## East West University

**Department of Computer Science and Engineering**

## A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka

**Lab Manual:** 02

**Lab Topic:** Introducing Basics of Elementary Programming in Java

**Course Code:** CSE110 (Object Oriented Programming)

**Course Instructor:** Tanni Mittra, Senior Lecturer, CSE

**Lab Objective**

* **Understand** basic program structure in Java
* **Solve** a few simple problems in Java.
* **Solve** problems using selection statement

**Lab Activities**

## Reading inputs from user

* Everything in Java comes in form of a class.
* To read inputs from a user, we need to use *Scanner* class.
* The following program reads name, age and department name of a student and print them accordingly.

import java.util.Scanner;

class SampleReadInput{

public static void main (String[] args){

Scanner input = new Scanner (System.in);

System.out.println("Enter your name: ");

String name = input.next();

System.out.println("Enter your age: ");

int age = input.nextInt();

System.out.println("Enter your CGPA: ");

double cgpa = input.nextDouble();

System.out.println("Enter your department: ");

String department = input.nextLine();

System.out.printf("Your Name: %s\n", name);

System.out.printf("Your Age: %d\n", age);

System.out.printf("Your CGPA: %f\n", cgpa);

System.out.printf("Your Deparmtent: %s\n", department);

} // main method ends

} // Main class ends

* **Does the program execute as we have wanted? What is the problem? How can you solve it?**

**Lab Problems**

**01:** Write a program that displays the area and perimeter of a circle using the following formula:

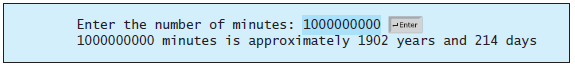
*perimeter* = 2 \* π \* *radius*

*area* = π *\* radius* \* *radius*

**02:** Assume a runner runs **a** kilometers in bminutes and **c** seconds. Write a program that displays the average speed in miles per hour. (Note that **1** mile is **1.6** kilometers.)

**03:** Write a program that reads an integer from the console and determines whether the given number is divisible by either 2 or 3 (but not both). Then the program should print TRUE, otherwise, the program should print FALSE.

**04:** 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. For simplicity, assume a year has **365** days. Here is a sample run:



**05:** The two roots of a quadratic equation *ax*2+ *bx* + *c* = 0 can be obtained using the following formula:



*b*2- 4*ac* is called the discriminant of the quadratic equation. If it is positive, the equation has two real roots. If it is zero, the equation has one root. If it is negative, the equation has no real roots. Write a Java program that prompts the user to enter values for *a*, *b*, and *c* and displays the result based on the discriminant. If the discriminant is positive, display two roots. If the discriminant is **0**, display one root. Otherwise, display “The equation has no real roots”.

Note that you can use **Math.pow(x, 0.5)** to compute 2*x*. *Use appropriate JOptionPane dialog boxes to read inputs and write outputs.*



**06:** Write a Java program that prompts the user to enter the exchange rate from currency in U.S. dollars (USD) to Bangladeshi Taka (BDT). Prompt the user to enter **0** to convert from USD to BDT and **1** to convert from BDT to USD. Then, prompt the user to enter the amount in USD or in BDT to convert it to BDT or USD, respectively.

**07.** Write a Java program that prompts the user to enter the center (**p**,**q**) and the radius (**r**) of a circle. Then, prompts user to enter a point (**x**, **y**) and checks whether the point is within the circle centered at (**p, q**) with radius **r**. For example, (**4**, **5**) is inside the circle centered at (0,0) with radius 10 and (**9**, **9**) is outside the circle, as shown in the following figure.

