ASSIGNMENT 1

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

Part2: 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)*/

```
import java.util.Scanner;
import java.io.*;
public class input_calculator {
public static void main(String[] args) throws IOException, ArrayIndexOutOfBoundsException{
{//commandline arguments
System.out.println("Input taken trough commandline arguments: ");
System.out.print("Enter a number: ");
int num1 = Integer.parseInt(args[0]);
System.out.println("Number entered (commandline): " + num1);
//input option
input_options.input();
//calculator
calculator.calculation();}
}
}
class input_options {
static void input() throws IOException{
// Scanner object
Scanner Sc = new Scanner(System.in);
System.out.println("Input taken trough Scanner object: ");
System.out.print("Enter a number: ");
int num = Sc.nextInt();
System.out.println("Number entered (Scanner): " + num);
```

```
//BufferedReader object
InputStreamReader r= new InputStreamReader(System.in);
BufferedReader br = new BufferedReader(r);
System.out.println("Input taken trough BufferedReader object: ");
System.out.print("Enter a number: ");
String n = br.readLine();
int num2 = Integer.parseInt(n);
System.out.println("Number entered (BufferedReader): " + num2);
//DataInputStream object
DataInputStream data = new DataInputStream(System.in);
System.out.println("Input taken trough DataInputStream object: ");
System.out.print("Enter a number: ");
int num3 = Integer.parseInt(data.readLine());
System.out.println("Number entered (DataInputStream): " + num3);
//console object
Console c = System.console();
System.out.println("Input taken trough console object: ");
System.out.print("Enter a number: ");
int num4 = Integer.parseInt(c.readLine());
System.out.println("Number entered (console): " + num4);
}
}
class calculator {
static void calculation() {
Scanner Sc = new Scanner(System.in);
while (true) {
System.out.println("Menu:");
System.out.println("1. Add");
System.out.println("2. Sub");
System.out.println("3. Multiply");
System.out.println("4. Divide");
```

```
System.out.println("5. Square Root");
System.out.println("6. Power");
System.out.println("7. Mean");
System.out.println("8. Variance");
System.out.println("9. Exit");
System.out.print("Enter your choice: ");
int choice = Sc.nextInt();
switch (choice) {
case 1:
System.out.print("Enter first number: ");
double num1 = Sc.nextDouble();
System.out.print("Enter second number: ");
double num2 = Sc.nextDouble();
System.out.println("Result: " + (num1 + num2));
break;
case 2:
System.out.print("Enter first number: ");
num1 = Sc.nextDouble();
System.out.print("Enter second number: ");
num2 = Sc.nextDouble();
System.out.println("Result: " + (num1 - num2));
break;
case 3:
System.out.print("Enter first number: ");
num1 = Sc.nextDouble();
System.out.print("Enter second number: ");
num2 = Sc.nextDouble();
System.out.println("Result: " + (num1 * num2));
break;
case 4:
System.out.print("Enter first number: ");
```

```
num1 = Sc.nextDouble();
System.out.print("Enter second number: ");
num2 = Sc.nextDouble();
System.out.println("Result: " + (num1 / num2));
break;
case 5:
System.out.print("Enter number: ");
num1 = Sc.nextDouble();
System.out.println("Result: " + Math.sqrt(num1));
break;
case 6:
System.out.print("Enter base: ");
num1 = Sc.nextDouble();
System.out.print("Enter exponent: ");
int exponent = Sc.nextInt();
System.out.println("Result: " + Math.pow(num1, exponent));
break;
case 7:
double sum = 0;
int count = 0;
String input;
System.out.println("Enter numbers one by one, enter 'end' to stop input:");
while (true) {
input = Sc.next();
if (input.equalsIgnoreCase("end")) {
break;
}
sum += Double.parseDouble(input);
count++;
}
System.out.println("Mean: " + (sum / count));
```

```
break;
case 8:
sum = 0;
count = 0;
double mean = 0;
double variance = 0;
System.out.println("Enter numbers one by one, enter 'end' to stop input:");
while (true) {
input = Sc.next();
if (input.equalsIgnoreCase("end")) {
break;
}
double num = Double.parseDouble(input);
sum += num;
count++;
}
mean = sum / count;
Sc = new Scanner(System.in);
System.out.println("Enter numbers one by one, enter 'end' to stop input:");
while (true) {
input = Sc.next();
if (input.equalsIgnoreCase("end")) {
break;
}
double num = Double.parseDouble(input);
variance += Math.pow((num - mean), 2);
}
variance = variance / count;
System.out.println("Variance: " + variance);
break;
case 9:
```

```
System.out.println("Exiting...");
System.exit(0);
break;
default:
System.out.println("Invalid choice!");
break;
}
 }
}
}
```

OUTPUT

Input taken trough scanner object:

Enter a number: 3

Number entered Input taken trough scanner object:

Enter a number: 1

Number entered (scanner): 1

Input taken trough BufferedReader object:

Enter a number: 2

Number entered (BufferedReader): 2

Input taken trough DataInputStream

object:

Enter a number: 3

Number entered (DataInputStream): 3Input taken trough console object:

Enter a number: 4

Number entered (console): 4

Menu:

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square Root

6. Power

7. Mean

8. Variance

9. Exit

Enter your choice: 2

Enter first number: 5

Enter second number: 3

Result: 2.0

Menu:

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square Root

6. Power

7. Mean

8. Variance

9. Exit

Enter your choice: 6

Enter base: 4

Enter exponent: 6

Result: 4096.0

Menu:

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square Root

6. Power

7. Mean

8. Variance

9. Exit

Enter your choice: 5

Enter number: 144

Result: 12.0

Menu:

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square Root

6. Power

7. Mean

8. Variance

9. Exit

Enter your choice: 9

Exiting...(scanner): 3

Input taken trough BufferedReader object:

Enter a number: 5

Number entered (BufferedReader): 5

Input taken trough DataInputStream

object:

Enter a number: 7

Number entered (DataInputStream): 7Input taken trough console object:

Enter a number: 10

Number entered (console): 10

Menu:

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square Root

6. Power

7. Mean

8. Variance

9. Exit

Enter your choice: 3

Enter first number: 4

Enter second number: 7

Result: 28.0

Menu:

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square Root

6. Power

7. Mean

8. Variance

9. Exit

Enter your choice: 9

Exiting...

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