PROGRAMMING IN JAVA LAB ASSIGNMENT-1

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BATCH- AIML A1

Program Description- Part1: Implement a menu-driven Java program (like fib or factorial) to implement these input methods in java (command line args, Scanner, Buffered Reader, DataInputStream, Console)

Part 2: Implement a simple menu driven calculator in java to implement add, sub, mul, div, sqrt, power, mean, variance. Implement a separate Calculator class to include all related function inside that class. (mean calculation: program reads numbers from the keyboard, summing them in the process until the user enters the string “end”. It then stops input & displays the avg. of numbers)

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PART-1

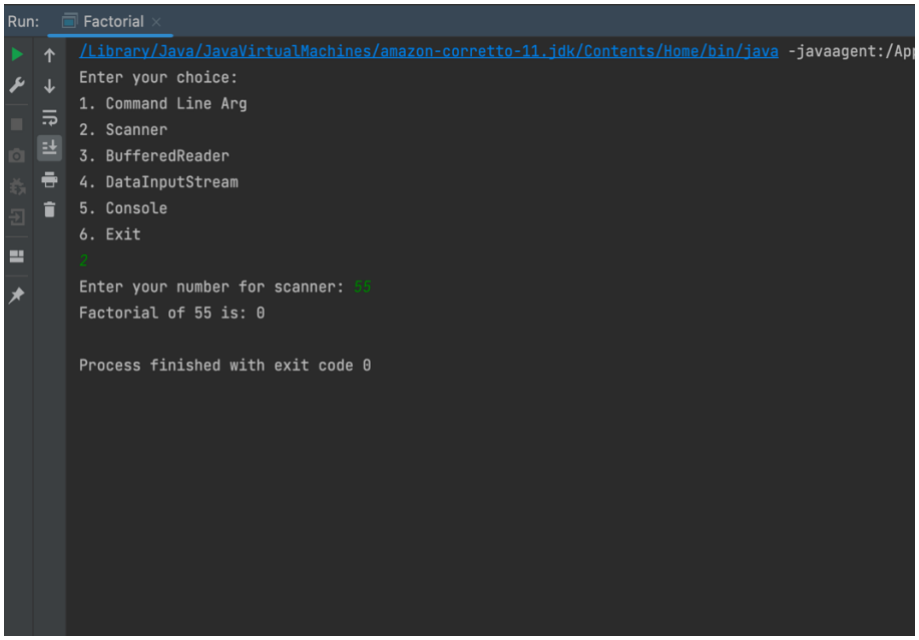
CODE:

```
import java.io.*;
import java.util.Scanner;

class Get_Factorial {

void fetch_fact(int n) {

int fact = 1;
for(int i=1; i<=n; i++) {

fact = fact*i; }

System.out.println("Factorial of "+n+" is: "+fact); }

}

public class Factorial {

public static void main(String[] args) throws IOException

{
Get_Factorial obj1 = new Get_Factorial();
BufferedReader b = new BufferedReader(new InputStreamReader(System.in));
```

```
//creating a menu
int choice;
System.out.println("Enter your choice: "); System.out.println("1. Command Line Arg");
System.out.println("2. Scanner"); System.out.println("3. BufferedReader"); System.out.println("4.
DataInputStream"); System.out.println("5. Console"); System.out.println("6. Exit");
choice = Integer.parseInt(b.readLine());

if(choice == 1) {

obj1.fetch_fact(Integer.parseInt(args[0])); }

else if(choice == 2) {

Scanner myObj = new Scanner(System.in); System.out.print("Enter your number for scanner: "); int a
= myObj.nextInt();
obj1.fetch_fact(a);
myObj.close();

}
else if(choice == 3) {

BufferedReader a1 = new BufferedReader(new InputStreamReader(System.in));
System.out.print("Enter your number for BufferReader: ");

String n = a1.readLine();
int n1 = Integer.parseInt(n); obj1.fetch_fact(n1);

}
else if(choice == 4) {

DataInputStream a2 = new DataInputStream(new
FileInputStream("C:\\Users\\aayush\\OneDrive\\Desktop\\JAVA\\input.txt"));

String s = a2.readLine();
int n2 = Integer.parseInt(s); obj1.fetch_fact(n2); a2.close();

}
else if(choice == 5) {

Console a3 = System.console(); System.out.print("Enter your number for console: "); int n3 =
Integer.parseInt(a3.readLine()); obj1.fetch_fact(n3);

}
else if(choice == 6) {

System.exit(0); }

else {

System.out.println("Invalid choice"); }
```

} }

OUTPUT:



PART-2
CODE:

import java.io.*; import java.util.*; public class Calculator {

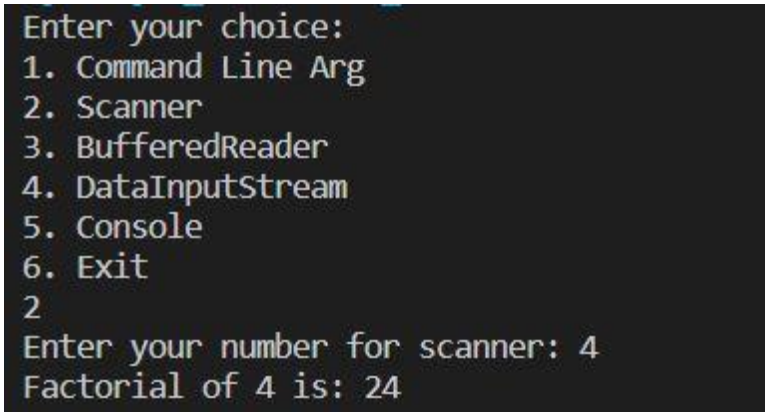
public static void main(String[] args) { Scanner reader = new Scanner(System.in); int m,k=0,gcd=1;

System.out.print("Menu:\n1)add\n2)sub\n3)mul\n4)div\n5)sqrt\n6)power\n7)mean\n8)variance\n9)GCD\n");

System.out.print("Enter choice: "); int i = reader.nextInt();
double first,second;
double result;

switch(i) {

case 1:
System.out.print("Enter first number: "); first = reader.nextDouble(); System.out.print("Enter second number: "); second = reader.nextDouble();



result = first + second; System.out.printf("%.1f + %.1f = %.1f",

first,second, result); break;

case 2:
System.out.print("Enter first number: "); first = reader.nextDouble(); System.out.print("Enter second number: "); second = reader.nextDouble();
result = first - second; System.out.printf("%.1f - %.1f = %.1f",

first,second, result); break;

case 3:
System.out.print("Enter first number: "); first = reader.nextDouble(); System.out.print("Enter second number: "); second = reader.nextDouble();
result = first * second; System.out.printf("%.1f * %.1f = %.1f",

first,second, result); break;

case 4:
System.out.print("Enter first number: "); first = reader.nextDouble(); System.out.print("Enter second number: "); second = reader.nextDouble();
result = first / second; System.out.printf("%.1f / %.1f = %.1f",

first,second, result); break;

case 5:
System.out.print("Enter second number: "); second = reader.nextDouble();
result = Math.sqrt(second); System.out.printf("Square root of %.1f = %.1f",

second, result); break;

case 6:
System.out.print("Enter first number: ");
first = reader.nextDouble(); System.out.print("Enter power: ");
int p = reader.nextInt();
result = Math.pow(first,p); System.out.printf("Power %d of %.1f = %.1f",p,first,

result); break;

```
case 7:

Scanner sc = new Scanner(System.in); String s = "";
int count=0;
int total=0;

double avg=0;
int n;
System.out.print("Please enter end to stop taking input: "); while (true)
{

String input = sc.nextLine(); if(input.equals("end")) break;

else {

n = Integer.parseInt(input); count+=1;
total += n;
avg=total/n;

}

}
System.out.println("Mean is "+avg);

case 8:
System.out.print("Enter how many numbers you want to enter: "); int o = reader.nextInt();
int ar[]=new int[o];
for(int l=0;l<o;l++)
{

ar[l] = reader.nextInt();

k=k+ar[l];; }

int mean=k/o;
double sqDiff = 0;
for (int q = 0; q < o; q++)

sqDiff += (ar[q] - mean) * (ar[q] - mean); result=sqDiff/o; System.out.printf("Variance = %.3f", result);
break;

case 9:
System.out.print("Enter first number: ");

int n1 = reader.nextInt(); System.out.print("Enter second number: "); int n2 = reader.nextInt();
for(int h = 1; h <= n1 && h <= n2; ++h)
{

if(n1 % h==0 && n2 % h==0) gcd = h;
```

}
System.out.printf("G.C.D of %d and %d is %d", n1,

n2, gcd); break;

default:
System.out.printf("Wrong choice"); return;

} }

}

OUTPUT: