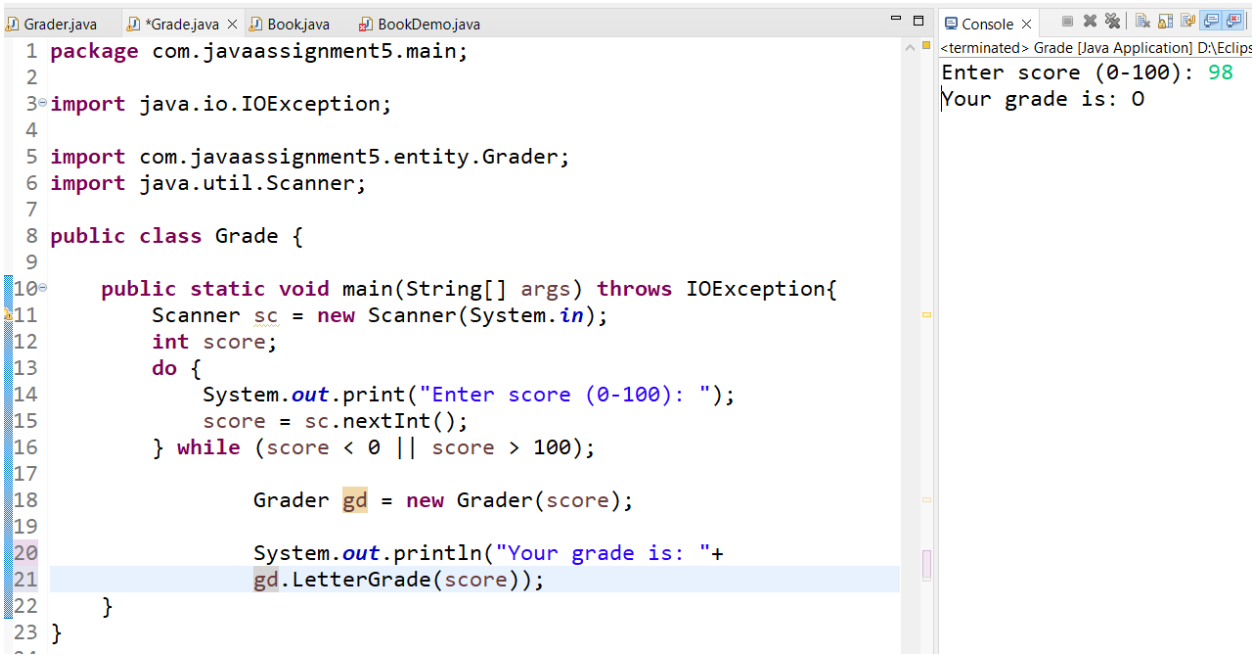
PG DAC–March 2023
C-DAC THIRUVANANTHAPURAM
JAVA- LAB 5

1. Write a class, Grader, which has a data member variable, score, an appropriate constructor and appropriate methods. A method, letterGrade() that returns the letter grade as O/E/A/B/C/F.

a) Now write a demo class to test the Grader class by reading a score from the user, using it to create a Grader object after validating that the value is not negative and is not greater than 100.

b) Finally, call the letterGrade () method to get and print the grade.




```java
package com.javaassignment5.main;

import java.io.IOException;

import com.javaassignment5.entity.Grader;
import java.util.Scanner;

public class Grade {

    public static void main(String[] args) throws IOException{
        Scanner sc = new Scanner(System.in);
        int score;
        do {
            System.out.print("Enter score (0-100): ");
            score = sc.nextInt();
        } while (score < 0 || score > 100);

                Grader gd = new Grader(score);

                System.out.println("Your grade is: "+
                gd.LetterGrade(score));
    }
}
```

Grader.java × Grade.java Book.java BookDemo.java

```java
package com.javaassignment5.entity;

public class Grader {
        private int score;

        public Grader(int score) {
        this.score = score;
        }
    public char LetterGrade(int score) {

        if (score >= 90) {
            return 'O';
        } else if (score >= 80) {
            return 'E';
        } else if (score >= 70) {
            return 'A';
        } else if (score >= 60) {
            return 'B';
        } else if (score >= 50) {
            return 'C';
        } else {
            return 'F';
        }
    }
}

```

2. Create a class named Book with data member's title, author and price. Write a parameterized constructor for the class. Write a function for displaying the details.

Book.java × BookDemo.java

```
1  package com.javaassignment52.entity;
2
3  public class Book {
4          private String title;
5          private String author;
6          private double price;
7
8          public Book(String title, String author, double price) {
9              this.title = title;
10             this.author = author;
11             this.price = price;
12         }
13
14         public void displayDetails() {
15             System.out.println("Title: " + title);
16             System.out.println("Author: " + author);
17             System.out.println("Price: $" + price);
18         }
19     }
20
```

Book.java BookDemo.java ×

```
1  package com.javaassignment52.main;
2
3  import com.javaassignment52.entity.Book;
4
5  public class BookDemo {
6
7      public static void main(String[] args) {
8          Book bk = new Book("Bhagwad Geeta", "Vyasa", 12.99);
9          bk.displayDetails();
10     }
11     }
12
```

Console ×

<terminated> BookDemo [Java Application] D:\E

```
Title: Bhagwad Geeta
Author: Vyasa
Price: $12.99
```

3. Create a class named Account with the data member's accno, custname, balamt. Initialize the data members with a parameterized constructor. Write a method to get the current balance. Create an object for the class and invoke the method.

```java
package com.javaassignment53.entity;

public class Account {
    private int accno;
    private String custname;
    private double amt;

     public Account(int accno, String custname, double amt) {
        this.accno = accno;
        this.custname = custname;
        this.amt = amt;
    }

    public double getAmt() {
        return amt;
    }
}
```

```
<terminated> AccountMain [Java Application] D:\Eclipse\eclips
Enter your Name:
Monika
Enter your Account number:
2345
Enter your Amount:
2355
Current balance is: 2355.0
```

Book.java | BookDemo.java | Account.java | AccountMain.java | Grade.java

```java
package com.javaassignment53.main;
import java.util.Scanner;
import java.io.IOException;

import com.javaassignment53.entity.Account;


public class AccountMain {
    public static void main(String[] args) throws IOException{
        Scanner sc = new Scanner(System.in);

        System.out.println("Enter your Name: ");
        String custname =sc.nextLine();

        System.out.println("Enter your Account number: ");
        int accno =sc.nextInt();

        System.out.println("Enter your Amount: ");
        double amt =sc.nextInt();

        Account bk=new Account(accno, custname,amt);
        System.out.println("Current balance is: " + bk.getAmt());

}
}
```

4. Create a class named Car with a default constructor which initializes the instance variable model with the string "Ford".

a) Write a parameterized constructor also to initialize model. Write a getModel() method to print the value of model.

b) Create two objects for the class using two constructors and invoke the getModel() method.

Book.java | BookDemo.java | Account.java | AccountMain.java | Car.java | CarMain.java

```
1  package com.javaassignment54.main;
2
3  import java.io.IOException;
4
5  import com.javaassignment54.entity.Car;
6
7  public class CarMain {
8      public static void main(String[] args) throws IOException{
9
10     Car cr1 = new Car();
11     Car cr2 = new Car("Hundai");
12
13     System.out.println("Default model name is: "+cr1.getModel());
14     System.out.println("New model name is:" +cr2.getModel());
15
16     }
17 }
18
```

Console

```
<terminated> CarMain [Java Application] D:\Eclipse\eclips
Default model name is: ford
New model name is:Hundai
```

Book.java | BookDemo.java | Account.java | AccountMain.java | Car.java

```
1  package com.javaassignment54.entity;
2
3  public class Car {
4
5      private String model;
6
7      public Car() {
8          this.model= "ford";
9      }
10     public Car(String model) {
11         this.model= "Hundai";
12     }
13     public String getModel() {
14         return model;
15     }
16 }
17
```

5. Create a class called Circle which contains:

I. Two private instance variables: radius (of the type double) and color (of the type String).
II. Two overloaded constructors: a default constructor with no argument which Initializes the instance variables with the value of 1.0 and red; respectively and a constructor which takes a double argument for radius and String argument for color.
III. Two public methods: getRadius() and getArea(), which return the radius and area of the instance, respectively.
Create two objects for the class using two constructors and invoke the methods.

```java
package com.javaassignment55.main;
import com.javaassignment55.entity.Circle;
public class CircleMain {

    public static void main(String[] args) {
        Circle c1 = new Circle();
        Circle c2 = new Circle(7.5, "blue");

        System.out.println("Circle 1:");
        System.out.println("Radius = " + c1.getRadius());
        System.out.println("Area = " + c1.getArea());

        System.out.println("Circle 2:");
        System.out.println("Radius = " + c2.getRadius());
        System.out.println("Area = " + c2.getArea());
    }

}

```

```
<terminated> CircleMain [Java Application] D:\Eclips
Circle 1:
Radius = 4.0
Area = 50.26548245743669
Circle 2:
Radius = 7.5
Area = 176.71458676442586
```

```java
package com.javaassignment55.entity;

public class Circle {
          private double radius;
          private String color;

          public Circle() {
            this.radius = 4.0;
            this.color = "red";
          }
          public Circle(double radius, String color) {
            this.radius = radius;
            this.color = color;
          }
          public double getRadius() {
            return this.radius;
          }
          public double getArea() {
            return Math.PI * Math.pow(this.radius, 2);
          }
}
```

6. Create a class with a static method that returns the maximum value of three given integers. Write another class with main method and call the static method to print the maximum value of three integers given by the user.

MaxValue.java | MaxMain.java

```
1  package com.javaassignment56.main;
2  import com.javaassignment56.entity.MaxValue;
3  import java.util.Scanner;
4
5  public class MaxMain {
6
7      public static void main(String[] args) {
8              Scanner scanner = new Scanner(System.in);
9              System.out.println("Enter three integers:");
10             int num1 = scanner.nextInt();
11             int num2 = scanner.nextInt();
12             int num3 = scanner.nextInt();
13             int max = MaxValue.getMaxValue(num1, num2, num3);
14             System.out.println("The maximum value is: " + max);
15         }
16     }
17
```

Console

```
<terminated> MaxMain [Java Application] D:\Eclipse\
Enter three integers:
10 20 30
The maximum value is: 30
```

MaxValue.java | MaxMain.java

```
1  package com.javaassignment56.entity;
2
3  public class MaxValue {
4      public static int getMaxValue(int num1, int num2, int num3) {
5          int max = num1;
6          if (num2 > max) {
7              max = num2;
8          }
9          if (num3 > max) {
10             max = num3;
11         }
12         return max;
13     }
14 }
15
```