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19BCE245

Practical 4

OOP Lab

Practical 4 A

Write a Java program to decide the following information based on Body Mass Index. Let the user enter height in feet and inch and weight in pounds (lb). (Hint: 1 feet = 12 inches). Based on BMI computed, print relevant message i.e if BMI is <18.5 print "Person is Under-weight", if BMI is >18.5 & < 24.9 print "Person is having Normal BMI" & if BMI is >25 & <29.9 print "Person is Over-weight", if BMI>30 print "Person Is Obese".

CODE

```
import java.util.Scanner;
class Prac4a {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter your HEIGHT : \nFeet : ");
		int feet = sc.nextInt();
		System.out.print("Inches : ");
		int inches = sc.nextInt();
		System.out.print("Enter your weight [in pounds (lb)] : ");
		float weight = sc.nextFloat();
		inches+=feet*12;
		System.out.println("Your Body Mass Index [BMI] is : " + ((703 * weight) /
(inches*inches)));
		if(((703 * weight) / (inches*inches))<18.5)
		System.out.println("You are UNDER-WEIGHT :(");
		else if(((703 * weight) / (inches*inches))>18.5 && ((703 * weight) /
(inches*inches))<24.9)
		System.out.println("You are having Normal BMI :)");
		else if(((703 * weight) / (inches*inches))>25 && ((703 * weight) /
(inches*inches))<29.9)
		System.out.println("You are OVER-WEIGHT :(");
```

```
            else
            System.out.println("You are OBESE :((");
      }
}
```

INPUT :

```
5
1
121
```

OUTPUT :

```
Enter your HEIGHT :
Feet : 5
Inches : 1
Enter your weight [in pounds (lb)] : 121
Your Body Mass Index [BMI] is : 22.860252
You are having Normal BMI :)
```

Run Succeeded | Time 219 ms | Prac4a | Tabs: 4 | Line 22, Column 2

Practical 4 B

Write a Java program to find all even numbers between1 and a given number given as input by user.

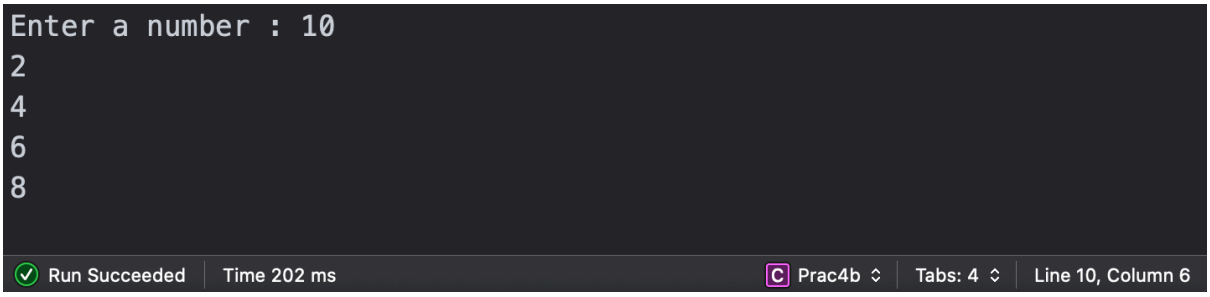
CODE

```
import java.util.Scanner;
class Prac4b {
      public static void main(String[] args) {
            Scanner sc = new Scanner(System.in);
            System.out.print("Enter a number : ");
            int n = sc.nextInt();
            for (int i=1;(n%2==0)?i<n/2:i<=n/2;i++) {
                  System.out.println(i*2);
            }
      }
}
```

INPUT :

10

OUTPUT :



Practical 4 C (i)

Check whether a number is odd or even (using if – else statement)

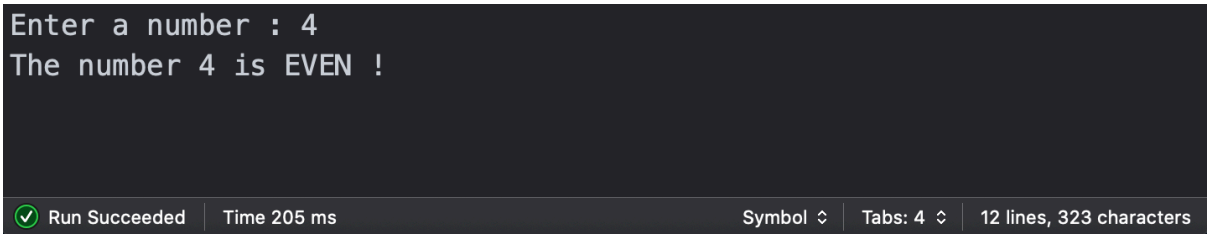
CODE

```
import java.util.Scanner;
class Prac4c1 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a number : ");
		int n = sc.nextInt();
		if(n%2==0)
		System.out.println("The number " + n + " is EVEN !");
		else
		System.out.println("The number " + n + " is ODD !");
	}
}
```

INPUT :

4

OUTPUT :



Practical 4 C (ii)

Check the category of a given character. (using if…else…if ladder)

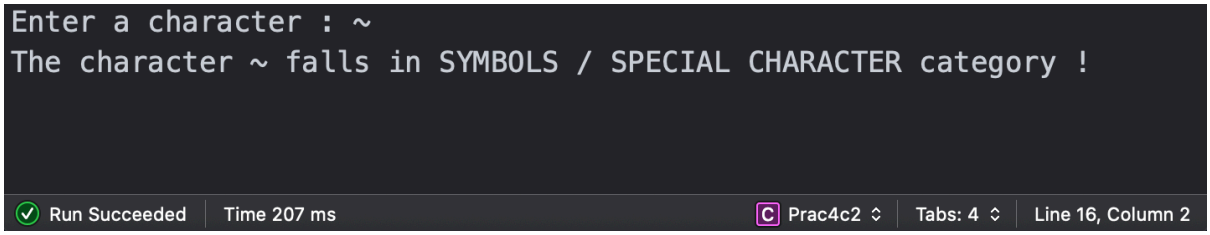
CODE

```
import java.util.Scanner;
class Prac4c2 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a character : ");
		char character = sc.next().charAt(0);
		if(character>=48 && character<=57)
		System.out.println("The character " + character + " falls in DIGIT
category !");
		else if(character>=65 && character<=90)
		System.out.println("The character " + character + " falls in UPPER CASE
category !");
		else if(character>=97 && character<=122)
		System.out.println("The character " + character + " falls in LOWER CASE
category !");
		else
		System.out.println("The character " + character + " falls in SYMBOLS /
SPECIAL CHARACTER category !");
	}
}
```

INPUT :

~

OUTPUT :



Practical 4 C (iii)

Check whether a number is prime or not. (using for loop)

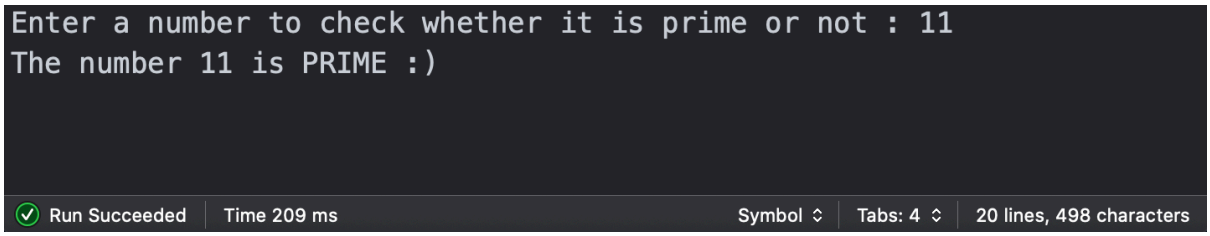
CODE

```
import java.util.Scanner;
import java.lang.Math;
class Prac4c3 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a number to check whether it is prime or not : ");
		int n = sc.nextInt();
		int flag=1;
		for(int i=2;i<=Math.sqrt(n);i++){
			if(n%i==0){
				flag=0;
				break;
			}
		}
		if(n==1 || flag==0)
		System.out.println("The number " + n + " is not PRIME :(");
		else
		System.out.println("The number " + n + " is PRIME :)");
	}
}
```

INPUT :

11

OUTPUT :



Practical 4 C (iv)

Display reverse of a number and check whether it is palindrome or not. (using while/do while loop)

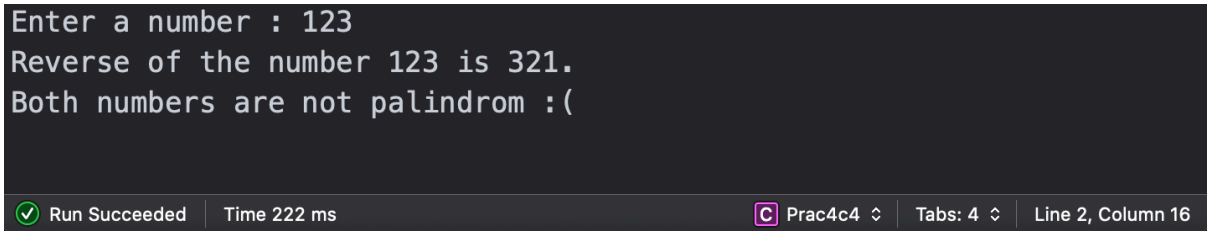
CODE

```
import java.util.Scanner;
class Prac4c4 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a number : ");
		int n = sc.nextInt();
		int temp=n;
		int reverse=0;
		while(temp!=0){
			reverse=(reverse*10)+(temp%10);
			temp/=10;
		}
		System.out.println("Reverse of the number " + n + " is " + reverse + ".");
		if(reverse==n)
		System.out.println("Both numbers are palindrom :)");
		else
		System.out.println("Both numbers are not palindrom :(");
	}
}
```

INPUT :

123

OUTPUT :



Practical 4 C (v)

Perform arithmetic operations of a calculator. (using switch case)

CODE

```
import java.util.Scanner;
class Prac4c5 {
	public static void main(String[] args) {
		System.out.println("ARITHMATIC OPERATORS : ");
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter the first number : ");		//asks user to enter the first number
		double n1 = sc.nextDouble();	//scans double as first number
		System.out.print("Enter the second number : ");	//asks user to enter the second number
		double n2 = sc.nextDouble();	//scans double as second number
		System.out.print("Enter an arithmatic operator ['*' or '/' or '%' or '+' or '-'] to perform action between two integer : ");		//asks user to enter a string (char)
		char operator = sc.next().charAt(0);	//scans a char
		double answer=0;
		switch (operator) {
			case '+':
				answer = n1 + n2;
				break;
			case '-':
				answer = n1 - n2;
				break;
			case '*':
				answer = n1 * n2;
				break;
			case '/':
				answer = n1 / n2;
				break;
```

```
                case '%':
                        answer = n1 % n2;
                        break;
                default:
                        System.out.println("Invalid operator :(");
                        break;
            }
            System.out.println(n1 + " " + operator + " " + n2 + " = " + answer);
        }
}
```

INPUT :

```
5
4
*
```

OUTPUT :

```
ARITHMATIC OPERATORS :
Enter the first number : 5
Enter the second number : 4
Enter an arithmatic operator ['*' or '/' or '%' or '+' or '-'] to
perform action between two integer : *
5.0 * 4.0 = 20.0

Run Succeeded | Time 250 ms | main | Tabs: 4 | Line 7, Column 65
```

Practical 4 C (iv)

Pattern printing. (using nested loops)

```
     1
   1 2
 1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
```

CODE

```
import java.util.Scanner;
class Prac4c6 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number of row : ");
		int n = sc.nextInt();
		int count = 1;
		for(int i=0;i<n;i++){
			count = 1;
			for(int j=0;j<n;j++){
				if(j<(n-i-1))
				System.out.print("  ");
				else
				System.out.print(count++ + " ");
			}
			System.out.println();
		}
	}
}
```

INPUT :

6

OUTPUT :

```
Enter the number of row :
6
          1
        1 2
      1 2 3
    1 2 3 4
  1 2 3 4 5
1 2 3 4 5 6

Run Succeeded | Time 206 ms | main | Tabs: 4 | Line 7, Column 23
```

FINAL CONCLUSION :

From the practical 4, we understood of the concepts of control statements such as for, while, do while, if-else and switch case.