COMPS312F – Tutorial 1

Demonstration

(a) We will show you how to write the simple "`HelloWorld`" program.

```
public class HelloWorld {
   public static void main(String st[]) {
      System.out.println("hello world");
   }
}
```

This class contains a main method which can executed.

(b) We will try the `BankAccount` example.

```
public class BankAccount {
   private int balance;
   public void setBalance(int b) { balance=b; }
   public int getBalance() { return balance; }
}
```

```
public class TestProgram {
   public static void main(String st[]) {
      BankAccount a1=new BankAccount();
      a1.setBalance(100);
      System.out.println(a1.getBalance());
      BankAccount a2=new BankAccount();
      a2.setBalance(20);
      System.out.println(a2.getBalance());
   }
}
```

(c) Then, we modify the `BankAccount` class.

```
public class BankAccount {
   private int balance;
   private float interestRate;
   public void setBalance(int b) { balance=b; }
   public int getBalance() { return balance; }
   public void setInterestRate(float i) {interestRate=i;}
   public float getInterestRate() {return interestRate;}
}
```

```
public class TestProgram {
   public static void main(String st[]) {
      BankAccount a1=new BankAccount();
      a1.setInterestRate(0.05f);
      System.out.println(a1.getInterestRate());
      BankAccount a2=new BankAccount();
      a2.setInterestRate(0.04f);
      System.out.println(a2.getInterestRate());
   }
}
```

In this tutorial, you will be asked to perform a number of tasks. You do not need to submit your work.

Question 1

Create a project called `Project1`, then in that project, create a file `Class1.java`.

(a) Type in the following code in `Class1.java`:

```
public class Class1 {
   public static void main(String st[]) {
      System.out.println("Hello world!");
   }
}
```

What will be the output of the program when you execute it?

(b) Now change the first line of the program as:

```
public class Class2 {
```

Without changing the file name. Try running the program again as before. What will happen when you run the program?

What conclusion can you make from this observation?

(c) Now, change the program back to what it was in (i). Then, change the second line of the program to:

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

Run the program again to see what will happen. What conclusion can you make from this observation?

(d) Now, change the program back to what it was in (i). Then, change the second line of the program to:

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

Run the program again to see what will happen. What conclusion can you make from this observation?

(e) Now, change the program back to what it was in (i). Then, change the second line of the program to:

```
public static void main2(String st[]) {
```

Run the program again to see what will happen. What conclusion can you make from this observation?

Question 2

Consider each of the following programs and state whether it has problems or not. If it has problems, then describe the problem.

(a)

```
public class A {
    public void method() {
       return 3.1;
    }
}
```

(b)

```
public class A {
    public int method() {
       return 1.2;
    }
}
```

(c)

```
public class A {
     public void method() {
         int a=4;
     }
     public int method() {
         return 4;
     }
}
```

(d)

```
public class A {
    private int a;
    public static void method(int b) {
       a=b*3;
    }
}
```

(e)

```
public class A {
    private static int a;
    public void method(int b) {
       a=b*3;
    }
}
```

Question 3

(a)
Write a Java class `Book` that represents all books in a library. The class should store the following information:

- Title
- Authors
- Call number
- Publisher
- Borrower
- Borrow date

You can make whatever assumption on how to store these attributes. For example, you can assume that Title is stored as `String`, or as a predefined class `Title`. Please also add all the getters and setters of these attributes.

Also add two static attributes to the class:

- Loan period
- Fine for one day of overdue.

These two attributes are static because we assume that all books have the same loan period and fine.

(b)
Write a `main` method that creates two instances of `Book`. Then assigns some values to the attributes of the two instances. Then use the `System.out.println()` method to print out the title of the two books.

(c)
Add a method called `borrow` which has one parameter `borrower`, which is an instance of the `Borrower` class. This method would allow the borrower to borrow the book. Note that you can assume the following:

- You can get the current date using the following statement: `java.util.Date currentDate=new java.util.Date();`
- A class `Borrower` has been defined somewhere else and you can use it.