**BITS PILANI, DUBAI CAMPUS**

**DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI**

**FIRST SEMESTER 2021 – 2022**

**COURSE:** F213 (Object Oriented Programming)

**COMPONENT:** Practical Sheet 2 **DATE:**14th-19thSeptember 2021

## Q.1 Program to find the smallest of three numbers using ternary operator.

**Solution:**

import java.util.Scanner;

public class Smallest

{

public static void main(String[] args)

{

    int a, b, c, smallest;

    Scanner sc = new Scanner(System.in);

    System.out.println("Enter the first number:");

    a = sc.nextInt();

    System.out.println("Enter the second number:");

    b = sc.nextInt();

    System.out.println("Enter the third number:");

    c = sc.nextInt();

    smallest = c < (a < b ? a : b) ? c : ((a < b) ? a : b);

    System.out.println("The smallest number is: "+smallest);

    }

}

**Output:**

Text

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## Q.2. Write a program to calculate the area of geometric objects like square, triangle, circle, rectangle and cylinder using methods. Call the appropriate method by its name from main() method.

**Solution:**

import java.util.Scanner;

public class Area {

    static void square(){

        Scanner sc = new Scanner(System.in);

        System.out.println("Input the side: ");

        float side = sc.nextFloat();

        System.out.printf("Area is: %.2f", side\*side);

    }

    static void triangle(){

        Scanner sc = new Scanner(System.in);

        System.out.println("Input the base: ");

        float base = sc.nextFloat();

        System.out.println("Input the height: ");

        float height = sc.nextFloat();

        System.out.printf("Area is: %.2f", 0.5 \* base \* height);

    }

    static void circle(){

        Scanner sc = new Scanner(System.in);

        System.out.println("Input the radius: ");

        float radius = sc.nextFloat();

        System.out.printf("Area is: %.2f", Math.PI \* radius \* radius);

    }

    static void rectangle(){

        Scanner sc = new Scanner(System.in);

        System.out.println("Input the length: ");

        float l = sc.nextFloat();

        System.out.println("Input the breadth: ");

        float b = sc.nextFloat();

        System.out.printf("Area is: %.2f", l \* b);

    }

    static void cylinder(){

        Scanner sc = new Scanner(System.in);

        System.out.println("Input the radius: ");

        float r = sc.nextFloat();

        System.out.println("Input the height: ");

        float h = sc.nextFloat();

        System.out.printf("Area is: %.2f", (2 \* Math.PI \* r \*h) + (2 \* Math.PI \* r \*r));

    }

    public static void main(String[] args)

    {

        Scanner sc = new Scanner(System.in);

        while(true){

            System.out.println("Please select the shape you want to find area of: ");

            System.out.println("1: Square");

            System.out.println("2: Triangle");

            System.out.println("3: Circle");

            System.out.println("4: Rectangle");

            System.out.println("5: Cylinder");

            System.out.println("Input Your Choice: ");

            int choice = sc.nextInt();

            if(choice == 1){

                square();

                break;

            }

            else if(choice == 2){

                triangle();

                break;

            }

            else if(choice == 3){

                circle();

                break;

            }

            else if(choice == 4){

                rectangle();

                break;

            }

            else if(choice == 5){

                cylinder();

                break;

            }

            else{

                System.out.println("Sorry! Invalid choice. Please choose again.");

            }

        }

    }

}

**Output:**

## Text Description automatically generated

## Q.3. Generate all the prime numbers between a specified range.

## a. Read the lower and upper bound as input from the user

## b. Read the lower and upper bound as command line arguments.

**Solution:**

**(a)**

import java.util.Scanner;

public class GenPrime {

    static boolean check(int n){

        if(n<2){

            return false;

        }

        else if (n == 2){

            return true;

        }

        else if (n % 2 == 0){

            return false;

        }

        for (int i =3; i<= Math.sqrt(n); i+=2){

            if (n % i == 0){

                return false;

            }

        }

        return true;

        }

    public static void main(String[] args)

    {

        Scanner sc = new Scanner(System.in);

        int a, b, i;

        System.out.println("Enter lower bound of the interval: ");

        a = sc.nextInt();

        System.out.println("Enter upper bound of the interval: ");

        b = sc.nextInt();

        System.out.println("Prime numbers between %d and %d are: ", a, b);

        for (i = a; i <= b; i++) {

            if(check(i)){

                System.out.print(i + " ");

            }

        }

    }

}

**Output:**

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**(b)**

import java.util.\*;

public class GenPrimecommand {

    static boolean check(int n){

        if(n<2){

            return false;

        }

        else if (n == 2){

            return true;

        }

        else if (n % 2 == 0){

            return false;

        }

        for (int i =3; i<= Math.sqrt(n); i+=2){

            if (n % i == 0){

                return false;

            }

        }

        return true;

        }

    public static void main(String[] args)

    {

        Scanner sc = new Scanner(System.in);

        int i;

        if(args.length > 0)

           {

                try{

                    int a = Integer.parseInt(args[0]);

                    int b = Integer.parseInt(args[1]);

                    System.out.printf("Prime numbers between %d and %d are: ", a, b);

                    for (i = a; i <= b; i++){

                        if(check(i)){

                            System.out.print(i + " ");

                        }

                    }

                }

               catch(NumberFormatException nfe)

                 {

                     System.out.println("Argument/s must be the integer value");

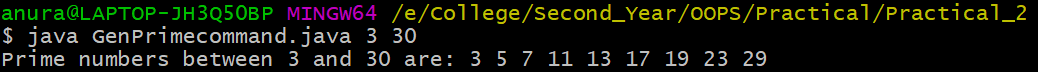
                 }

           }

    }

}

**Output:**

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## Q.4. Write a program to develop an Arithmetic Calculator Application. Read the two operands and the operator from the user. Use a switch statement to check the operator type and perform the appropriate calculation.

**Solution:**

import java.util.Scanner;

class Calc {

  public static void main(String[] args) {

    char operator;

    Double number1, number2, result;

    Scanner input = new Scanner(System.in);

    System.out.println("Enter first number: ");

    number1 = input.nextDouble();

    System.out.println("Enter second number: ");

    number2 = input.nextDouble();

    System.out.println("Choose an operator: +, -, \*, or /: ");

    operator = input.next().charAt(0);

    switch (operator) {

      case '+':

        result = number1 + number2;

        System.out.println(number1 + " + " + number2 + " = " + result);

        break;

      case '-':

        result = number1 - number2;

        System.out.println(number1 + " - " + number2 + " = " + result);

        break;

      case '\*':

        result = number1 \* number2;

        System.out.println(number1 + " \* " + number2 + " = " + result);

        break;

      case '/':

        result = number1 / number2;

        System.out.println(number1 + " / " + number2 + " = " + result);

        break;

      default:

        System.out.println("Invalid operator!");

        break;

    }

    input.close();

  }

}

**Output:**

Text

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