Java and Advanced Java with OOPS Internship

Project Report

Arithmetic Formatter

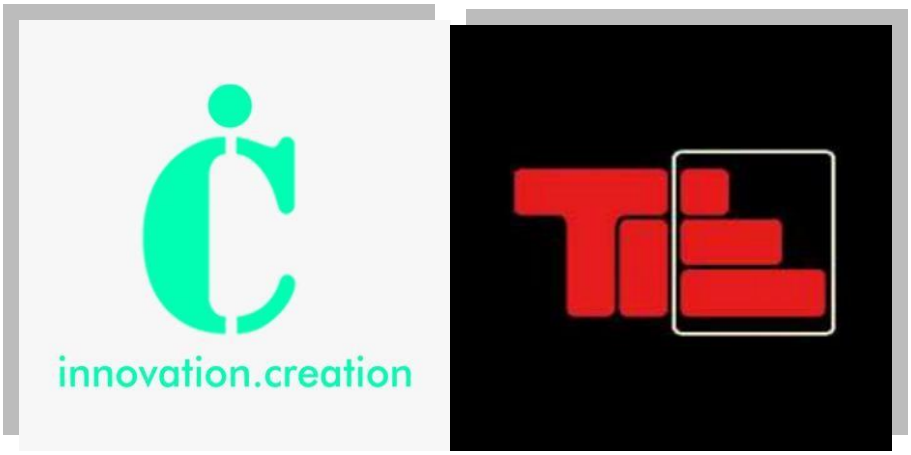
Submitted by:

Prajwal M S [1VE18EC070 gowdaprajwal009@gmail.com]

Online Internship Organizes By:

IC Solutions

In association with **Takeiteasy_Engineers(TIE)**



Under the guidance of

Mr.Nithin K S

Acknowledgement

Firstly I would like to express my special thanks of gratitude to **Take It Easy Engineers**(**TIE**) for arranging this internship program. Also I would really like to thank **IC Solutions** for giving the students such a golden opportunity to do **Java and Advance Java with OOPS internship** at just **₹499**. Providing such a quality training at low price is really appreciable. As doing an internship is a must for all the VTU students, it was really difficult to find good internship program during the pandemic. This online internship has really helped me.

I would like to extend my gratitude to my instructor **Mr.Nithin K S.** I'm really fortunate that such a good trainer was assigned to me. He has so much knowledge in this area, so all the eleven sessions of this internship program were really informative. He shared his experience in the field of ML during the sessions which was really great. He used to clear all the doubts asked by each & every student, due to which all the concepts taught by him are crystal clear.

I perceive this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desired career objectives.

Hope to continue cooperation with all of you in the future.

Sincerely,
Prajwal M S

Place: Bangalore

Date: 24/05/2021

About the company

IC Solutions(ICS) is a digital service provider that aims to provide software, designing and marketing solutions to individuals and businesses. ICS believes that service and quality is the key to success.

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Mobile Application - They offer a wide range of professional Android, iOS & Hybrid app development services for global clients, from a start-up to a large enterprise.

Design - They offer professional Graphic design, Brochure design & Logo design. They are experts in crafting visual content to convey the right message to the customers.

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Overview

Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependences as possible. The project given on Arithmetic Formatter using Java. Arithmetic Formatter is a popular problem that is used by most people to get their basics stronger. And it is thought by many programming language. But know we have to implement the Arithmetic Formatter using Java. The problem statement go like this “Create a function arithmetic Arranger() that receives a list of Strings that are arithmetic problems and returns the problems arranged vertically and side-by-side. The function should optionally take a second argument. When the second argument is set to True , the answer should be displayed".

Using the knowledge gained by this internship I have completed a Java project which involved Arithmetic Formatter concept.

Advantages and Challenges

Solving this in Arithmetic Formatter using Java was really a Challenge for because I couldn't find any reference file on Arithmetic Formatter in Java. But somehow I worked on it and try to solve the Problem. Create a function arithmetic Arranger() that receives a list of Strings that are arithmetic problems and returns the problems arranged vertically and side-by-side. The function should optionally take a second argument. When the second argument is set to True , the answer should be displayed was really a challenges.

System Requirements

Hardware Specifications (Minimum Requirement):-

- RAM: 4 GB
- CPU: Processor above Intel Corei3 8th Gen
- OS: Windows 10/Mac OS

Software Requirements:-

- ECLIPSE IDE
- VS CODE

IMPLEMENTATION

SOURCE CODE:

APPROACH-1(PrajwalMS.java)

```
import java.util.*;
public class PrajwalMS {
    public static String arithmeticArranger(String str[],boolean a){
        int operand1[] = new int[5];
        int operand2[] = new int[5];
        int result[] = new int[5];
        String line1="";
        String line2="";
        String line3="";
        String line4="";
        int prob_length[] =new int[5];
        String err;
        char operator[] = new char[5];
        if(str.length>5){
            err="Error: Too many problems.";
            return err;
        }
        else{
            for(int i=0;i<str.length;i++){
                String prob[] = str[i].split(" ");
                operator[i] = prob[1].charAt(0);
                if(operator[i] !='+' && operator[i] !='-'){
                    // System.out.println(operator[i]);
                    err="Error: Operator must be '+' or '-'.";
                    return err;
                }
                try{
                    operand1[i] = Integer.parseInt(prob[0]);
```

```
            operand2[i] = Integer.parseInt(prob[2]);  }
              catch(Exception e){
                 err="Error: Numbers must contain only digits";
                 return err;
              }
              if(prob[0].length()>4 || prob[2].length()>4){
                 err="Error: Numbers cannot be more than four digits";
                 return err;
              }


              if (operand1[i]>=operand2[i]){
                 int str_len= prob[0].length()+2;
                 String line1_term=" ".repeat(2)+ prob[0]+" ".repeat(4);
                 line1+=line1_term;
                 String line2_term=prob[1]+" ".repeat(str_len-prob[2].length()-1)+prob[2]+"
".repeat(4);
                 line2+=line2_term;
                 String line3_term="_".repeat(str_len)+" ".repeat(4);
                 line3+=line3_term;
                 prob_length[i]=str_len;
              }else{
                 int str_len= prob[2].length()+2;
                 String line1_term=" ".repeat(str_len-prob[0].length())+ prob[0]+" ".repeat(4);
                 line1+=line1_term;
                 String line2_term=prob[1]+" "+prob[2]+" ".repeat(4);
                 line2+=line2_term;
                 String line3_term="_".repeat(str_len)+" ".repeat(4);
                 line3+=line3_term;
                 prob_length[i]=str_len;
              }
           }
           if(a){
```

```
            for(int i=0;i<str.length;i++){
                switch(operator[i]){
                    case '+': result[i]=operand1[i]+operand2[i];
                            break;
                    case '-': result[i]=operand1[i]-operand2[i];
                            break;
                }
                String res = Integer.toString(result[i]);
                int str_len=res.length();
                // System.out.println(res);
                // System.out.println(str_len+" "+(prob_length[i]));
                String line4_term = " ".repeat(prob_length[i]-str_len)+res+" ".repeat(4);
                line4 +=line4_term;
            }
            String succ = line1+"\n"+line2+"\n"+line3+"\n"+line4;
            return succ;
        }else{
            String succ = line1+"\n"+line2+"\n"+line3;
            return succ;
        }
    }
}
public static void main(String[] args){
    String s[] = {"32 + 698","3819 - 2","45 + 43","123 + 49"};
    String str = arithmeticArranger(s, false);
    System.out.println(str);
    System.out.println();
    String s1[] = {"32 + 8","1 - 3801","9999 + 9999","523 - 49"};
    String str1 = arithmeticArranger(s1, true);
    System.out.println(str1);
}}
```

APPROACH-2 (ar_arrange.java)

```
import java.util.Scanner;
Public class ar_arrange{
   public static void main(String args[]){
      Scanner sc = new Scanner(System.in);
      int no,i=0;boolean solve;
      System.out.println("Enter number of expressions-");
      no = sc.nextInt();
      String[] exp = new String[no+1];
      System.out.println("Enter Expression-");
      for(i=0;i<=no;i=i+1) {
         exp[i] = sc.nextLine();
      }
      System.out.println("Enter True- To Solve Else");
      System.out.println(" False- To Not Solve");
      solve = sc.nextBoolean();
      for(i =1;i<=no;i++) {
         //System.out.println(exp[i]);
         arithmeticArranger(exp[i], solve);
         System.out.println();
      }
      //System.out.println(exp.length);
   }
   public static void arithmeticArranger(String exp, boolean solve) {
      int i;int x,y;float result;
      //System.out.println(exp);
      String[] a = exp.split(" ");
      //System.out.println(a.length);
      System.out.println(" "+a[0]);

                                          System.out.print(a[1]+" ");
      System.out.println(a[2]);
```

```
    if(solve){
            x = Integer.parseInt(a[0]);
            y = Integer.parseInt(a[2]);
            switch(a[1]){
               case "+":
                  result = x+y;
                  break;
               case "-":
                  result = x-y;
                  break;
               case "*":
                  result = x*y;
                  break;
               case "/":
                  result = x/y;
                  break;
               case "%":
                  result = x%y;
                  break;
               default:
                  System.out.println("Wrong Input");
                  return;
            }
            System.out.println("--------");
            System.out.println(result);
        }
     }
}
```

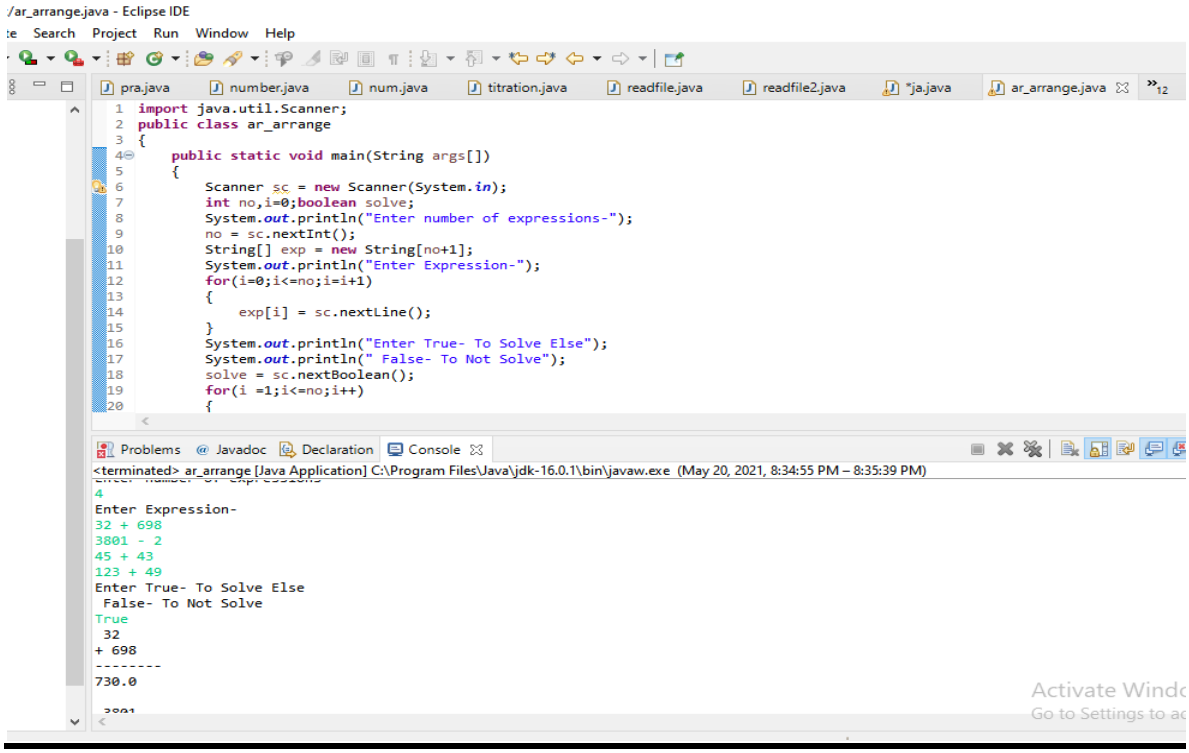
APPROACH-3 (ar_arrange2.java)

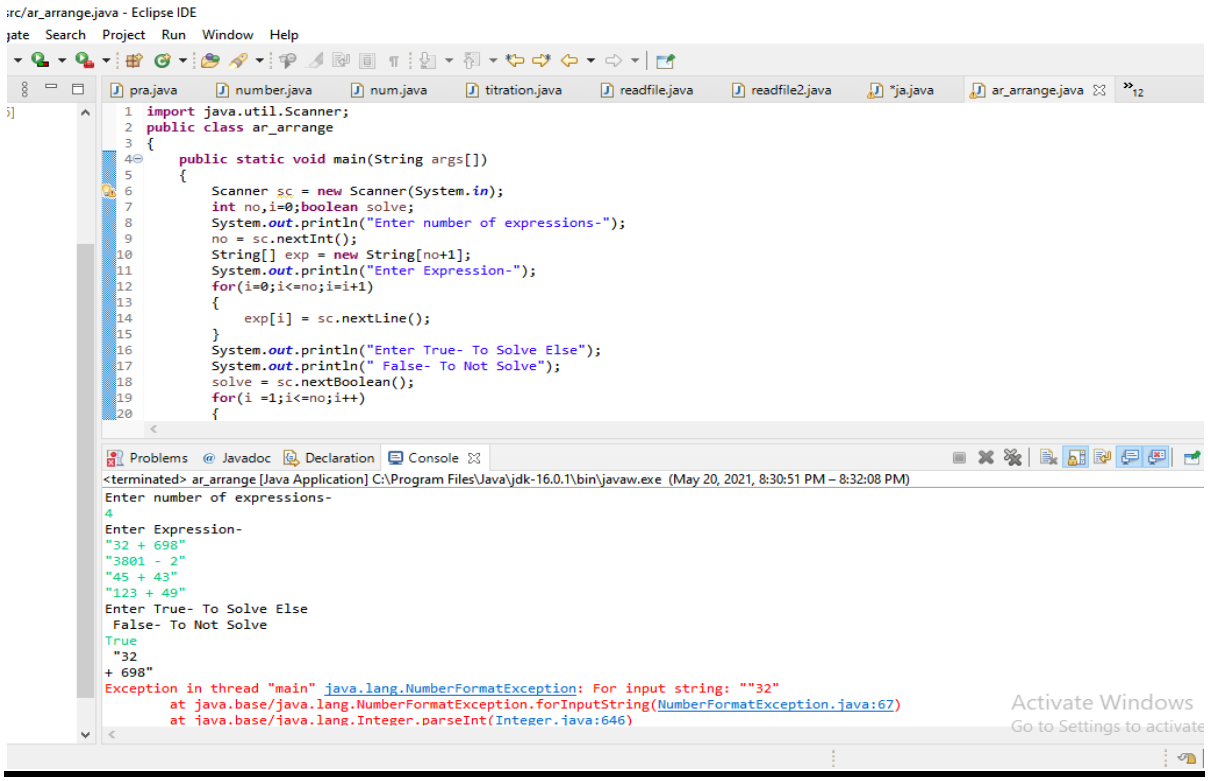
```
import java.util.Scanner;
public class ar_arrange2{
public static void main(String[] args) {
for(int i = 1; i < 5 ; i++) {
int x , y ;
Scanner a = new Scanner(System.in);
System.out.println("Enter number1");
x = a.nextInt();
System.out.println("Enter number2");
y = a.nextInt();
int sum = x+y , dif = x-y ;
System.out.println(+ x + "\t+"  + y + "\n-----\n=" + (x+y));
System.out.println('\t');
System.out.println(+ x + "\t-"  + y + "\n-----\n=" + (x-y));
}
}
}
```

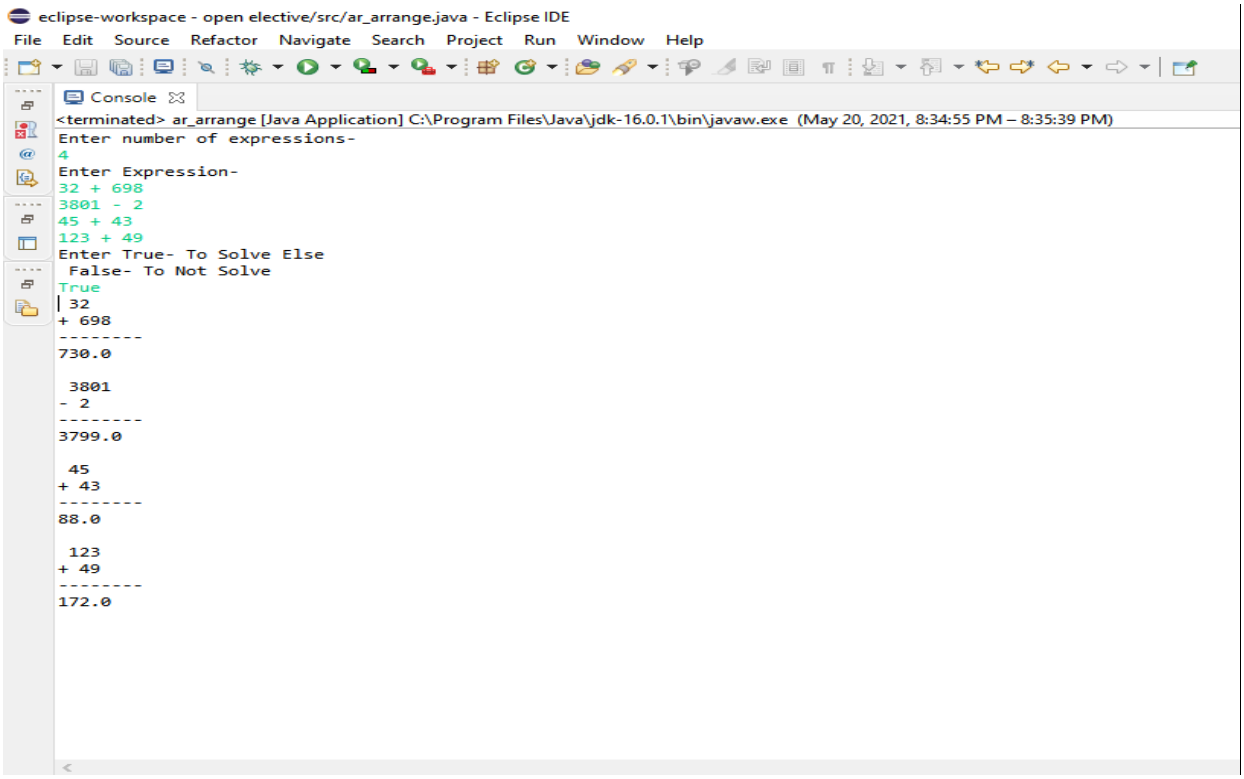
APPROACH-3 (ar_arrange3.java)

```
import java.util.Scanner;
public class approach3{
public static void main(String[] args) {
        String[]exp=new String[] {"123 + 31","13 + 31", "23 + 13","423 - 234"};
         aritmeticArranger(exp);
         System.out.println(10+"10");}
public static void eval(String[] str) {
        int num1=0;
        int num2=0;
        char op;
        int index=0;
        for(int i=0;i<str.length;i++) {
                if(str[i]>= '0' && str[i]<= '9')
                        continue;
                if(str[i]== '+' || str[i]== '-') {
                        continue;
                }}}
public static void aritmeticArranger(String[] str) {
for(int i=0; i<1; i++) {
String exp=str[i];
eval(exp);
for(int k=0;k<exp.size(); i++) {
if(exp.charAt(k)=='+' || exp.charAt(k)=='-') {
continue;
int a=Integer.parseInt(str[i]);
System.out.println(result);
System.out.println(str[i]);    }
}}}
```

OUTPUT OF THE PROGRAM





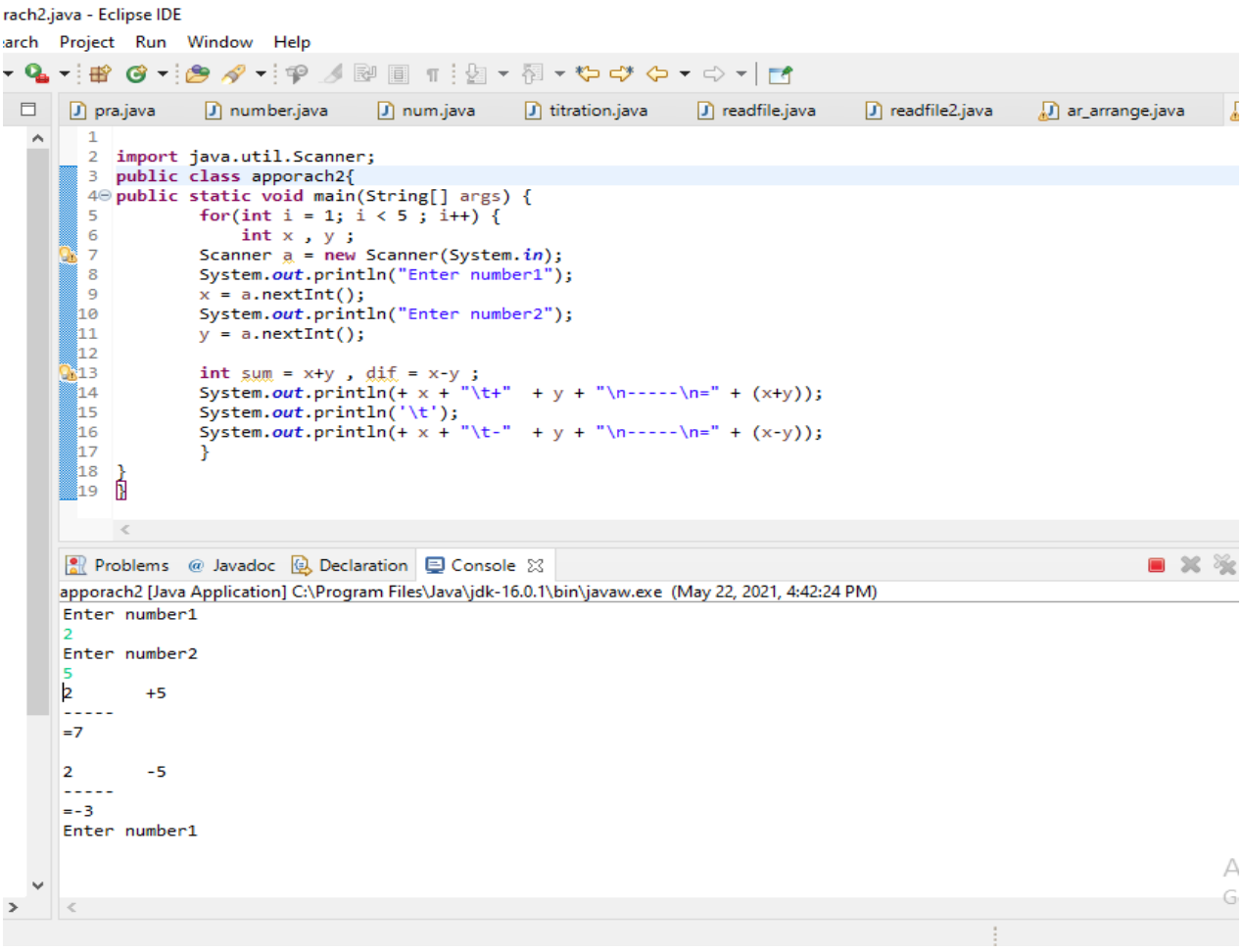

eclipse-workspace - open elective/src/ar_arrange.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Console
<terminated> ar_arrange [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (May 20, 2021, 8:34:55 PM – 8:35:39 PM)
Enter number of expressions-
4
Enter Expression-
32 + 698
3801 - 2
45 + 43
123 + 49
Enter True- To Solve Else
False- To Not Solve
True
32
+ 698

730.0
3801
- 2

3799.0
45
+ 43

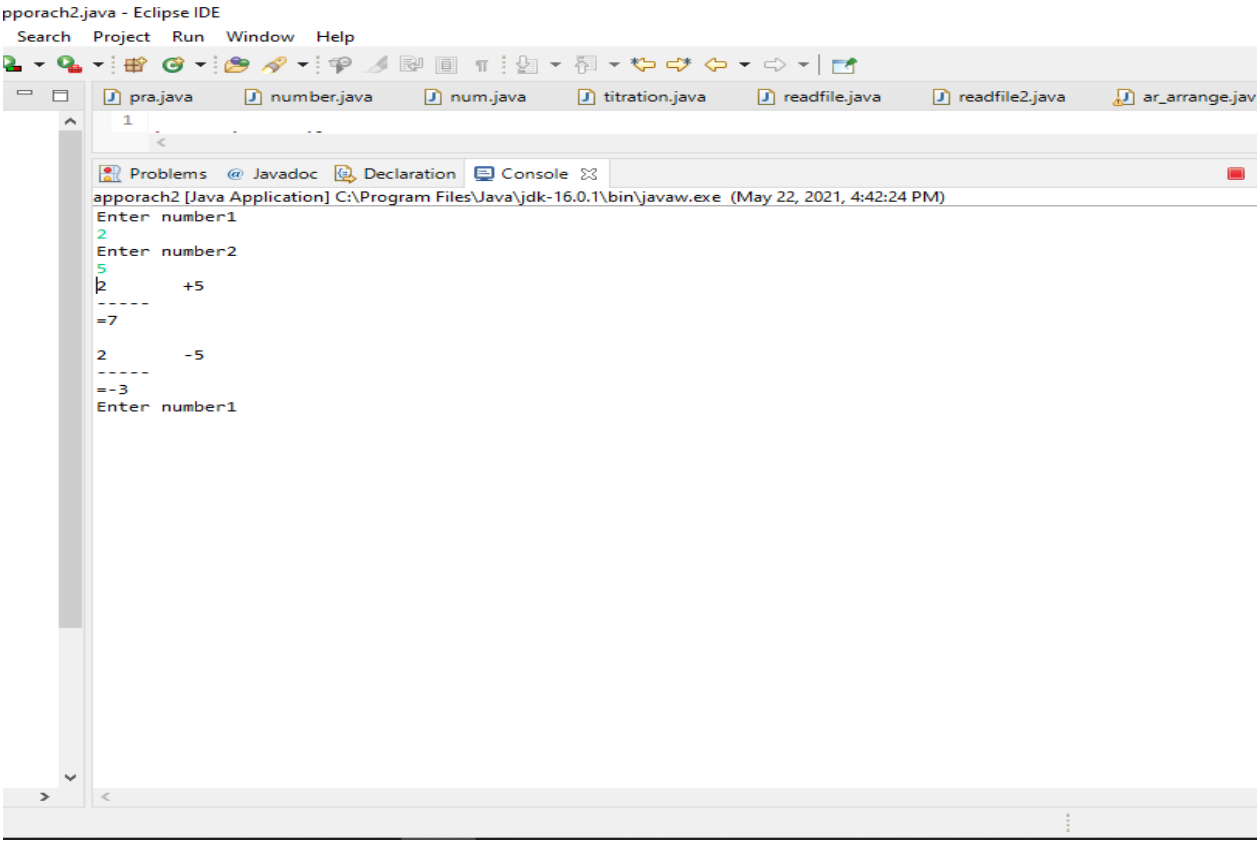
88.0
123
+ 49

172.0


rach2.java - Eclipse IDE
arch Project Run Window Help
pra.java number.java num.java titration.java readfile.java readfile2.java ar_arrange.java
import java.util.Scanner;
public class apporach2{
public static void main(String[] args) {
for(int i = 1; i < 5 ; i++) {
int x , y ;
Scanner a = new Scanner(System.in);
System.out.println("Enter number1");
x = a.nextInt();
System.out.println("Enter number2");
y = a.nextInt();
int sum = x+y , dif = x-y ;
System.out.println(+ x + "\t+" + y + "\n-----\n=" + (x+y));
System.out.println('\t');
System.out.println(+ x + "\t-" + y + "\n-----\n=" + (x-y));
}
}
}
Problems Javadoc Declaration Console
apporach2 [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (May 22, 2021, 4:42:24 PM)
Enter number1
2
Enter number2
5
2 +5

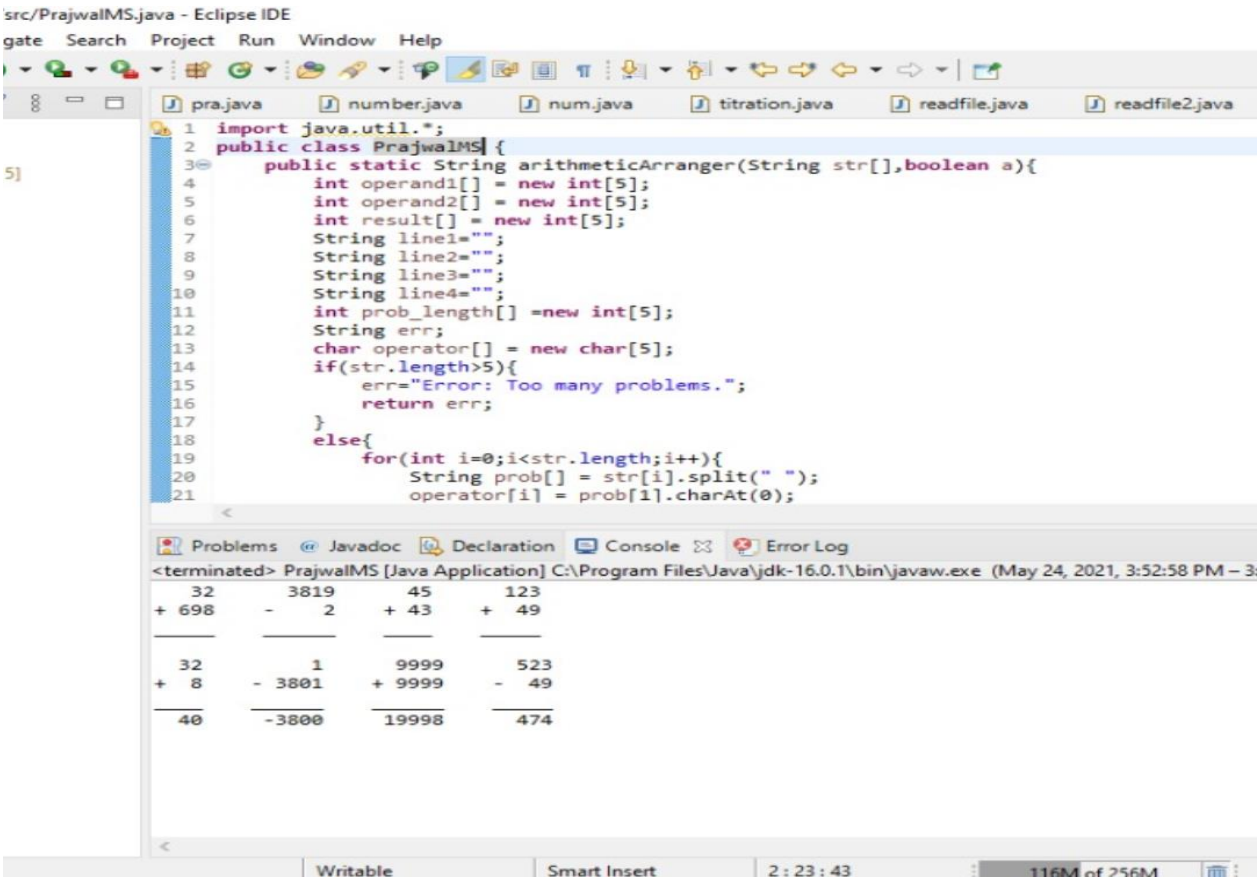
=7
2 -5

=-3
Enter number1


pporach2.java - Eclipse IDE
Search Project Run Window Help
pra.java number.java num.java titration.java readfile.java readfile2.java ar_arrange.jav
Problems Javadoc Declaration Console
apporach2 [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (May 22, 2021, 4:42:24 PM)
Enter number1
2
Enter number2
5
2 +5

=7
2 -5

=-3
Enter number1


src/PrajwalMS.java - Eclipse IDE
gate Search Project Run Window Help
pra.java number.java num.java titration.java readfile.java readfile2.java
1 import java.util.*;
2 public class PrajwalMS {
3 public static String arithmeticArranger(String str[],boolean a){
4 int operand1[] = new int[5];
5 int operand2[] = new int[5];
6 int result[] = new int[5];
7 String line1="";
8 String line2="";
9 String line3="";
10 String line4="";
11 int prob_length[] =new int[5];
12 String err;
13 char operator[] = new char[5];
14 if(str.length>5){
15 err="Error: Too many problems.";
16 return err;
17 }
18 else{
19 for(int i=0;i<str.length;i++){
20 String prob[] = str[i].split(" ");
21 operator[i] = prob[1].charAt(0);
Problems Javadoc Declaration Console Error Log
<terminated> PrajwalMS [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (May 24, 2021, 3:52:58 PM – 3
32 3819 45 123
+ 698 - 2 + 43 + 49
32 1 9999 523
+ 8 - 3801 + 9999 - 49
40 -3800 19998 474
Writable Smart Insert 2 : 23 : 43

Conclusion

Solving this in Arithmetic Formatter using Java was really a Challenge for because I couldn't find any reference file on Arithmetic Formatter in Java. But somehow I worked on it and try to solve the Problem. I have tried executing the code in the way, but I am able to do it for the integer type and somewhere I could get for String in the first time. So I got is the partial output. Then I tried It and got the actual output. I gained so much knowledge on competitive programming using Java. And this project and internship gave me a immense knowledge which I can carry through out. I thank the tutor who guided me to achieve this project.

Bibliography

1. Java file given by the tutor.
2. Referred few research papers on Arithmetic Formatter.