PROGRAMMING IN JAVA LAB-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)

//

Part-1

```
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
```

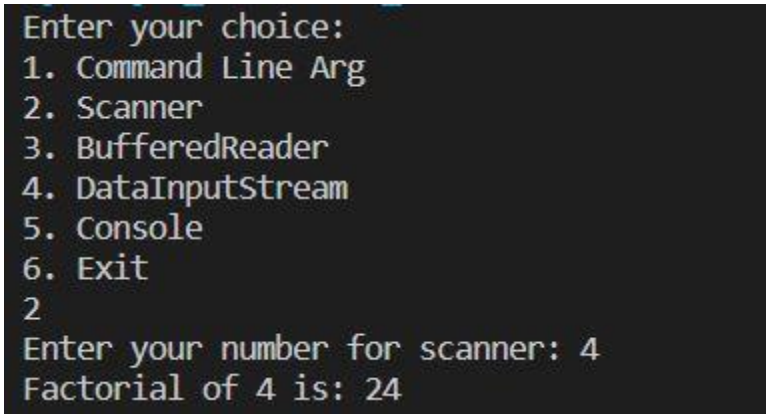
```
{
    Get_Factorial obj1 = new Get_Factorial();
    BufferedReader b = new BufferedReader(new InputStreamReader(System.in));

    //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\\nayye\\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

```
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:

```
Menu:
1)add
2)sub
3)mul
4)div
5)sqrt
6)power
7)mean
8)variance
9)GCD
Enter choice: 7
Please enter end to stop taking input: 12
45
8
5
end
Mean is 14.0
Enter how many numbers you want to enter:
```

GITHUB LINK: https://github.com/akhilrastogi10/java-sem-4.git