

PRACTICUM REPORT

Job sheet 5

Selection



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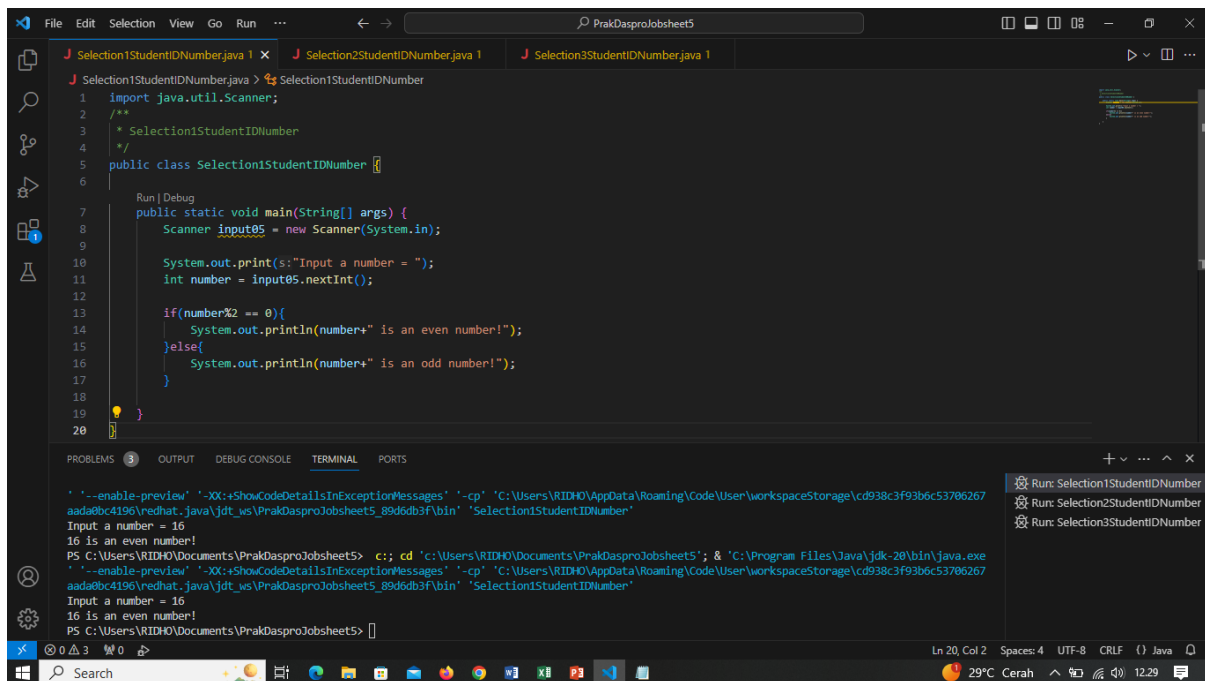
CLASS 1I (INTERNATIONAL)

INFORMATICS ENGINEERING
INFORMATION TECHNOLOGY
STATE POLYTECHNIC OF MALANG

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Experiment 1 :



The screenshot shows an IDE with three tabs: Selection1StudentIDNumber.java, Selection2StudentIDNumber.java, and Selection3StudentIDNumber.java. The active tab is Selection1StudentIDNumber.java, which contains the following code:

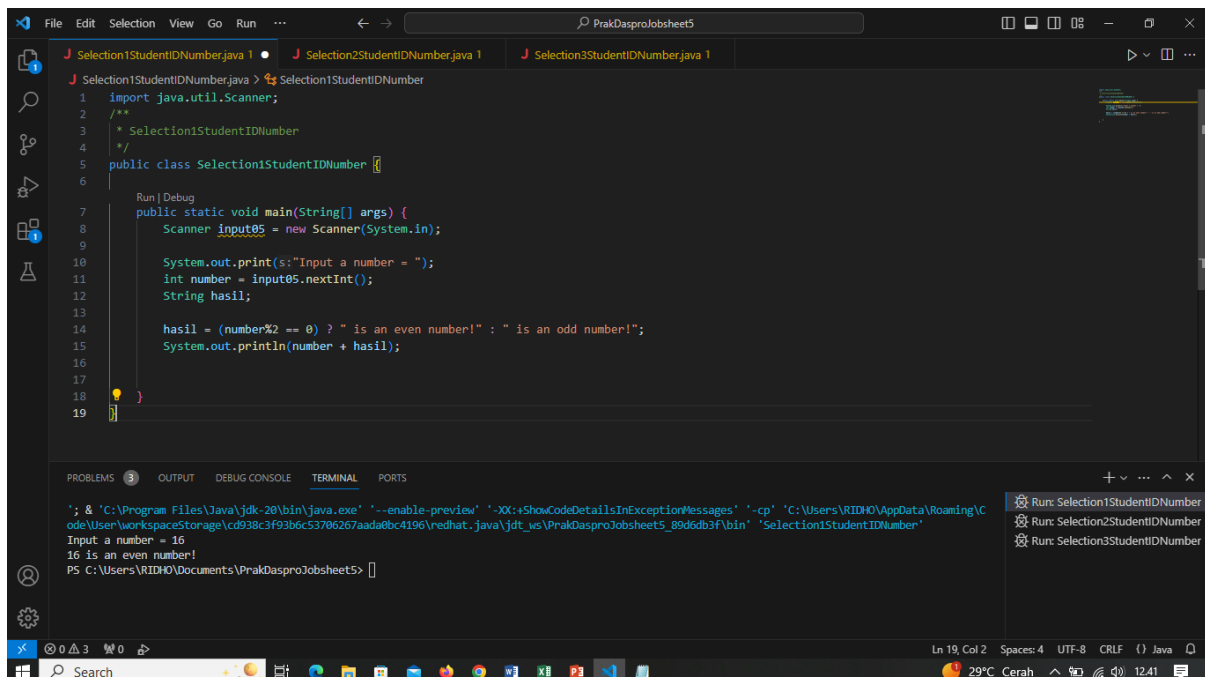
```
1 import java.util.Scanner;
2 /**
3  * Selection1StudentIDNumber
4  */
5 public class Selection1StudentIDNumber {
6
7     Run | Debug
8     public static void main(String[] args) {
9         Scanner input05 = new Scanner(System.in);
10
11         System.out.print(s:"Input a number = ");
12         int number = input05.nextInt();
13
14         if(number%2 == 0){
15             System.out.println(number+" is an even number!");
16         }else{
17             System.out.println(number+" is an odd number!");
18         }
19     }
20 }
```

The terminal output shows the program running and printing "16 is an even number!".

Question!

1. Modify the above selection statement (if-else) by using Ternary Operator! We know that Ternary Operator could be used as a selection statement as well.

Answer :



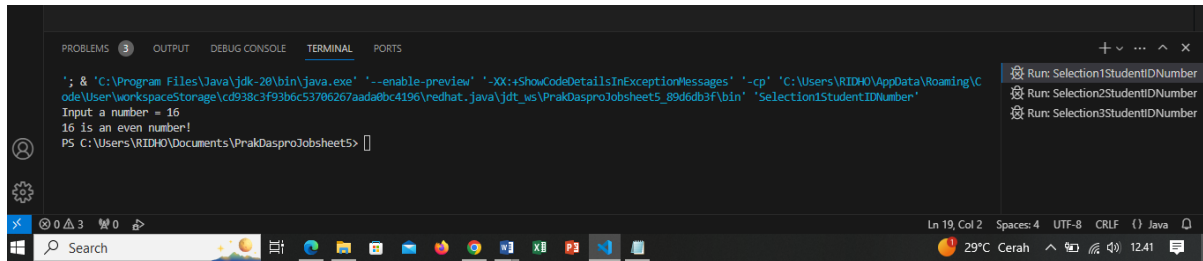
The screenshot shows the same IDE with the same three tabs. The active tab is Selection1StudentIDNumber.java, which has been modified to use the Ternary Operator. The code is as follows:

```
1 import java.util.Scanner;
2 /**
3  * Selection1StudentIDNumber
4  */
5 public class Selection1StudentIDNumber {
6
7     Run | Debug
8     public static void main(String[] args) {
9         Scanner input05 = new Scanner(System.in);
10
11         System.out.print(s:"Input a number = ");
12         int number = input05.nextInt();
13         String hasil;
14
15         hasil = (number%2 == 0) ? " is an even number!" : " is an odd number!";
16         System.out.println(number + hasil);
17
18     }
19 }
```

The terminal output shows the program running and printing "16 is an even number!".

2. Compile, run and observe the result!

Answer :



```
PS C:\Program Files\Java\jdk-20\bin> java -cp "C:\Users\Ridho\AppData\Roaming\Code\workspaceStorage\cd938c3f93b6c53706267aada8bc4196\redhat_java\jdt_ws\PrakDasproJobsheet5_89d6db3f\bin" Selection1StudentIDNumber
Input a number = 16
16 is an even number!
```

3. Commit and push the changes into your repository!

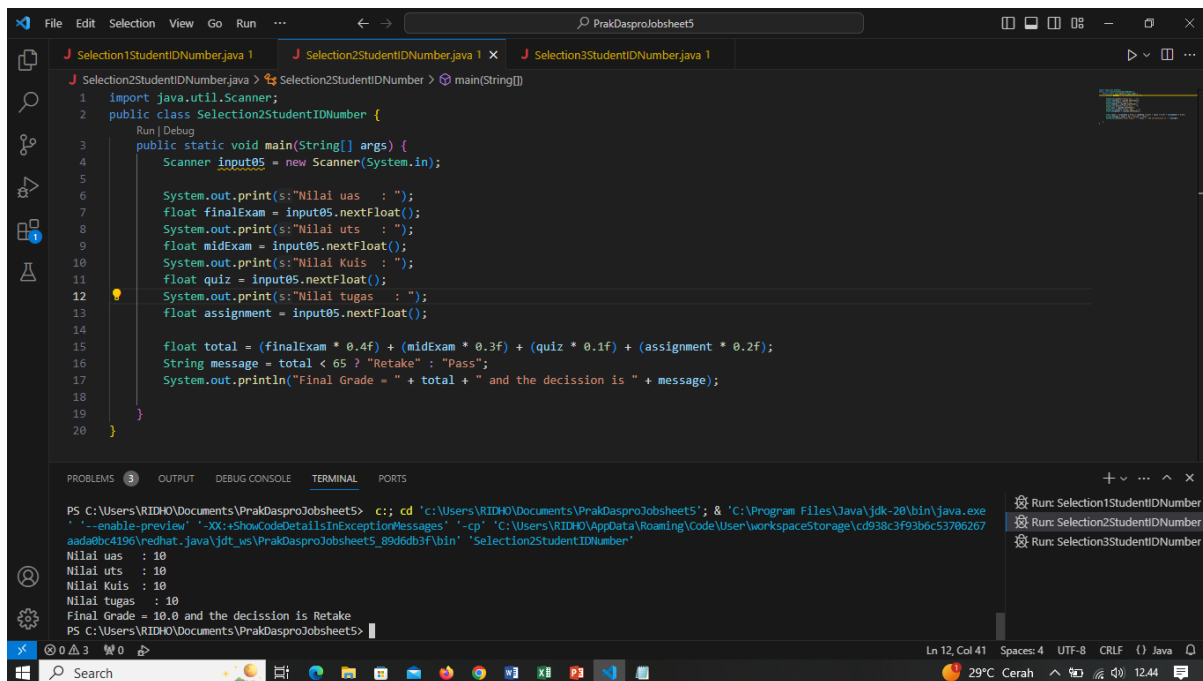
Answer :

<https://github.com/RidhoAnfaal/Daspro/blob/master/Selection1StudentIDNumber.java>

4. Finally, please explain why the output of the program before and after the changes has a similar output.

Answer : Regular selection programs and ternary operators are basically used to make decisions based on a condition. When you convert a regular selection program into a ternary operator, the result should still be the same if you write the code correctly. This is because ternary operators are just a more concise way to evaluate conditions and select values based on those conditions.

Experiment 2 :



```
1 import java.util.Scanner;
2 public class Selection2StudentIDNumber {
3     public static void main(String[] args) {
4         Scanner input05 = new Scanner(System.in);
5
6         System.out.print(s:"Nilai uas  : ");
7         float finalExam = input05.nextFloat();
8         System.out.print(s:"Nilai uts  : ");
9         float midExam = input05.nextFloat();
10        System.out.print(s:"Nilai Kuis  : ");
11        float quiz = input05.nextFloat();
12        System.out.print(s:"Nilai tugas  : ");
13        float assignment = input05.nextFloat();
14
15        float total = (finalExam * 0.4f) + (midExam * 0.3f) + (quiz * 0.1f) + (assignment * 0.2f);
16        String message = total < 65 ? "Retake" : "Pass";
17        System.out.println("Final Grade = " + total + " and the decision is " + message);
18    }
19 }
20 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

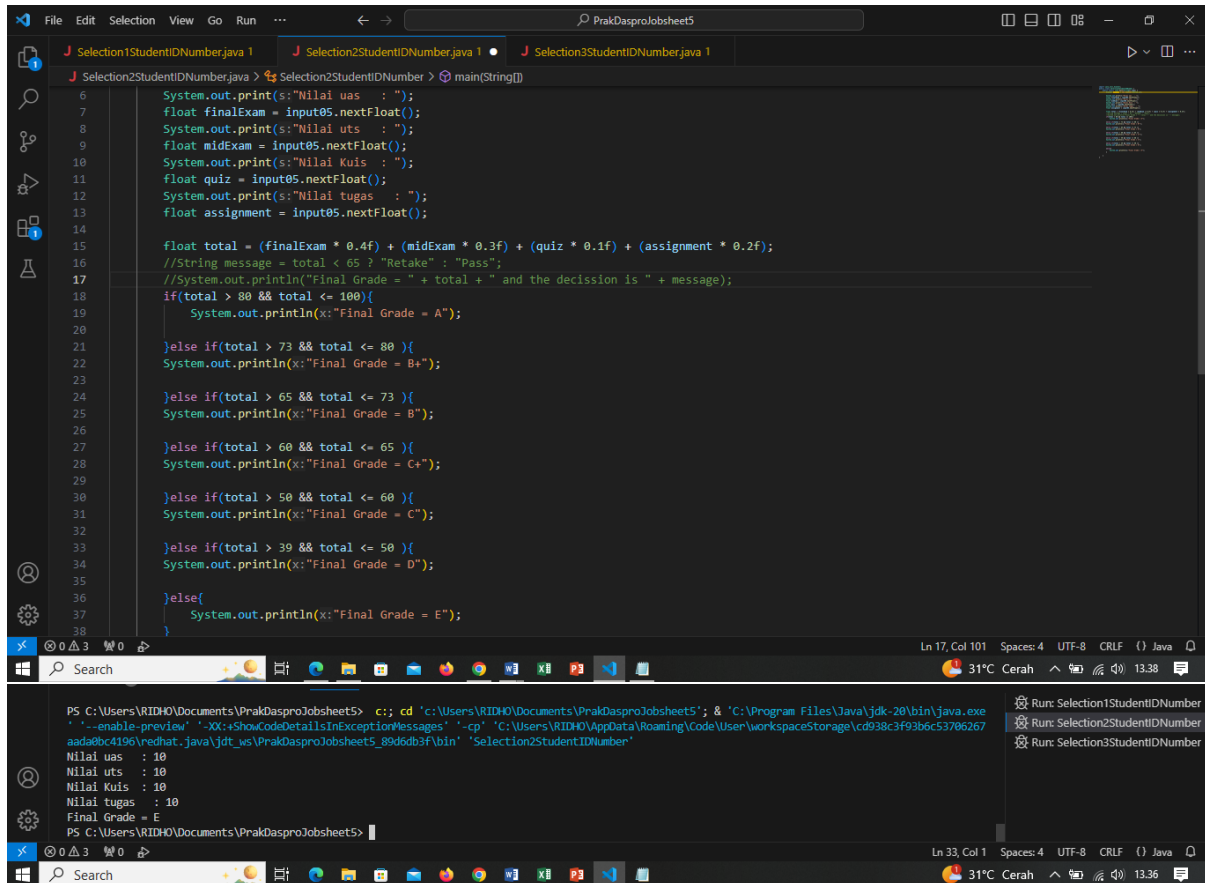
```
PS C:\Users\RIIDHO\Documents\PrakDasproJobsheet5> c:\cd 'c:\Users\RIIDHO\Documents\PrakDasproJobsheet5'; & 'C:\Program Files\Java\jdk-20\bin\java.exe
' --enable-preview' -Xc+ShowCodeDetailsInExceptionMessages' -cp 'C:\Users\RIIDHO\AppData\Roaming\Code\User\workspaceStorage\cd938c3f93b6c53786267
aada8bc4196\redhat_java\jdt_ws\PrakDasproJobsheet5_89d6db3f\bin' 'Selection2StudentIDNumber'
Nilai uas  : 10
Nilai uts  : 10
Nilai Kuis  : 10
Nilai tugas : 10
Final Grade = 10.0 and the decision is Retake
PS C:\Users\RIIDHO\Documents\PrakDasproJobsheet5>
```

Question!

1. Modify the above program so that it now can convert from numerical grade into letter grade, based on the following rule!

Nilai Angka	Nilai Mutu		
	Nilai Huruf	Nilai Setara	Kualifikasi
80 < N ≤ 100	A	4	Sangat Baik
73 < N ≤ 80	B+	3,5	Lebih dari Baik
65 < N ≤ 73	B	3	Baik
60 < N ≤ 65	C+	2,5	Lebih dari Cukup
50 < N ≤ 60	C	2	Cukup
39 < N ≤ 50	D	1	Kurang
N ≤ 39	E	0	Gagal

Answer :



```
File Edit Selection View Go Run ...
PrakDasproJobsheet5
J Selection1StudentIDNumber.java 1 J Selection2StudentIDNumber.java 1 J Selection3StudentIDNumber.java 1
J Selection2StudentIDNumber.java > Selection2StudentIDNumber > main(String[])
6 System.out.print(s:"Nilai uas : ");
7 float finalExam = input05.nextFloat();
8 System.out.print(s:"Nilai uts : ");
9 float midExam = input05.nextFloat();
10 System.out.print(s:"Nilai Kuis : ");
11 float quiz = input05.nextFloat();
12 System.out.print(s:"Nilai tugas : ");
13 float assignment = input05.nextFloat();
14
15 float total = (finalExam * 0.4f) + (midExam * 0.3f) + (quiz * 0.1f) + (assignment * 0.2f);
16 //String message = total < 65 ? "Retake" : "Pass";
17 //System.out.println("Final Grade = " + total + " and the decision is " + message);
18 if(total > 80 && total <= 100){
19     System.out.println(x:"Final Grade = A");
20
21 }else if(total > 73 && total <= 80 ){
22     System.out.println(x:"Final Grade = B+");
23
24 }else if(total > 65 && total <= 73 ){
25     System.out.println(x:"Final Grade = B");
26
27 }else if(total > 60 && total <= 65 ){
28     System.out.println(x:"Final Grade = C+");
29
30 }else if(total > 50 && total <= 60 ){
31     System.out.println(x:"Final Grade = C");
32
33 }else if(total > 39 && total <= 50 ){
34     System.out.println(x:"Final Grade = D");
35
36 }else{
37     System.out.println(x:"Final Grade = E");
38 }
Ln 17, Col 101 Spaces: 4 UTF-8 CRLF {} Java
31°C Cerah 13.38

PS C:\Users\RIDHO\Documents\PrakDasproJobsheet5> cd 'c:\Users\RIDHO\Documents\PrakDasproJobsheet5'; & 'C:\Program Files\Java\jdk-20\bin\java.exe'
'--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\RIDHO\AppData\Roaming\Code\User\workspaceStorage\cd938c3f93b6c53786267
aada0bc4196\redhat_java\jdt_ws\PrakDasproJobsheet5_89d6db3f\bin' 'Selection2StudentIDNumber'
Nilai uas : 10
Nilai uts : 10
Nilai Kuis : 10
Nilai tugas : 10
Final Grade = E
PS C:\Users\RIDHO\Documents\PrakDasproJobsheet5>
Ln 33, Col 1 Spaces: 4 UTF-8 CRLF {} Java
31°C Cerah 13.36
```

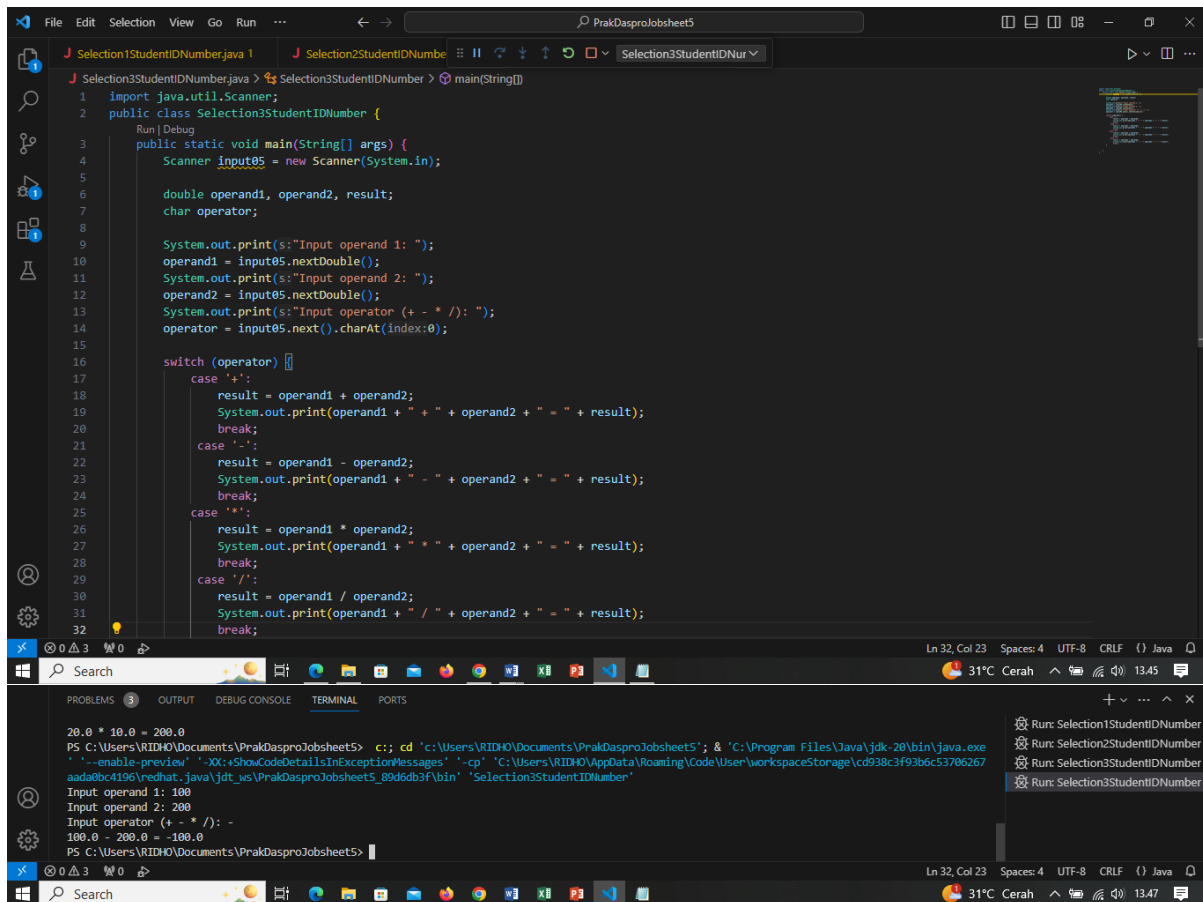
2. After the above modification, how many conditions are there and what type of operator are used?

Answer : There are 7 conditions, if: Used to evaluate a condition, and if the condition is true, then the code block following the if will be executed. Otherwise, the code block will be skipped.

else if: Used when you have multiple conditions that you want to evaluate sequentially. If the first if condition is not met, the program will try the next else if condition. If one of the else if conditions is true, the corresponding code block will be executed.

else: Optional, but useful. The code block in else will be executed if none of the if or else if conditions are true.

Experiment 3 :



```
1 import java.util.Scanner;
2 public class Selection3StudentIDNumber {
3     public static void main(String[] args) {
4         Scanner input05 = new Scanner(System.in);
5
6         double operand1, operand2, result;
7         char operator;
8
9         System.out.print(s:"Input operand 1: ");
10        operand1 = input05.nextDouble();
11        System.out.print(s:"Input operand 2: ");
12        operand2 = input05.nextDouble();
13        System.out.print(s:"Input operator (+ - * /): ");
14        operator = input05.next().charAt(index:0);
15
16        switch (operator) {
17            case '+':
18                result = operand1 + operand2;
19                System.out.print(operand1 + " + " + operand2 + " = " + result);
20                break;
21            case '-':
22                result = operand1 - operand2;
23                System.out.print(operand1 + " - " + operand2 + " = " + result);
24                break;
25            case '*':
26                result = operand1 * operand2;
27                System.out.print(operand1 + " * " + operand2 + " = " + result);
28                break;
29            case '/':
30                result = operand1 / operand2;
31                System.out.print(operand1 + " / " + operand2 + " = " + result);
32                break;
```

20.0 * 10.0 = 200.0
PS C:\Users\RIDHO\Documents\PrakDasproJobsheet5> c:; cd 'c:\Users\RIDHO\Documents\PrakDasproJobsheet5'; & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\RIDHO\AppData\Roaming\Code\User\workspaceStorage\cd938c3f93b6c53706267aada8bc4196\redhat_java\jdt_ws\PrakDasproJobsheet5_89d6db3f\bin' 'Selection3StudentIDNumber'

Input operand 1: 100
Input operand 2: 200
Input operator (+ - * /): -
100.0 - 200.0 = -100.0
PS C:\Users\RIDHO\Documents\PrakDasproJobsheet5>

Question!

1. What is the use of break and default statement?

Answer : The break statement is used for control flow within switch statements and loops, while the default statement provides a fallback or default action to be taken when none of the specific case labels match in a switch statement.

2. Modify the above program by deleting break statement in the first case. Run the program, observe the result, and explain what it is the effect if there is no break in case block!

Answer : Not using a break statement in a case block can lead to fall-through behavior, where code in subsequent case blocks is executed,

The screenshot shows an IDE with a Java file named `Selection3StudentIDNumber.java`. The code implements a `main` method that takes a `String[]` as input and performs arithmetic operations based on the user's choice of operator. The operations are: addition (+), subtraction (-), multiplication (*), and division (/). The code uses a `switch` statement to handle the operator input.

```
16 switch (operator) {
17     case '+':
18         result = operand1 + operand2;
19         System.out.print(operand1 + " + " + operand2 + " = " + result);
20
21     case '-':
22         result = operand1 - operand2;
23         System.out.print(operand1 + " - " + operand2 + " = " + result);
24         break;
25     case '*':
26         result = operand1 * operand2;
27         System.out.print(operand1 + " * " + operand2 + " = " + result);
28         break;
29     case '/':
30         result = operand1 / operand2;
31         System.out.print(operand1 + " / " + operand2 + " = " + result);
32         break;
33 }
34
```

The terminal output shows the execution of the program. It prompts for the input operand 1 (10), input operand 2 (20), and the input operator (+). The result of the addition is displayed as `10.0 + 20.0 = 30.0`.

```
PS C:\Users\RIDHO\Documents\ProjekAkhirDaspro> & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\RIDHO\AppData\Local\Microsoft\Windows\workspaceStorage\4cf22bcc24577b2e9d499c1e94ec5081\rednat_java\jdt_ws\jdt.ls-java-project\bin' 'Selection3StudentIDNumber'
Input operand 1: 10
Input operand 2: 20
Input operator (+ - * /): +
10.0 + 20.0 = 30.0
PS C:\Users\RIDHO\Documents\ProjekAkhirDaspro>
```

3. Commit and push the changes into your repository.

Answer :

<https://github.com/RidhoAnfaal/Daspro/blob/master/Selection3StudentIDNumber.java>

4. Please explain the function of the following statement

`operator = sc.next().charAt(0);`

Answer : The statement `operator = sc.next().charAt(0);` in Java is typically used to read a character input from the user through the console using the Scanner class and assign the first character of the input to a variable named `operator`.

Assignment

Create a program based on the flowchart that was already created in Assignment 5 in the Slide of Selection part 1! Commit and push the code results to your project repository!

Answer : <https://github.com/RidhoAnfaal/ProjectAkhirDaspro/blob/master/ProjekAkhir.java>