# Java Assessment Week 2

\*\*Duration:\*\* 1 Hour  
\*\*Total Marks:\*\* 50

---

## Section A: Java Methods (10 Marks)

### Question 1 (5 Marks):

Write a Java program to create a method `calculateFactorial(int number)` that accepts an integer as an argument and returns the factorial of the number. Use the method in the `main` method to find the factorial of 5.

### Question 2 (5 Marks):

Write a method `isPalindrome(String str)` that checks whether the given string is a palindrome. Test the method with the word `"radar"`.

---

## Section B: Objects and Classes (10 Marks)

### Question 3 (5 Marks):

Define a class `Book` with the following attributes:  
- `title` (String)  
- `author` (String)  
- `price` (double)  
  
Create an object of the class in the `main` method and initialize it with sample data. Display the details of the book.

### Question 4 (5 Marks):

Write a program that defines a class `Rectangle` with attributes `length` and `width`. Include a method `calculateArea()` that returns the area of the rectangle. In the `main` method, create an object of the class, assign values to its attributes, and display its area.

---

## Section C: Class Attributes (10 Marks)

### Question 5 (5 Marks):

Define a class `Car` with the following attributes:  
- `brand` (String)  
- `model` (String)  
- `year` (int)  
  
Use both instance and static variables. Create multiple objects to demonstrate how the static variable is shared across all instances.

### Question 6 (5 Marks):

Create a class `Counter` with a static variable `count`. Increment the count every time a new object of the class is created. In the `main` method, create three objects of `Counter` and display the value of `count`.

---

## Section D: Constructors (10 Marks)

### Question 7 (5 Marks):

Write a program to create a class `Student` with attributes `name` and `rollNumber`. Create a parameterized constructor to initialize these attributes. Display the student details using the constructor.

### Question 8 (5 Marks):

Create a class `Employee` with the following attributes:  
- `name` (String)  
- `salary` (double)  
  
Write a default constructor that sets default values for the attributes. Write another parameterized constructor to accept user-defined values. Test both constructors in the `main` method.

---

## Section E: Class Methods (10 Marks)

### Question 9 (5 Marks):

Write a program to define a class `Circle` with an attribute `radius`. Include a class method `calculateCircumference()` that returns the circumference of the circle. Test the method with a circle of radius 7.

### Question 10 (5 Marks):

Define a class `BankAccount` with attributes `accountNumber` and `balance`. Include a method `deposit(double amount)` to add money to the account. Demonstrate its usage in the `main` method.