LABEXERCISE#1 - ALGORITHM DEVELOPMENT

MR. Nonato wants to create a java program: arithmetic sequence finder. The program will ask to input 6 integer arithmetic sequences saved in an array (e.g 2 4 6 8). The program will ask for a particular nth number and display the specified number. The program can also determine if the number series is not an arithmetic sequence.

Sample Output:

```
Enter the 6 numbers of the arithmetic sequence:
2
4
6
8
10
12
The common difference in the arithmetic sequence is 2
Enter the series to find: 8
The 8th number in the series is 16
```

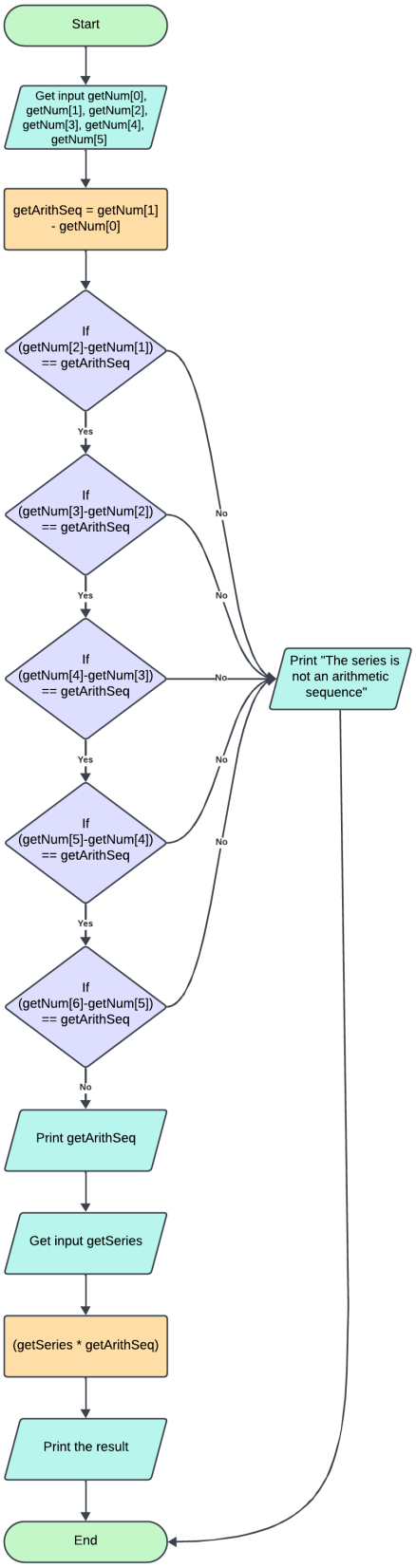
```
Enter the 6 numbers of the arithmetic sequence:
2
4
5
8
9
10
The series is not an arithmetic sequence
```

Create the following:
> Pseudocode
> Flowchart (https://www.lucidchart.com)
> Java Program Implementation using java netbeans

PSEUDOCODE

1. Start the program
2. Get the 1st to 6th number and save in array variable **int getNum[] = new int[5]**
3. Subtract the **getNum[1]** to **getNum[0]** and save the result in the variable **getArithSeq** using the formula **getArithSeq** = **getNum[1]** – **getNum[0]**
4. Subtract **getNum[2]** to **getNum[1]** and compare the result to **getArithSeq**; if the result is equal to the **getArithSeq**, proceed to the next step; otherwise, terminate the program and skip to Step 9
5. Subtract **getNum[3]** to **getNum[2]** and compare the result to **getArithSeq**; if the result is equal to the **getArithSeq**, proceed to the next step; otherwise, terminate the program and skip to Step 9
6. Subtract **getNum[4]** to **getNum[3]** and compare the result to **getArithSeq**; if the result is equal to the **getArithSeq**, proceed to the next step; otherwise, terminate the program and skip to Step 9
7. Subtract **getNum[5]** to **getNum[4]** and compare the result to **getArithSeq**; if the result is equal to the **getArithSeq**, proceed to the next step; otherwise, terminate the program and skip to Step 9
8. Subtract **getNum[6]** to **getNum[5]** and compare the result to **getArithSeq**; if the result is equal to the **getArithSeq**, proceed to the next step; otherwise, terminate the program and skip to Step 9
9. If all the result are equal to variable **getArithSeq**, display the value of variable **getArithSeq**; otherwise, display "The series is not an arithmetic sequence" and terminate the program then skip to Step 13
10. Get the series to find and save in variable **getSeries**
11. Multiply the variable **getSeries** to **getArithSeq** and display the result
12. End the program

FLOWCHART


Start
Get input getNum[0], getNum[1], getNum[2], getNum[3], getNum[4], getNum[5]
getArithSeq = getNum[1] - getNum[0]
If (getNum[2]-getNum[1]) == getArithSeq
If (getNum[3]-getNum[2]) == getArithSeq
If (getNum[4]-getNum[3]) == getArithSeq
If (getNum[5]-getNum[4]) == getArithSeq
If (getNum[6]-getNum[5]) == getArithSeq
Yes
No
Print "The series is not an arithmetic sequence"
Print getArithSeq
Get input getSeries
(getSeries * getArithSeq)
Print the result
End

JAVA PROGRAM

vinasAct1.java 1

D: > BSIT-3F(AY 2024-2025) > EVENT DRIVEN PROGRAMMING > vinasAct1.java > vinasAct1 > main(String[])

```java
import java.util.Scanner;
public class vinasAct1 {
    Run | Debug
    public static void main (String[] args){
        Scanner input = new Scanner(System.in);

        int[] getNum = new int[6];
        System.out.println(x:"Enter the 6 numbers of the arithmetic sequence:");
        for(int i=0; i<6; i++){
            getNum[i]=input.nextInt();
        }

        int getArithSeq = getNum[1]-getNum[0];

        boolean checker = true;
        for(int i=1; i<5; i++){
            if((getNum[i+1]-getNum[i])!=getArithSeq){
                checker = false;
                break;
            }
        }

        if(checker){
            System.out.println("The common difference in the arithmetic sequence is " + getArithSeq);
            System.out.print(s:"Enter the series to find: ");
            int getSeries = input.nextInt();
            System.out.println("The " + getSeries + "th number in the series is " + (getArithSeq*getSeries));
        } else {
            System.out.println(x:"The series is not an arithmetic sequence");
        }
        input.close();
    }
}
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\vinas> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetai
-project\bin' 'vinasAct1'
Enter the 6 numbers of the arithmetic sequence:
3
6
9
12
15
18
The common difference in the arithmetic sequence is 3
Enter the series to find: 10
The 10th number in the series is 30
PS C:\Users\vinas>
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\vinas> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX
dt_ws\jdt.ls-java-project\bin' 'vinasAct1'
Enter the 6 numbers of the arithmetic sequence:
1
2
3
5
9
10
The series is not an arithmetic sequence
PS C:\Users\vinas>
```