CSCI 1100 – September 2016
Laboratory Report 5

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Please mark your lab						
T 8:30 L143	T 8:30 L134	T 8:30 L133	T 11:30 L143	T 11:30 L133	T 11:30 L142	T 2:30 L143
T 5:30 L143	T 5:30 L142	W 11:30 143	W 4:30 143			

Declaration: Please complete this declaration or your lab may not be graded		
1	This document is entirely my own work. Your lab should be the efforts of your own work. However, you may need to look something up to help you or ask someone for help. If acquired help (online or with someone) you need to acknowledge this below.	Yes
2	I obtained some help to complete this document.	no
3	This document contains some material from the Internet or another document or file or program. Note, your lab should be the efforts of your own work. However, you may need to look something up to help you – you need to acknowledge this. You should not cut and paste solutions.	no

Exercise 0a. (No marks) TAs please remind students about the use of the % operator for positive integer numbers to students. Give several examples. Show how it may be used to determine whether a number is even or odd. [This is for exercise 2 below.]

Exercise 0b. (No Marks) Students first write in what is printed by the following main method for the given inputs. Then type in and run the method to see if you are right.

lightRed	lightGreen	Complete this column
0	0	Jump bend bend
0	1	Jump kick Shriek
1	0	Shout bend Shriek
1	1	Shout Kick Kick

```
public static void main(String[] args) {
  int lightRed, lightGreen;
  Scanner keyboard = new Scanner(System.in);
  System.out.print("Input value for lightRed: ");
  lightRed = keyboard.nextInt();        // input
  System.out.print("Input value for lightGreen: ");
  lightGreen = keyboard.nextInt();      // input
  String action = "nothing";
  if (lightRed == 0){
    action = "Jump";
  }
  else {
```

```
      action = "Shout";
    }
    System.out.println("Action 1: " + action);
    if (lightGreen != 0){
      action = "Kick";
    }
    else {
      action = "Bend";
    }
    System.out.println("Action 2: " + action);
      if (lightRed != lightGreen)
         action = "Shriek";
    System.out.println("Action 3: " + action);
  }
}
```

Exercise 1. Write a Java program that prompts the user to type 3 double numbers. The program prints whether or not the sum of the last two numbers is greater than the first. Test the program with two sets of data and include the results in this report to show both outcomes. A sample program run is as follows:

```
Please input the first double 10.1
Please input the second double 5.25
Please input the third double 3.3
The sum of 5.25 and 3.3 is 8.55 which is less than 10.1
```

```
/*CSCI 1100 – Lab 5 – Exercise 1
   This program will take three numbers as input then compare
if the sum of last two is bigger than the first or not
<Mihyar Al-Masalma> <B00759975>  <18 Oct 2016> */
import java.util.Scanner; // import Scanner Class
public class Q1{
      public static void main(String[] args) {
            // Create an instance of the Scanner Class
            Scanner input = new Scanner(System.in);
            // Ask the user to enter the first number
            System.out.print("Please input the first double ");
            // Store the value in a variable
            double num1 = input.nextDouble();
            // Ask the user to enter the second number
            System.out.print("Please input the second double ");
            // Store the value in a variable
            double num2 = input.nextDouble();
            // Ask the user to enter the third number
            System.out.print("Please input the third double ");
            // Store the value in a variable
            double num3 = input.nextDouble();
            // Calculate the sum of the last two numbers
            double sum = num2 + num3;
            // Print out the result of the addition
            System.out.print("The sum of "+num2+" and "+num3+" is "+sum);

            if (sum>num1) {
                  // If the sum is bigger than the first number
                  System.out.println(" which is more than "+num1);
            }else{
                  // If the sum is not bigger than the first number
                  System.out.println(" which is less than "+num1);
            }
      }
}
```

```
Please input the first double 20.5
Please input the second double 15.6
Please input the third double 6.7
The sum of 15.6 and 6.7 is 22.3 which is more than 20.5

Please input the first double 99.9
Please input the second double 11.1
Please input the third double 22.2
The sum of 11.1 and 22.2 is 33.3 which is less than 99.9
```

Exercise 2. Write a program that prompts the user to enter two integers and determine if the first integer is divisible by the second (with no remainder). **[Hint:** modulus operator.] Test the program with two sets of data and include the results in this report to show both outcomes.

Some sample runs:

Please input 2 integers: 10 5
10 is divisible by 5

Please input 2 integers: 10 3
10 is not divisible by 3

Code:

```
/*CSCI 1100 – Lab 5 – Excercise 2
   This program will take two integers and test if it was divisible or not
<Mihyar Al-Masalma> <B00759975>  <18 Oct 2016> */
import java.util.Scanner;  // import Scanner Class
public class Q2{
      public static void main(String[] args) {
            // Create an instance of the Scanner Class
            Scanner input = new Scanner(System.in);
            // Ask the user to input two integers
            System.out.print("Please input 2 integers: ");
            // Store the first number
            int first = input.nextInt();
            // Store the second number
            int second = input.nextInt();
            // Test if the two numbers are divisable
            if (first%second == 0) {
                  // if yes then print out that
                  System.out.println(first+" is divisible by " +second);
            }else{
                  // if not divisible then print out that
                  System.out.println(first+ " is not divisible by "+second);
            }
      }
}
```

```
Please input 2 integers: 9 3
9 is divisible by 3

Please input 2 integers: 11 9
11 is not divisible by 9
```

Exercise 3. Write a program that translates a number code description for provinces in Atlantic Canada to its longer equivalency. The accepted code is 1 for Nova Scotia, 2 for New Brunswick, 3 for Prince Edward Island, and 4 for Newfoundland and Labrador. The program will prompt the user to input a number and then print the name of the province or a message “Not valid input". Test the program with five sets of data and include the results in this report to show all possible outcomes.

Some sample runs:

```
Please input the province code: 1
You have chosen Nova Scotia

Please input the province code: 3
You have chosen Prince Edward Island

Please input the province code: 6
Not valid input.
```

```
/*CSCI 1100 – Lab 5 – Excercise 3
   This program will translate the number to a province longer equivalency
<Mihyar Al-Masalma> <B00759975>  <18 Oct 2016> */
import java.util.Scanner;  // import Scanner Class
public class Q3 {
      public static void main(String[] args) {

            // Create instance of Scanner Class
            Scanner input = new Scanner(System.in);
            // Ask the user to input the number
            System.out.print("Please input the province code: ");
            // Store it in a variable
            int prov = input.nextInt();
            // See if the number is one
            if (prov == 1) {
                  // if it was one then print out Nova Scotia
                  System.out.println("You have chosen Nova Scotia");
            }else if (prov == 2) {
                  // if the number is 2 then it is New Brunswick
                  System.out.println("You have Chosen New Brunswick");
            }else if (prov == 3) {
                  // if the number is 3 then it is Prince Edward Island
                  System.out.println("You have Chosen Prince Edward Island");
            }else if (prov == 4) {
                  // if the number is 4 then it is Newfoundland and Labrador
                  System.out.println("You have Chosen Newfoundland and Labrador");
            }else{
                  // if it is something else print out not valid
                  System.out.println("Not Valid input");
            }
      }
}
```

```
Please input the province code: 1
You have chosen Nova Scotia

Please input the province code: 2
You have Chosen New Brunswick

Please input the province code: 3
You have Chosen Prince Edward Island


Please input the province code: 4
You have Chosen Newfoundland and Labrador

Please input the province code: 5
Not Valid input
```

Question 4. Write a program that computes the total cost of ordering a car. If the province of sale is Nova Scotia the cost to ship the car is $2000; if the destination is the Ontario the cost to ship the car is $1000 and elsewhere in Canada the shipping cost is $1500. The tax is 12.5% charged on the total cost of the car including the shipping. If you are a student though no tax is charged. [You need not concern yourself with the exact display of the decimal point.] Test the program with three sets of data and include the results in this report to show all shipping outcomes (with one showing the user to be a student). The program works as follows:

```
*CSCI 1100 – Lab 5 – Excercise 4
  This program will ask the user for the price of the car and where
  he is going to ship it and calculate how much will it cost
  and if the user is a student he'll get a discount
Mihyar Al-Masalma> <B00759975>  <18 Oct 2016> */
mport java.util.Scanner;  // import Scanner Class
ublic class Q4{
    public static void main(String[] args) {
           double taxed=0, shipping=0, total=0;
           // Create an instance of the Scanner Class
           Scanner input = new Scanner(System.in);
           // Ask the user to enter the price of his car
           System.out.print("Cost of Car: ");
           // Store the value in a variable
           double car = input.nextDouble();
           // Ask the user about the Shipping distanation
           System.out.print("Shipping destination - 1 for Nova Scotia, 2 for Ontario and 3 other
anadian Destinations: ");
           // Store the value in a variable
           double dist = input.nextDouble();
           // consume the whole line
           input.nextLine();
           // Ask if the user is a student
           System.out.print("Are you a student? Type true or false: ");
           // Store the value in a variable
           String student = input.nextLine();
           // Test where the car is being shipped to
           if (dist == 1) {
                  // if it was Nova Scotia the shipping cost is 2000
                  shipping = car + 2000;
           }else if (dist == 2) {
                  // if it was Ontario the shipping cost is 1000
                  shipping = car + 1000;
           }else if (dist == 3) {
                  // if it was somewhere else the shipping cost is 1500
                  shipping = car + 1500;
           }
           // test if the user is student
           if (student.equals("false") == true) {
                  // if not a student add taxes
                  taxed = shipping *0.125;
                  total = taxed + car;
           }else if (student.equals("true") == true){
                  // if a student there is no taxes
                  total = shipping;
           }
           // print out the final result
           System.out.println("Total cost: $"+ total);
    }

    Cost of Car: 20000
    Shipping destination - 1 for Nova Scotia, 2 for Ontario and 3 other Canadian Destinations: 1
    Are you a student? Type true or false: false
    Total cost: $22750.0

    Cost of Car: 30000
    Shipping destination - 1 for Nova Scotia, 2 for Ontario and 3 other Canadian Destinations: 2
    Are you a student? Type true or false: true
    Total cost: $31000.0

    Cost of Car: 10000
```

```
Shipping destination - 1 for Nova Scotia, 2 for Ontario and 3 other Canadian Destinations: 3
Are you a student? Type true or false: false
Total cost: $11437.5
```

Question 5. Write a complete program that will use a Scanner to ask for the total marks for your tests, assignments and labs each as a percentage (out of 100). If the lab mark is higher than the assignments the lab mark is omitted and the tests are weighted at 50% and the assignments at 50%. Otherwise the tests are weighted at 50% the assignments at 25% and the labs at 25%. The program then computes and prints your final grade as a letter. If you get 80% or higher the letter grade is an A, 70 or higher is a B, 60 or higher a C, 50 or higher a D and less than 50 a F. Test the program with two sets of data and include the results in this report that show both outcomes for the final grade calculation (with two different letter grades).

```
/*CSCI 1100 – Lab 5 – Excercise 5
  This program will take the user lab, assignment and test results
  if the lab mark is higher than assignment it will be ignored and 50%
  will go to test and 50% to assignments, otherwise it is 50% tests
  25% labs and 25% assignment. then the program print out the final grade as
  a letter
<Mihyar Al-Masalma> <B00759975>  <18 Oct 2016> */
import java.util.Scanner;  // import Scanner Class
public class Q5 {
        public static void main(String[] args) {
                double total = 0; char grade = ' ';
                // Create an instance of the Scanner Class
                Scanner input = new Scanner(System.in);
                // Ask the user to enter his assignment mark
                System.out.print("Please enter your assignments mark: ");
                // Store the value in a variable
                double assignment = input.nextDouble();
                // Ask the user to enter his test results
                System.out.print("Please enter your tests results: ");
                // Store it in a variable
                double test = input.nextDouble();
                // Ask the user to enter his labs mark
                System.out.print("Please enter your lab mark: ");
                // Store the value the user entered
                double lab = input.nextDouble();
                // Compare the lab and assignment marks
                if (lab > assignment) {
                        // if lab mark is greater than assignment mark
                        total = (test*.5) + (assignment*.5);
                }else{
                        // if assignment mark is greater than lab mark
                        total = (test*.5) + (lab*.25) + (assignment*.25);
                }
                // if total mark is greater or equal 80
                if (total >= 80) {
                        // the garde is A
                         grade = 'A';
                        // if total is more than 70
                }else if (total >= 70) {
                        // grade is B
                         grade = 'B';
                        // if total is more than 60
                }else if (total >=60) {
                        // grade is C
                         grade = 'C';
                        // if total is more than 50
                }else if (total >= 50) {
                        // total is D
```

```
                    grade = 'D';
                    // if either
                }else{
                    // grade is F
                    grade = 'F';
                }
                // print out the result
                System.out.println("Your final grade is :" + grade);
        }
}
```

```
Please enter your assignments mark: 90
Please enter your tests results: 90
Please enter your lab mark: 100
Your final grade is :A

Please enter your assignments mark: 90
Please enter your tests results: 90
Please enter your lab mark: 85
Your final grade is :A
```

Question 6. Use an if / else if / else to write a program that will translate any integer number between 0 and 5 into the corresponding word. Test the program with five sets of data and include the results in this report to show all possible outcomes.

Example Output

Please type a number: 4
4 translated is four

Please type a number: 12
12 is out of range.

```
/*CSCI 1100 – Lab 5 – Excercise 6
  This program will translate the numbers between 0 and 5
<Mihyar Al-Masalma> <B00759975>  <18 Oct 2016> */
import java.util.Scanner;  // import Scanner Class
public class Q6 {
        public static void main(String[] args) {
                // Create an instance of the Scanner Class
                Scanner input = new Scanner(System.in);
                // Ask the user to enter a number
                System.out.print("Please type a number: ");
                // Store the user input
                int number = input.nextInt();
                // check what the user entered
                if (number == 1) {
                        // evaluate if 1 print one
                        System.out.println(number+" translated is One");
                 } else if (number == 2) {
                        // evaluate if 2 print two
                        System.out.println(number+" translated is Two");
                 }else if (number == 3) {
                        // evalutate if 3 print three
                        System.out.println(number+" translated is Three");
                 }else if (number == 4) {
                        // evaluate if 4 print four
                        System.out.println(number+" translated is Four");
                 }else if (number == 5) {
```

```
                        // evaluate if 5 print five
                        System.out.println(number+" translated is Five");
                }else{
                        // if something else print out of range
                        System.out.println(number+" is out of range.");
                }
        }
}
```

```
Please type a number: 1
1 translated is One

Please type a number: 2
2 translated is Two

Please type a number: 3
3 translated is Three

Please type a number: 4
4 translated is Four

Please type a number: 5
5 translated is Five

Please type a number: 6
6 is out of range.
```