جامعة الأميرة
نورة بنت عبدالرحمن
كلية علوم الحاسب والمعلومات

IQ ACADEMY

CS110T: Programming Language1

Lab 5: Control Statements

Lab Objectives:

In this lab, the student will practice:

- ✓ Reading data values from the user.
- ✓ Using if and nested if statements

1st Semester 2025-2026

Lab Exercise 1: Code Tracing

Find and discuss the output for the following codes:

a.

```
String month = "March";
if (month.equals("February"));
     System.out.println(month+" has 28 days");
```

March has 28 days

b.

```
int mark = 58;
if (mark >= 60)
    System.out.println("Your mark is: " +mark);
    System.out.println("You are pass");
```

You are pass

Lab Exercise 2: Code Writing (1)

a. Write a program that ask the user to enter a number then print if the number is positive. (if statement)

Output sample:

```
Enter a number: 10
10 is positive
```

```
import java.util.Scanner;

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

      System.out.print("Enter a number: ");
      int number = input.nextInt();

      if (number > 0) {
         System.out.println(number + " is positive");
      }
   }
}
```

b. Write a Java program that checks whether a given number entered by user is even or odd. (if-else statement)

Output sample:

```
Entera number: 20
20 iseven
```

```
Entera number: 11
11 is
    odd
```

```
import java.util.Scanner;

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

      System.out.print("Enter a number: ");
      int number = input.nextInt();

      if (number % 2 == 0) {
         System.out.println(number + " is even");
      } else {
         System.out.println(number + " is odd");
      }
   }
}
```

c. Update the solution of (b) using **ternary operator**.

```
import java.util.Scanner;

public class EvenOddTernary {

   public static void main(String[] args) {

      Scanner input = new Scanner(System.in);

      System.out.print("Enter a number: ");

      int number = input.nextInt();



      String result = (number % 2 == 0) ? "even" : "odd";

      System.out.println(number + " is " + result);

   }

}
```

Lab Exercise 3: Code Writing (2)

a) Problem Description: Write a Java program that asks the user to enter distance (in km) and speed (in km/h). Compute the travel time and print it in hours and minutes.

- If distance ≤ 0 or speed ≤ 0 → "Invalid input".
- Otherwise: timeHours = distance / speed.
- Print hours = integer part, minutes = remaining * 60 (rounded to nearest integer).

Output Sample:

```
Enter distance (km): 325
Enter speed (km/h): 100
Time: 3 hours and 15 minutes
```

```
import java.util.Scanner;

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

      System.out.print("Enter distance (km): ");
      double distance = input.nextDouble();

      System.out.print("Enter speed (km/h): ");
      double speed = input.nextDouble();

      if (distance <= 0 || speed <= 0) {
         System.out.println("Invalid input");
      } else {
         double timeHours = distance / speed;
         int hours = (int) timeHours;
         int minutes = (int) ((timeHours - hours) * 60);

         System.out.println("Time: " + hours + " hours and " + minutes + " minutes");
      }
   }
}
```

b) Problem Description: Write a Java program that prompts the user to enter a number representing the hours worked in a week.
The program should calculate the employee's salary at a rate of 50 SAR per hour.

- If hours are less than 0 → "Invalid input".
- If hours are less than or equal to 40 → salary = hours * 50.
- If hours are more than 40 → salary = (40 * 50) + (extra hours * 75).

Output Sample:

```
Enter hours worked: 45
Your salary is 2375 SAR
```

```java
import java.util.Scanner;

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

      System.out.print("Enter hours worked: ");
      double hours = input.nextDouble();

      if (hours < 0) {
         System.out.println("Invalid input");
      } else if (hours <= 40) {
         double salary = hours * 50;
         System.out.println("Your salary is " + salary + " SAR");
      } else {
         double regularHours = 40;
         double overtimeHours = hours - 40;
         double salary = (regularHours * 50) + (overtimeHours * 75);
         System.out.println("Your salary is " + salary + " SAR");
      }
   }
}
```

c) Problem Description: Write a Java program that prompts the user to enter the current time (hour in 24-hour format, 0–23).

Based on the time, display:

- Invalid time" for numbers less than 0 or greater than 23
- "Good Morning" for 5–11
- "Good Afternoon" for 12–16
- "Good Evening" for 17–20
- "Good Night" for 21–23 or 0–4

Output Sample:

```
Enter the hour (0-23): 6 Good
Morning
```


```
import java.util.Scanner;

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

        System.out.print("Enter the hour (0-23): ");
        int hour = input.nextInt();

        if (hour < 0 || hour > 23) {
            System.out.println("Invalid time");
        } else if (hour >= 5 && hour <= 11) {
            System.out.println("Good Morning");
        } else if (hour >= 12 && hour <= 16) {
            System.out.println("Good Afternoon");
        } else if (hour >= 17 && hour <= 20) {
            System.out.println("Good Evening");
        } else {
            System.out.println("Good Night");
        }
    }
}
```