Object Oriented Programming Lab File

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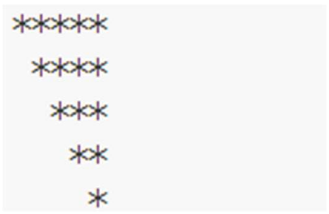
Experiment 2: Basic Java Programming

1. Print this Pattern:

```
*****
 ****
  ***
   **
    *
```

```
public class question1Pattern {
    public static void main(String[] args) {
        for (int i = 5; i > 0; i--){
            System.out.print(" ".repeat(5-i));
            System.out.println("*".repeat(i));
        }
    }
}
```



2. **Write a Java program that calculates the electricity bill based on the number of units consumed by a user. The electricity charges are determined as follows:**

- For consumption between 1 and 100 units, the cost is Rs 5 per unit.
- For consumption between 101 and 200 units, the cost is Rs 7 per unit.
- For consumption between 201 and 300 units, the cost is Rs 10 per unit.
- For consumption exceeding 300 units, the cost is Rs 15 per unit.

The program should:

1. Take the total units consumed as input.
2. Calculate the total electricity bill based on the charges above.
3. Display the total electricity bill.

Example Input/Output:

- Input: 150
- Output: The total electricity bill is Rs 850.

```
import java.util.Scanner;
public class question2Bill {
    public static int calculateBill(int totalUnits){
        int charge = 0, currentBracket = 0;
        int chargeBrackets[] = {5,7,10,15};
        while (totalUnits >= 100 && currentBracket < 3){
            charge += chargeBrackets[currentBracket] * 100;
            totalUnits -= 100;
            currentBracket += 1;
        }
        charge += totalUnits>0 ? (chargeBrackets[currentBracket] * totalUnits):0;
        return charge;
    }

    public static void main(String[] args) {
        int totalUnits, charge;
        try (Scanner in = new Scanner(System.in)){
            System.out.print("Enter total Units: ");
            totalUnits = in.nextInt();
        }
        charge = calculateBill(totalUnits);
        System.out.println("Total Bill: " + charge);
    }
}
```

```
Enter total Units: 150
Total Bill: 850
```

3. Write a program to find the area of a shape (Rectangle, Square, Circle, Triangle) using method overloading.

```
public class question3Area {
    static int area(int length, int height){
        return length*height;
    }
    static double area(double radius){
        return Math.PI * radius * radius;
    }
    static int area(int length){
        return length*length;
    }
    static double area(double  height, int base){
        return 0.5*height*base;
    }
    public static void main(String[] args) {
        System.out.println("Square: " + area(10));
        System.out.println("Sphere: " + area(5.0));
        System.out.println("Rectangle: " + area(5,2));
        System.out.println("Triangle: " + area(5.0,2));
    }

}
```

```
Square: 100
Sphere: 78.53981633974483
Rectangle: 10
Triangle: 5.0
```

4. Write a Java program that takes an operator (+, -, *, /, %) and two numbers as input from the user. Use a switch statement to perform the specified operation and display the result.

```
import java.util.Scanner;
public class question4Calculate {
    public static void main(String[] args) {
        float a, b;
        String op;
        try (Scanner in = new Scanner(System.in)){
            System.out.print("Enter the operator(+,-,*,/,%): ");
            op = in.next();
            System.out.println("Enter first Number: ");
            a = in.nextFloat();
            System.out.println("Enter second Number: ");
            b = in.nextFloat();
        }
        float res = switch(op){
            case "+" -> a+b;
            case "-" -> a-b;
            case "*" -> a*b;
            case "/" -> a/b;
            case "%" -> a%b;
            default -> 0;
        };
        System.out.println("Resut: " + res);
    }
}
```

```
Enter the operator(+,-,*,/,%): /
Enter first Number:
8
Enter second Number:
4
Resut: 2.0
```