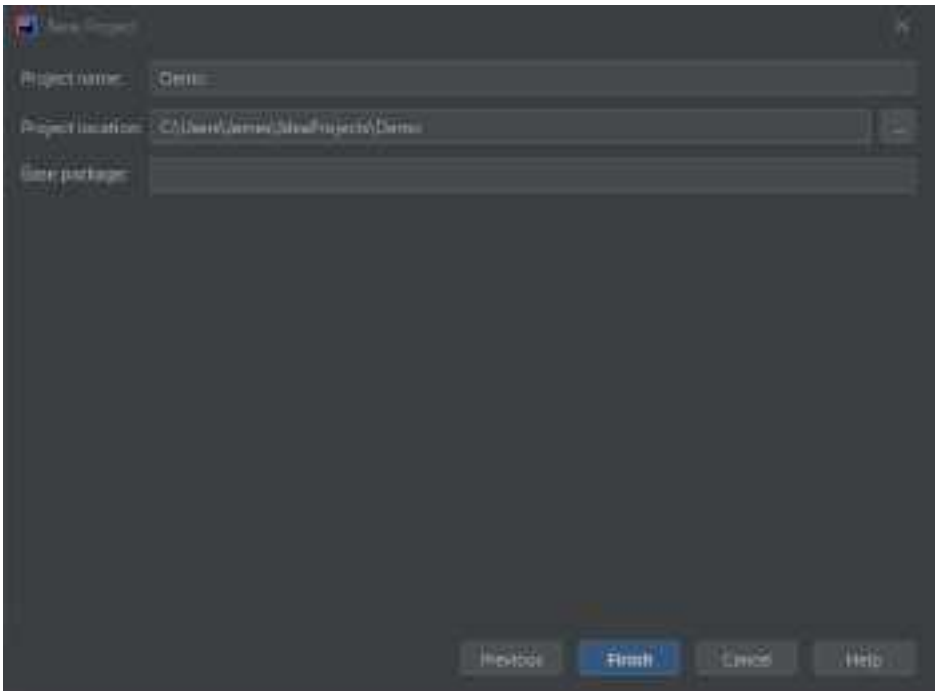
To create a new Java project, click *New Project*.



Make sure that *Project SDK* at the top is set to 1.8 if multiple JDKs are installed. Then, click *Next* using the default settings.

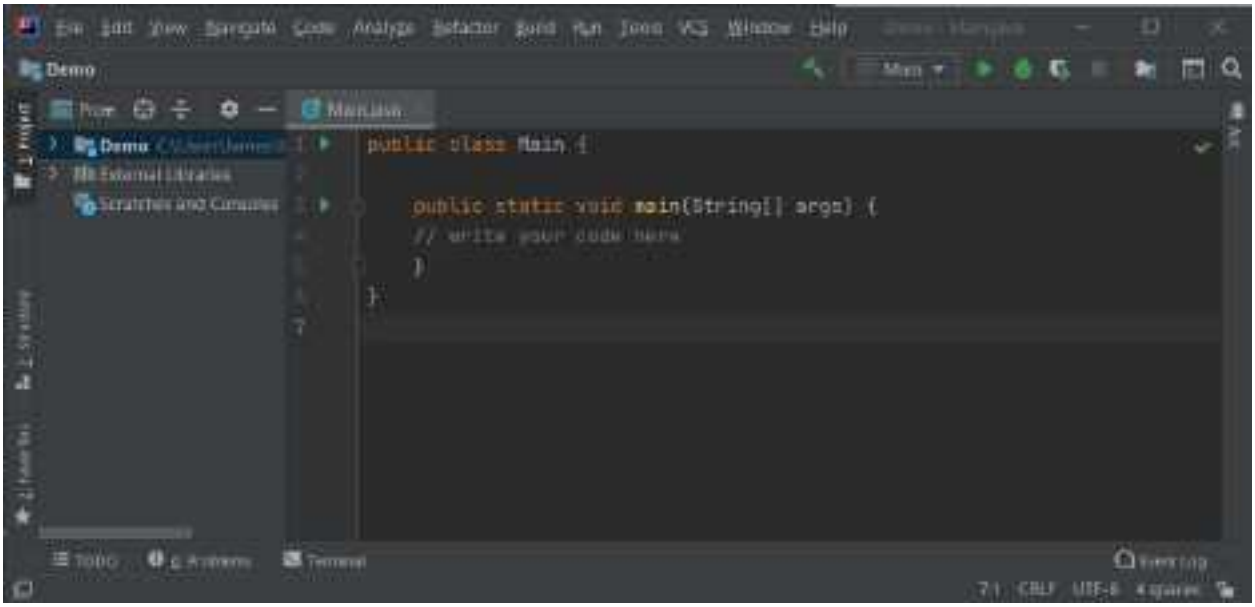


In the next page, select *Create project from template* and make sure that *Command Line App* is selected. Then, click *Next*.

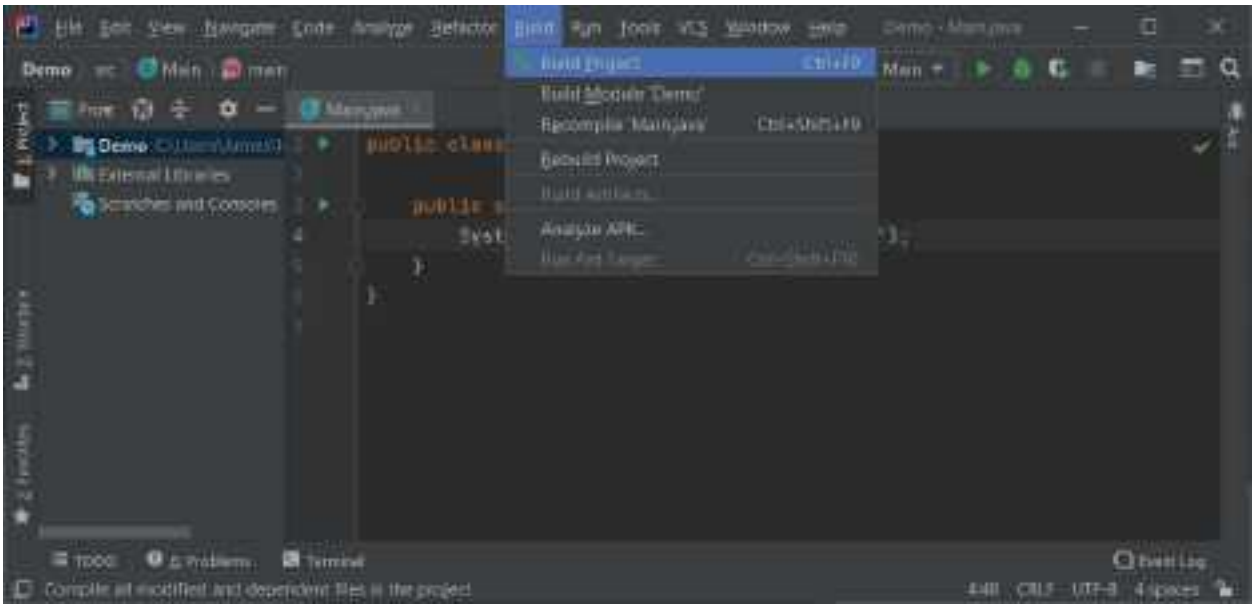


Give the project a name (this is the name of the project, not the Java class). Then, **remove the**

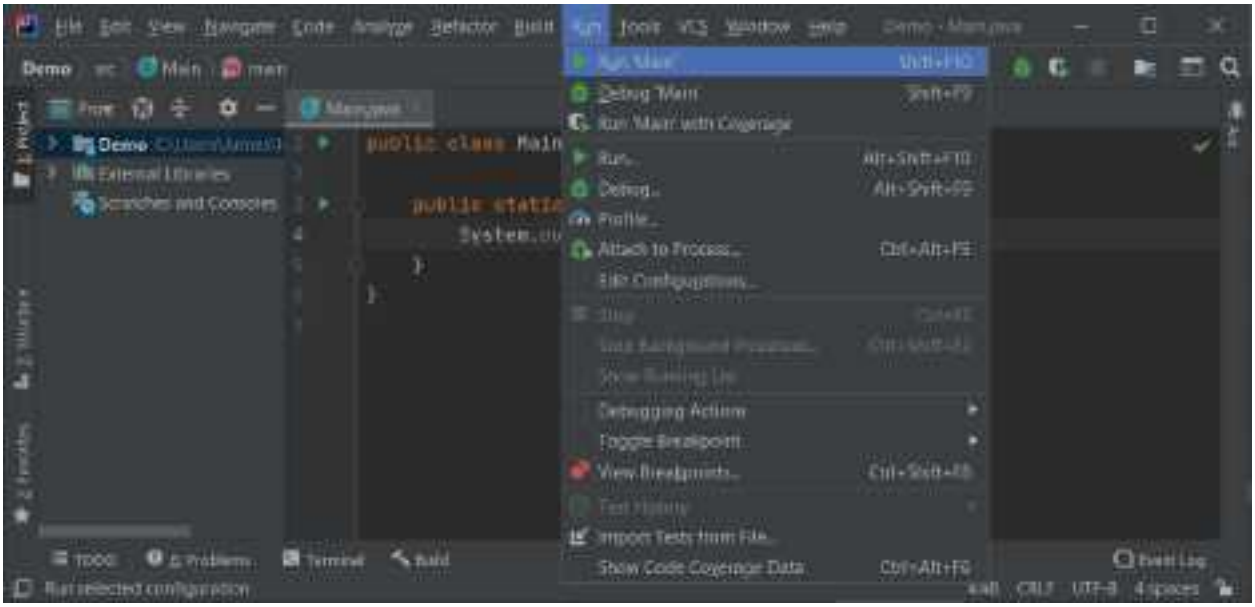
default base package name, and click *Finish*. The template code is given as follows:



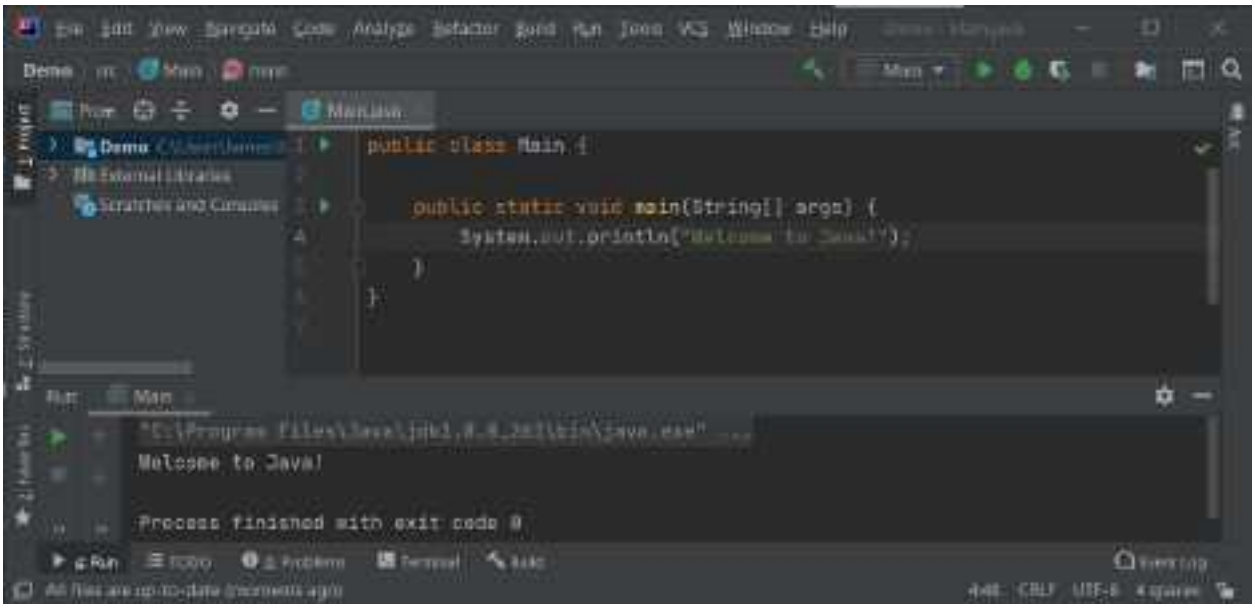
Add Java code that prints `"Welcome to Java!"` and compile this Main.java file.



After compilation, run the `Main` class.



In the output box, the output should look like the following:



2 Exercises

2.1 Exercise 1

Compile and execute the following code to see how the `Scanner` class works.

```java
import java.util.Scanner;

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/her information, and then prints it 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 should look 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` as the user's age? Try it out.

> **Note**
> We will talk about exception handling later in this course.

2.3 Exercise 3

Write a program that first prompts the user to enter the height and width of a rectangle, and then prints its area and perimeter rounded to the nearest two decimal places. The output should look 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 desired number of seconds, and then prints the equivalent time in hours, minutes, and seconds. The output should look like this:

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

2.5 Exercise 5

Write a program that uses asterisks (*) to display a rectangle, an oval, an arrow, and a diamond as follows:

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

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