North South University

Department of Electrical and Computer Engineering

CSE 215L: Programming Language II Lab

Lab – 2: Conditional statements & Common Mathematical functions

Learning Objectives:

- to learn how to use conditional statements (if, else if, else)
- to learn the usage of common mathematical functions (pow, sqrt etc)

Ex-1: Reading Numbers from the Keyboard

```
import java.util.Scanner;

public class HelloWorld {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);

    System.out.print("Enter a byte value: ");
    byte byteValue = input.nextByte();

    System.out.print("Enter a short value: ");
    short shortValue = input.nextShort();

    System.out.print("Enter an int value: ");
    int intValue = input.nextInt();

    System.out.print("Enter a long value: ");
    long longValue = input.nextLong();

    System.out.print("Enter a float value: ");
    float floatValue = input.nextFloat();

    System.out.print("Enter a double value: ");
    double doubleValue = input.nextDouble();
  }
}
```

Ex-2: Conditionals with User input

```
import java.util.Scanner;

public class HelloWorld {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);

    System.out.print("Enter an integer: ");
    int num = input.nextInt();

    if(num == 0) {
      System.out.println(num + " is zero");
    }
    else if(num > 0) {
      System.out.println(num + " is +ve");
    }
    else {
      System.out.println(num + " is -ve");
    }
  }
}
```

Ex-3: Augmented Assignment Operators

```
public class HelloWorld {
  public static void main(String[] args) {
   double a = 6.5;
   a += 1;
   System.out.println(a);

   a -=2.3;
   System.out.println(a);
```

Ex-4: Increment and Decrement Operators

```
public class HelloWorld {
  public static void main(String[] args) {
   int a = 10;
   int num1 = 10 * a++;
   System.out.println("a = " + a + ", num1 = " + num1);

   int b = 10;
   int num2 = 10 * (++b);
   System.out.println("b = " + b + ", num2 = " + num2);
```

```
    a = 6;
    a *= 2;
    System.out.println(a);

    a = 7.5;
    a /= 2;
    System.out.println(a);

    a = 7;
    a %= 4;
    System.out.println(a);
  }
}
```

```
    int c = 10;
    int num3 = 10 * c--;
    System.out.println("c = " + c + ", num3 = " + num3);

    int d = 10;
    int num4 = 10 * (--d);
    System.out.println("d = " + d + ", num4 = " + num4);
  }
}
```

Lab Task:

1. Write down a program to input the lengths of three sides for a triangle and print its type ("Triangle is Scalene / Isosceles / Equilateral"). [Hint: Use your basic geometry knowledge.]

2. Write a program to enter a year and check if it is a Leap Year or not.

3. Write a program that reads the length and width of a rectangle and checks if it is square or not.

4. Suppose, a quadratic equation $ax2 + bx + c = 0$ is given. Find out the roots of that equation $x1$ and $x2$.

[Hint: $x1 = \frac{-b + \sqrt{b2 - 4ac}}{2a}$, $x2 = \frac{-b - \sqrt{b2 - 4ac}}{2a}$]

HW1: [Submission deadline before the next class]

1. Write a program that reads in the radius and length of a cylinder and computes the area and volume using the following formulas and format the output up to 3 decimal points.

area = radius * radius * PI, volume = area * length

2. Write a program that reads an integer between 0 and 1000 and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 14. [Hint: Use the % operator to extract digits, and use the / operator to remove the extracted digit. For instance, 932 % 10 = 2 and 932 / 10 = 93.]

3. Write a program that prompts the user to enter the minutes (e.g., 1 billion), and displays the number of years and days for the minutes. [Hint: 1 year = 365 days]

4. Write a program that prompts the user to enter the side of a hexagon and displays its area upto 3 decimal points. [Hint: area of a hexagon is Area = $\frac{3\sqrt{3}\, s2}{2}$]

5. Write a program that prompts the user to enter three points (x1, y1), (x2, y2), (x3, y3) of a triangle and displays its area upto 3 decimal points. The formula for computing the area of a triangle is

$$s = (side1 + side2 + side3) / 2, area = \sqrt{s(s - side1)(s - side2)(s - side3)}$$