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Materi : LOOPING

BASIC PROGRAMMING PRACTICUM REPORT

Github Name: https://github.com/safrizalrahman46

JOBSHEET 7

LOOPING 1

1. Objective

After finishing this topic, students must be able to:

- Explain the format of loop programming part 1
- Implement a loop part 1 flowchart using the Java programming language

2. Laboratory

2.1 Experiment 1: Counting Multiples Using FOR

Experiment Time: 60 minutes

In this experiment, the code is created to display multiples of a specific number within the range of 1 to 50 using a FOR loop, and to calculate the total of these numbers.

1. Open text editor. Create a new Java File named **ForMultiplesStudentIDNumber.java**
2. Create the basic structure of Java program containing **class** declaration and **main()** method
3. Add the **Scanner** library.
4. Create or declare variable named **input** from **Scanner** library.
5. Create **int** variables named **multiple**, **sum**, and **counter**. Initialize variable **sum** and **counter** with 0.
6. Add the following code to get the user input!

```
System.out.print(s:"Input the multiple = ");
multiple = input.nextInt();
```

7. Create the FOR loop with IF condition to evaluate the multiples number

```
for(int i=1;i<=50;i++){
    if(i%multiple == 0){
        sum = sum + i;
        counter++;
        //System.out.print(i+"-");
    }
}
```

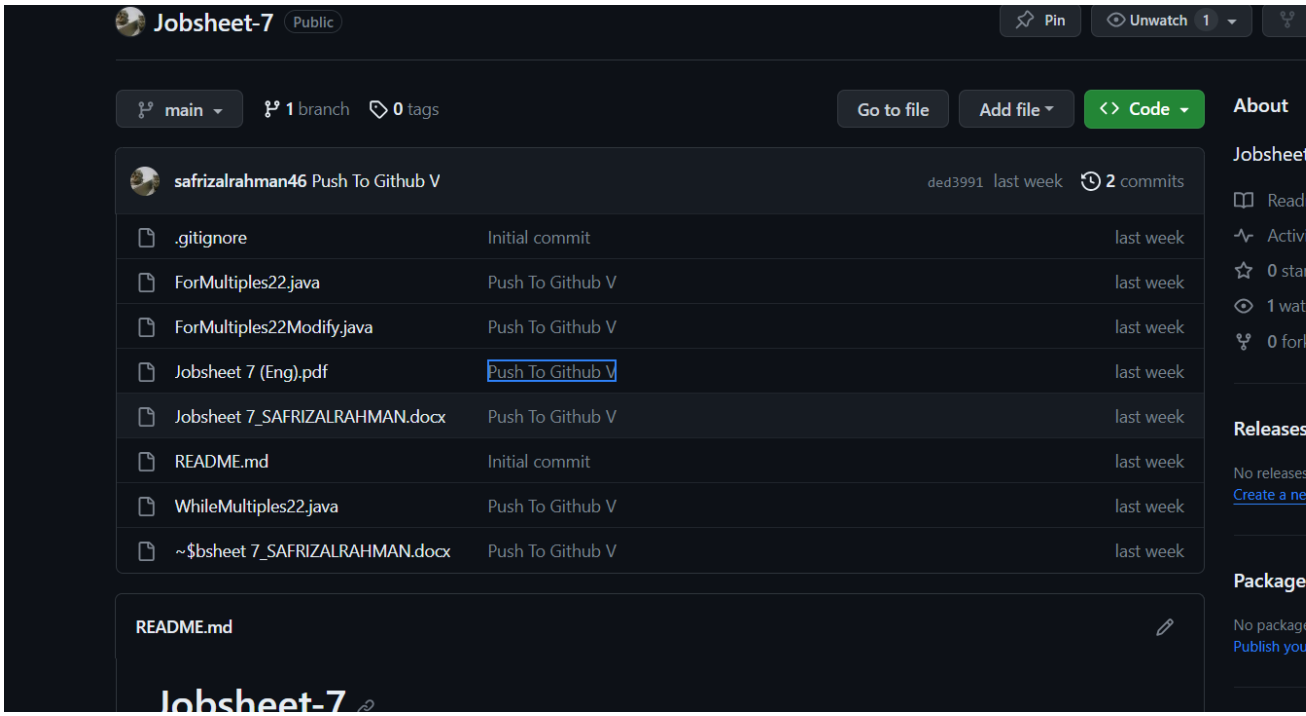
8. Display the sum and counter of multiples number in range from 1 to 50.

```
System.out.printf(format:"There are %d numbers that are multiple of %d in range 1 to 50.\n", counter, multiple);
System.out.printf(format:"The sum from all multiples of %d in range 1 s.d. 50 is %d. \n", multiple, sum);
```

9. Run the program and analyze the result. Your result must be like this:

```
Input the multiple = 5
There are 10 numbers that are multiple of 5 in range 1 to 50.
The sum from all multiples of 5 in range 1 s.d. 50 is 275.
```

10. Commit and push the changes to GitHub.



Questions

1. There are 3 main components in FOR loop. Based on experiment 1 above, identify and explain these 3 components!

   There are Conmponent of the for and I its for mark/sign increment or to looping

2. Explain how the following code works!

```
for(int i=1;i<=50;i++){
    if(i%multiple == 0){
        sum = sum + i;
        counter++;
        //System.out.print(i+"-");
    }
}
```

The loop will start from 1 to 50 and in each loop the value of i is increased by 1 then

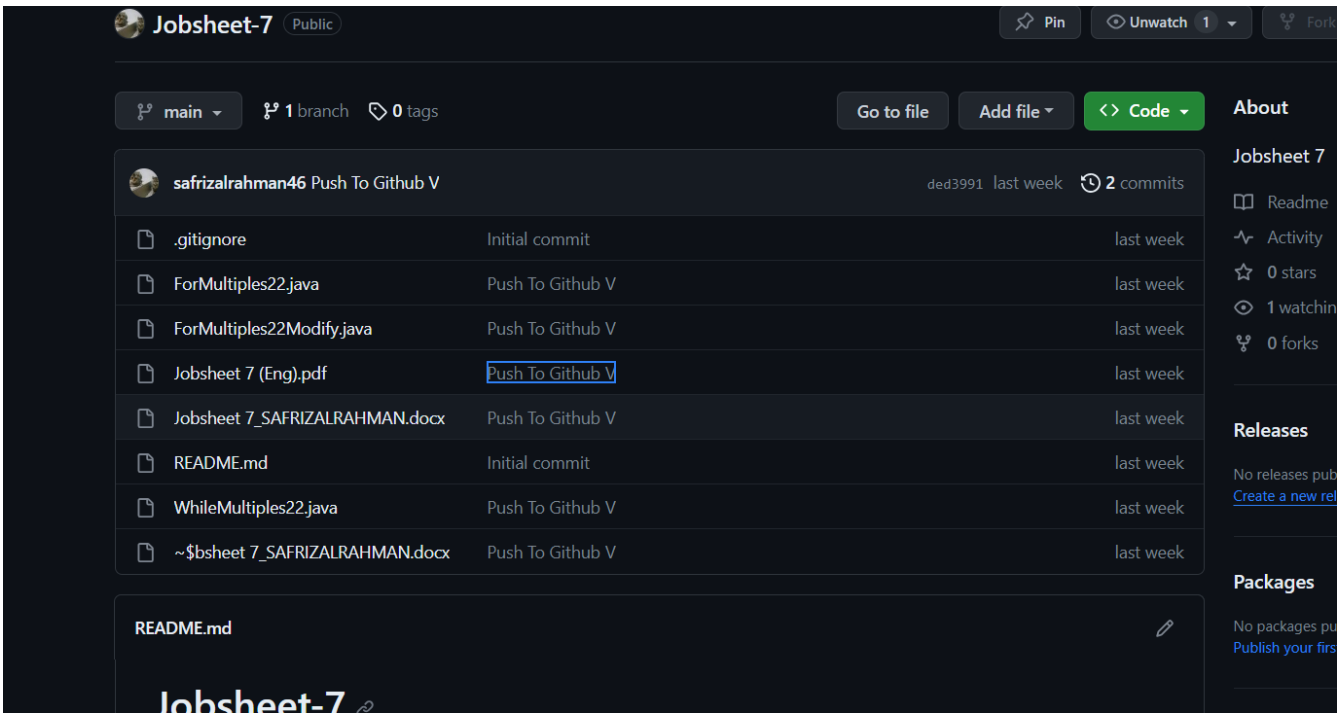
each loop the value of i is entered into the if operation, if i is divisible by a multiple then I will be entered into the entered the sum operation += i which will add up all i that enter if. And

counter++ counts the number of times the if is operated on

3. Modify the existing code by adding a new variable to calculate the average of all the specified multiples! Push and commit the program code to GitHub.

```
4.     average = (double) sum / counter;
5.
```

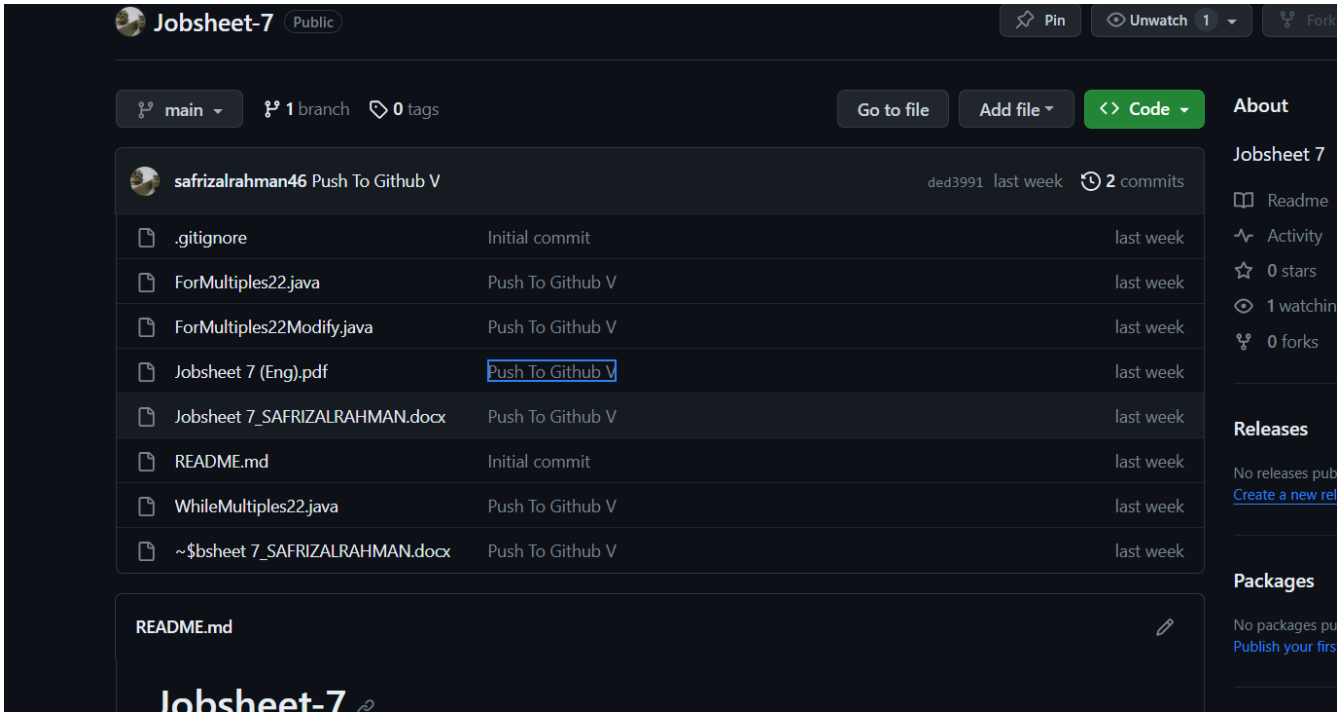
```
6.              System.out.printf("There Are %d numbers that
are multiple of %d in range 1 to 50. \n", counter
,multiple);
7.              System.out.printf("The sum from all
multiples of %d in range 1 s.d. 50 is %d. \n", multiple,
sum);
8.              System.out.printf("The Average of all
Multiples of %d in range 1 s.d. 50 is %.2f.  \n",
multiple, average);
9.
```



4. Create a new Java program file named **WhileMultiplesStudentIDNumber.java**. Create the equivalent code by using while loop. Push and commit the code to GitHub.

```java
import java.util.Scanner;

public class WhileMultiples22 {
    public static void main(String[] args) {
        Scanner input22 = new Scanner (System.in);

        // Declare
        int multiple;
        int sum = 0;
        int counter = 0;
        double average;

        System.out.print("INPUT THE MULTIPLE = ");
        multiple = input22.nextInt();

        // Declare Di luar
        int i = 1;
        while (i <= 50) {
            if (i % multiple == 0) {
```

```
                sum = sum + i;
                counter++;
            }
            i++;
        }

        average = (double) sum / counter;

        System.out.printf("There Are %d numbers that are
multiple of %d in range 1 to 50. \n", counter, multiple);
        System.out.printf("The sum from all multiples of %d
in range 1 s.d. 50 is %d. \n", multiple, sum);
        System.out.printf("The average of all multiples of
%d in range 1 s.d. 50 is %.2f. \n", multiple, average);

        input22.close();
    }

}
```



2.2 Experiment 2: Calculating Employee Overtime Pay Using WHILE and CONTINUE Experiment Times: 60 minutes

A company provides overtime pay to its employees every week. The overtime pay is calculated based on the employee's position and the number of overtime hours in a week. Employees with the position of 'director' do not receive any additional overtime pay even if they work overtime, employees with the position of 'manager' receive overtime pay of 100,000 per hour, while employees with the position of 'staff' receive overtime pay of 75,000 per hour. In this experiment, a program code is created using WHILE and CONTINUE to calculate the company's expenses.

1. Open the text editor and create a new Java file named **WhileOvertimePayStudentIDNumber.java**
2. Create the basic structure of Java program containing **class** declaration and **main**() method
3. Add the **Scanner** library.
4. Create or declare variable named **input** from **Scanner** library.

5. Declare **int** variable named **numEmployee** and **overtimeHours,** and then **overtimePay** and **totalOvertimePay** with **double** datatype. Initialize **overtimePay** and **totalOvertimePay** with 0
6. Declare variable **position** with **String** datatype.
7. Add the following code to get user input for **numEmployee** variable.

```
System.out.print(s:"Employee number = ");
numEmployee = input.nextInt();
```

8. Create a WHILE loop structure with an IF-ELSE conditional and CONTINUE to determine overtime pay based on employee positions

```
int i=0;
while(i<numEmployee){
    System.out.print("Position of employee "+(i+1)+" (director, manager, staff) = ");
    position = input.next();
    System.out.print("Employee "+(i+1)+" overtime hours = ");
    overtimeHours = input.nextInt();
    i++;

    if(position.equalsIgnoreCase(anotherString:"director")){
        continue;
    }else if(position.equalsIgnoreCase(anotherString:"manager")){
        overtimePay=overtimeHours*100000;
    }else if(position.equalsIgnoreCase(anotherString:"staff")){
        overtimePay=overtimeHours*75000;
    }

    totalOvertimePay += overtimePay;
}
```

9. Display the **totalOvertimePay**

```
System.out.println("Total of Overtime Pay = "+totalOvertimePay);
```

10. Run the program and analyze the result. Your result must be like this:

```
Employee number = 3
Position of employee 1 (director, manager, staff) = manager
Employee 1 overtime hours = 1
Position of employee 2 (director, manager, staff) = director
Employee 2 overtime hours = 10
Position of employee 3 (director, manager, staff) = staff
Employee 3 overtime hours = 5
Total of Overtime Pay = 475000.0
```

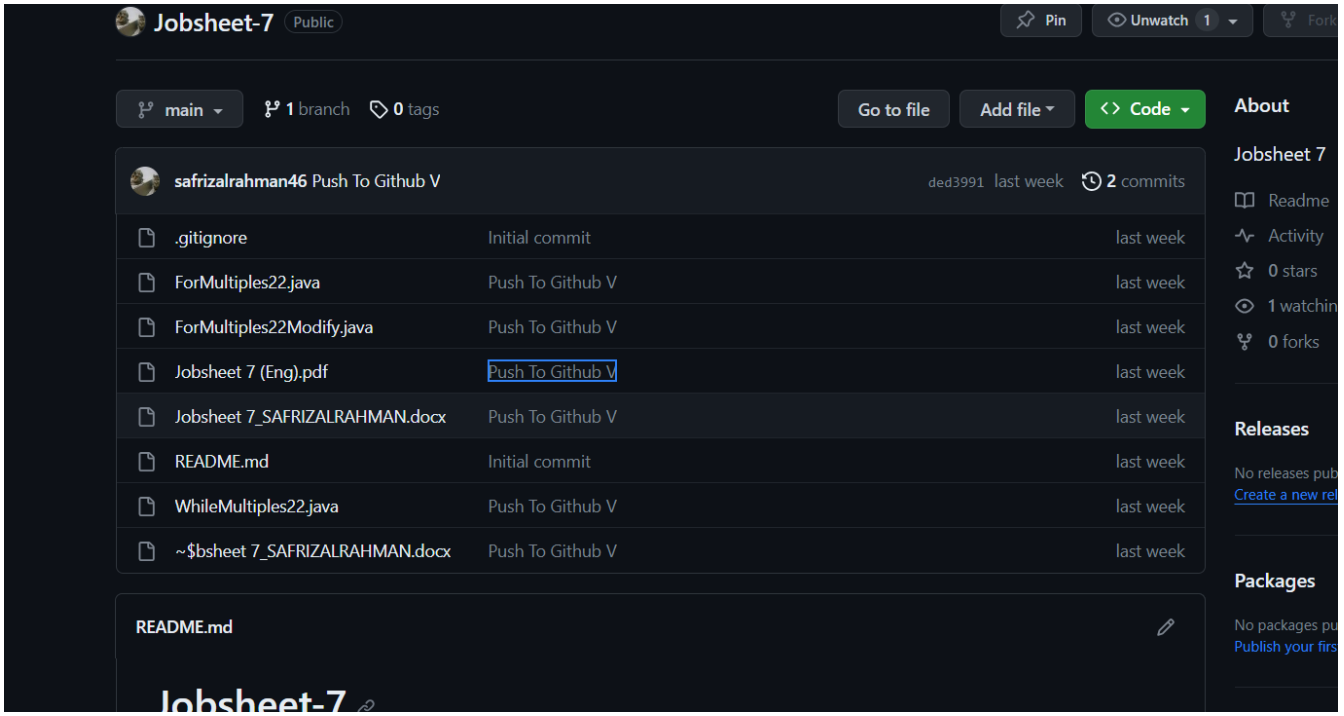
11. Commit and push the changes to GitHub.

```
import java.util.Scanner;
```

```
public class WhileOvertimePay22 {
    public static void main(String[] args) {
        Scanner input22 = new Scanner (System.in);

        //Declare
        String position;
        int numEmployee;
        int overtimeHours;
        double overtimePay = 0;
        double totalOvertimePay = 0;

        System.out.print("Employee Number = ");
        numEmployee = input22.nextInt();

        int i=0;
            while(i<numEmployee){
                System.out.print(" Position of employee
"+(i+1)+" (director, manager, staff) = ");
                position = input22.next();
                System.out.print(" Employee "+(i+1)+"
Overtime Hours = ");
                overtimeHours = input22.nextInt();
            i++;

            if(position.equalsIgnoreCase("director")){
                continue;
            }else if (position.equalsIgnoreCase("manager"))
{
                overtimePay= overtimeHours*100000;
            }else if (position.equalsIgnoreCase("staff")){
                overtimePay= overtimeHours*75000;
            }
```

```
            totalOvertimePay += overtimePay;

            System.out.print("Total of Overtime Pay = "
+totalOvertimePay);
        }

    }
}
```

```
PROBLEMS 3  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\A. DATA DARI DOCUMENT KUMPULAN TUGAS JUGA\ATugasPraktek\JOBSHEET 7\Jobsheet-7>  & 'C:\Program Files\Microsoft\jdk-11.0.12.7
ket,server=n,suspend=y,address=localhost:56043' '-cp' 'C:\Users\Safrizal Rahman\AppData\Roaming\Code\User\workspaceStorage\4f0f1a
7_d4260482\bin' 'WhileOvertimePay22'
Employee Number = 4
 Position of employee 1 (director, manager, staff) = satff
 Employee 1 Overtime Hours = 1212
Total of Overtime Pay = 0.0 Position of employee 2 (director, manager, staff) = director
 Employee 2 Overtime Hours = 1213
 Position of employee 3 (director, manager, staff) = manager
 Employee 3 Overtime Hours = 12313
Total of Overtime Pay = 1.2313E9 Position of employee 4 (director, manager, staff) = manager2
 Employee 4 Overtime Hours = 123212
Total of Overtime Pay = 2.4626E9
PS D:\A. DATA DARI DOCUMENT KUMPULAN TUGAS JUGA\ATugasPraktek\JOBSHEET 7\Jobsheet-7>

main*  0 3  0  Live Share
```



Questions

1. Show the part of the program code used as a condition to stop the WHILE loop! How many times is the loop executed?

   The number of times the loop is performed depends on this code

```
System.out.print("Employee Number = ");
        numEmployee = input22.nextInt();

        int i=0;
            while(i<numEmployee){
```

2. In this code,

```
if(position.equalsIgnoreCase(anotherString:"director")){
    continue;
```

What actually happens if the **'position'** variable contains the value 'DIRECTOR'? What is the use of CONTINUE within the loop structure?

- Because there is equalsIgnoreCase, as long as the string is written by the director, it is still

considered the same string

- The role of continue so that the loop jumps to the next increment

3. Why is the 'i++' iteration component placed in the middle, not at the end of the while block? Move 'i++' to the end of the while block, then run the program again by entering 'DIRECTOR' as the **position** for the first employee. What happens? Explain!

- If placed at the end when entering "director" continue will jump to i++ so that the loop loop will move to the next

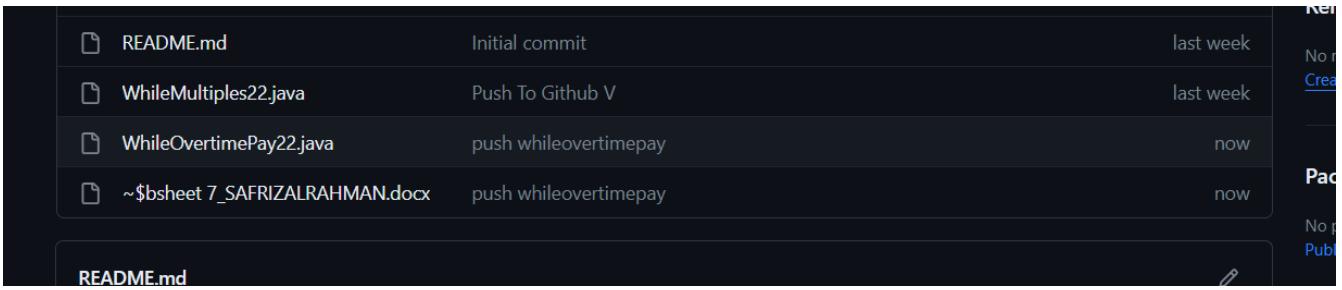
4.Modify the program code to handle invalid positions like the following example:

```
Employee number = 3
Position of employee 1 (director, manager, staff) = director
Employee 1 overtime hours = 5
Position of employee 2 (director, manager, staff) = manager
Employee 2 overtime hours = 10
Position of employee 3 (director, manager, staff) = programmer
Employee 3 overtime hours = 4
Invalid position!
Position of employee 3 (director, manager, staff) = staff
Employee 3 overtime hours = 4
Total of Overtime Pay = 1300000.0
```

```
}else{
                System.out.println("Invalid Position!");
                i--;
            continue;
            }
```

```
PROBLEMS 3   OUTPUT   TERMINAL   PORTS   DEBUG CONSOLE

 Position of employee 2 (director, manager, staff) = manager
 Employee 2 Overtime Hours = 2
Total of Overtime Pay = 200000.0 Position of employee 3 (director, manager, staff) = 2
PS D:\A. DATA DARI DOCUMENT KUMPULAN TUGAS JUGA\ATugasPraktek\JOBSHEET 7\Jobsheet-7>  d:; cd 'd:\A. DATA DARI DOC
rogram Files\Microsoft\jdk-11.0.12.7-hotspot\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y
ng\Code\User\workspaceStorage\4f0f1a23721e93d7b0642f38b694fce9\redhat.java\jdt_ws\Jobsheet-7_d4260482\bin' 'While
Employee Number = 3
 Position of employee 1 (director, manager, staff) = director
 Employee 1 Overtime Hours = 6
 Position of employee 2 (director, manager, staff) = manager
 Employee 2 Overtime Hours = 7
Total of Overtime Pay = 700000.0 Position of employee 3 (director, manager, staff) = programmer
 Employee 3 Overtime Hours = 2
Invalid Position!
 Position of employee 3 (director, manager, staff) = 2
PS D:\A. DATA DARI DOCUMENT KUMPULAN TUGAS JUGA\ATugasPraktek\JOBSHEET 7\Jobsheet-7>

main*   0 3   0   Live Share
```

7. Commit and push the changes to GitHub.



2.3 Experiment 3: Calculating Leave Entitlement Using DO-WHILE

Experiment Times: 50 minutes

In this experiment, a program code is created using DO-WHILE to calculate the **leave entitlement** of an employee. Employees are entitled to 5 days of leave. Leave days will be deducted each time they are used. When there are only 2 days of leave remaining, the employee receives a warning to stop using their leave

1. Open the text editor and create a new Java file named **DoWhileLeaveEntitlementStudentIDNumber.java**
2. Create the basic structure of Java program containing class declaration and main() method
3. Add the **Scanner** library.
4. Create or declare variable named **input** from **Scanner** library.
5. Create variables **leaveEntitlement** and **numLeave** with int datatype.
6. Create variable **confirmation** with **String** datatype.
7. Create a DO-WHILE loop structure to get the user input from the keyboard and calculate leave entitlement

```
int jatahCuti, jumlahHari;
String konfirmasi;

System.out.print("Jatah cuti: ");
jatahCuti = sc.nextInt();

do {
    System.out.print("Apakah Anda ingin mengambil cuti (y/t)? ");
    konfirmasi = sc.next();

    if (konfirmasi.equalsIgnoreCase("y")) {
        System.out.print("Jumlah hari: ");
        jumlahHari = sc.nextInt();

        if (jumlahHari <= jatahCuti) {
            jatahCuti -= jumlahHari;
            System.out.println("Sisa jatah cuti: " + jatahCuti);
        } else {
            System.out.println("Sisa jatah cuti Anda tidak mencukupi");
            break;
        }
    }
} while (jatahCuti > 0);
```

```
import java.util.Scanner;

public class DoWhileLeaveEntitlement22 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
            int jatahCuti, jumlahHari;
            String konfirmasi;

            System.out.print("Jatah cuti: ");
            jatahCuti = sc.nextInt();

            do {
                System.out.print("Apakah Anda ingin
mengambil cuti (y/n)?");
                konfirmasi = sc.next();
```

```
                if (konfirmasi.equalsIgnoreCase("y")) {
                    System.out.print("Jumlah hari: ");
                    jumlahHari = sc.nextInt();
                    if (jumlahHari<=jatahCuti) {
                        jatahCuti-=jumlahHari;
                        System.out.println("Sisa jatah cuti:
"+ jatahCuti);
                    } else {
                        System.out.println("Sisa jatah cuti
Anda tidak mencukupi");
                        break;
                    }
            }
        } while (jatahCuti>0);
    }
}
```

8. Run the program and analyze the result. It must be the same with the following output.

```
Number of Leave Entitlement = 12
Do you want to take a leave? (y/n) = y
Leave number = 4
The remaining leave entitlement = 8
Do you want to take a leave? (y/n) = y
Leave number = 5
The remaining leave entitlement = 3
Do you want to take a leave? (y/n) = y
Leave number = 4
The remaining leave entitlement is not sufficient!
```

```
PS D:\A. DATA DARI DOCUMENT KUMPULAN TUGAS JUGA\ATugasPraktek\JOBSHEET 7\Jobsheet-7>  & 'C:\
end=y,address=localhost:56233' '-cp' 'C:\Users\Safrizal Rahman\AppData\Roaming\Code\User\wor
lement22'
Jatah cuti: 13
Apakah Anda ingin mengambil cuti (y/n)?y
Jumlah hari: 5
Sisa jatah cuti: 8
Apakah Anda ingin mengambil cuti (y/n)?5
Apakah Anda ingin mengambil cuti (y/n)?y
Jumlah hari: 5
Sisa jatah cuti: 3
Apakah Anda ingin mengambil cuti (y/n)?y
Jumlah hari: 3
Sisa jatah cuti: 0
PS D:\A. DATA DARI DOCUMENT KUMPULAN TUGAS JUGA\ATugasPraktek\JOBSHEET 7\Jobsheet-7>
```

9. Commit and push the changes to GitHub.

Questions

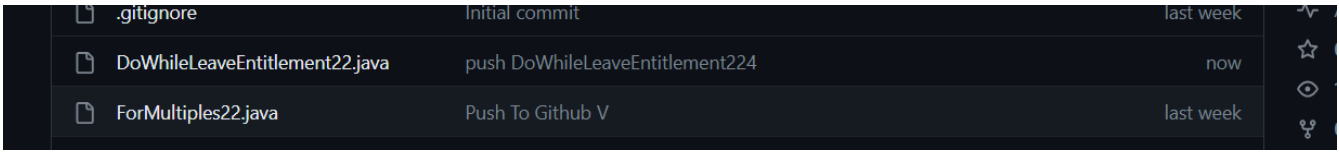
1. What is the use of the BREAK within the loop syntax?

   To stop the current loop

2. Modify the program so that if the number of leave days requested is greater than the remaining entitlement, the program does not stop, allowing the user to enter the number of days according to the entitlement.

   Remove break: in else condition

3. Commit and push the program code to GitHub.



4. When typing "t" as the confirmation input, what happens? Why?

   Because there is no condition for choosing "t"

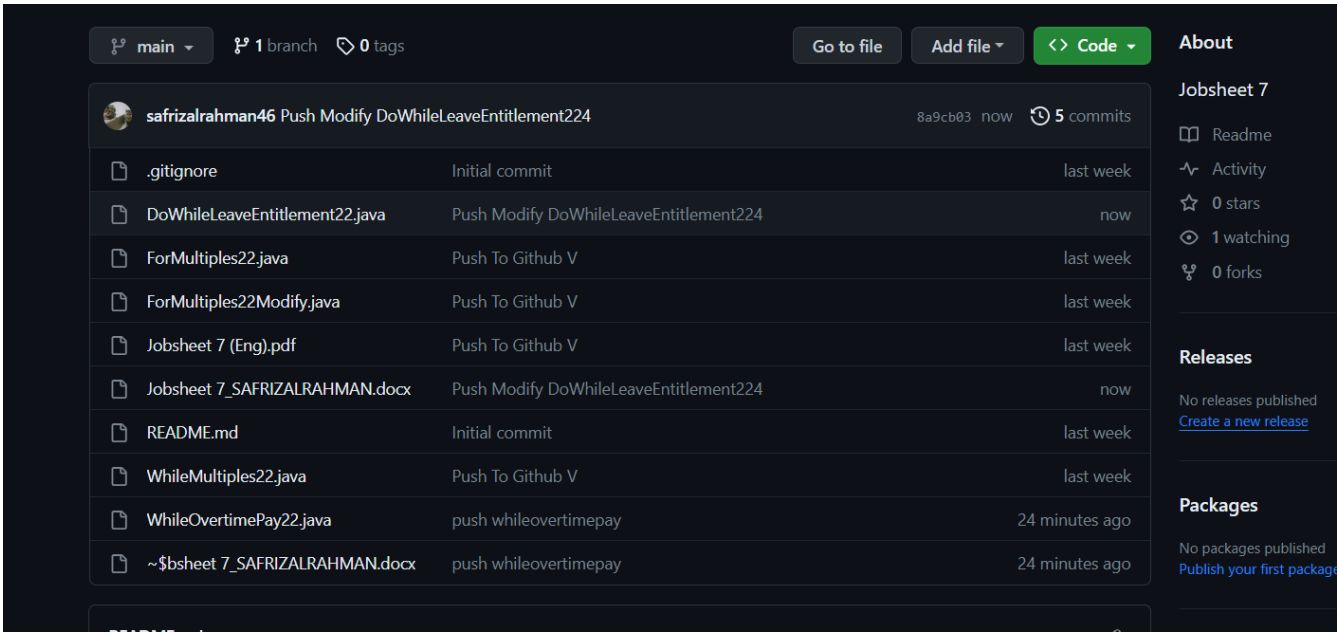
5. Modify the program code so that when the user enters "t" as the confirmation input, the program will stop.

   Just add this but not nested, you know this is outside if

```
6.     else {
7.                 System.out.println("Sudah Cukupu
Baiklah");
```

```
8.                  break;
9.
10.                 }
```

11. Commit and push the program code to GitHub.



3. Assignment Experiment Times: 130 minutes

- Implement the flowchart that was already created in the assignment for the Basic Programming course related to the project into your program.
- Push and commit the result of your program code to your project repository.
- Note: the assignment should only apply the material from sessions 1 to 7

```
import java.util.Scanner;


public class CodinganKedua {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

```
            // Declaration Login
            boolean signUp = false, login = false;
            int option;
            String name="Mitra", nameLogin ,
pass="Mitra123", passLogin, pass1, again;
            // Declaration
            String expeditionName, startDate, endDate;
            String totalGoods;
            double totalDistance, rangeTime, totalTime,
costPerTime, totalCost, costPerKilometer;

            // Login And SignUp
            System.out.print("\033[H\033[2J");
            System.out.flush();
            System.out.println(" ----------------");
            System.out.println("|    EXPEDITION   |");
            System.out.println(" ----------------");
            System.out.println("1. SignUp First if you dont
have account");
            System.out.println("2. Login If you Have an
account Before");
            option = scanner.nextInt();
            System.out.print("\033[H\033[2J");
            System.out.flush();
        switch (option) {
            case 1 :
                do{

                }
                break;

            default:
```

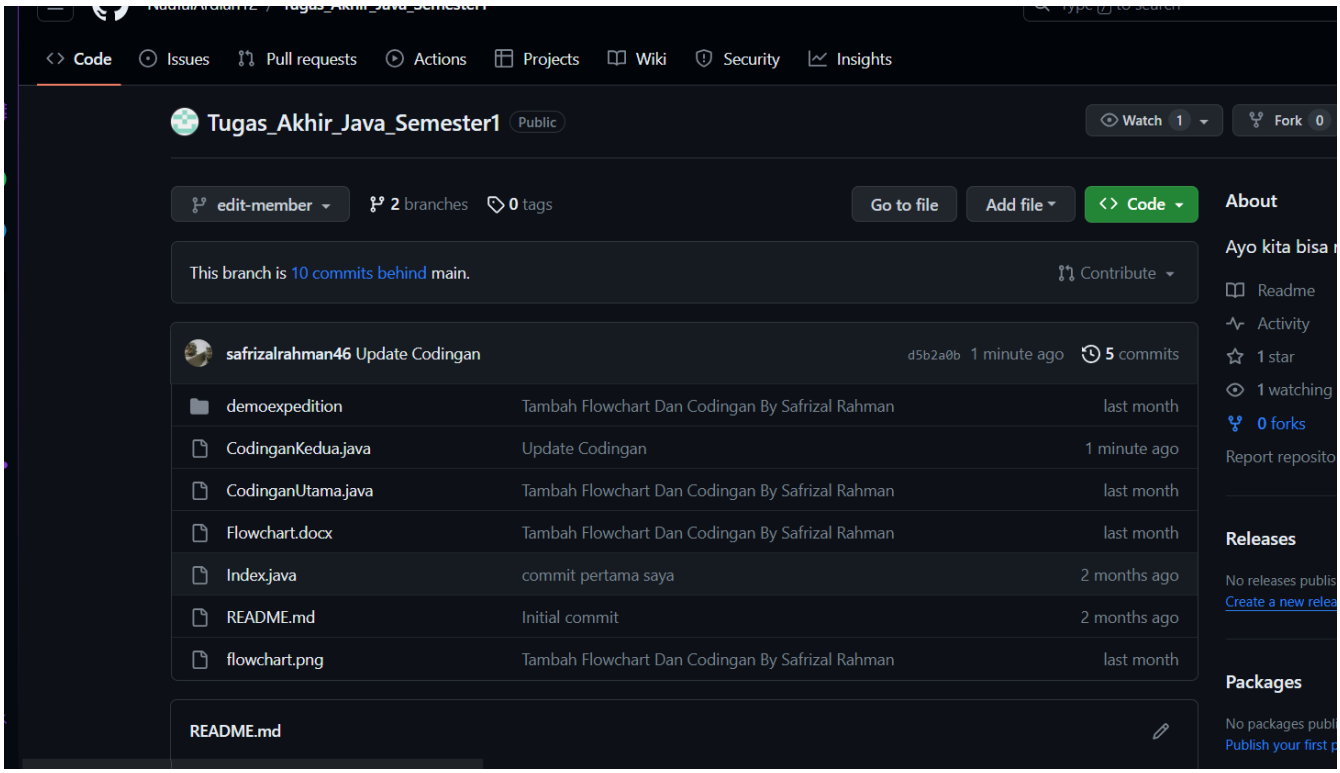
```
                break;
            }


            // Input
            System.out.println("Welcome to the Expedition
Java Application!");
            System.out.print("Please enter the name of the
expedition: ");
            expeditionName = scanner.nextLine();

            System.out.print("Please enter the start date
(DD-MM-YYYY): ");
            startDate = scanner.nextLine();

            System.out.print("Please enter the end date (DD-
MM-YYYY): ");
            endDate = scanner.nextLine();

            System.out.print("Please enter the total
distance (in kilometers): ");
            totalDistance = scanner.nextDouble();

            System.out.print("Please enter Range Time days :
");
            rangeTime = scanner.nextDouble();

            scanner.nextLine(); // Consume newline
            System.out.print("Please enter the total number
of Goods: ");
            totalGoods = scanner.nextLine();
```

```
            System.out.print("Please enter the cost per
Goods (in currency): ");
            costPerTime = scanner.nextDouble();

            // Calculations
            totalTime = totalDistance / rangeTime;
            totalCost = Double.parseDouble(totalGoods) *
costPerTime;
            costPerKilometer = totalCost / totalDistance;

            // Output
            System.out.println("\nExpedition Details:");
            System.out.println("Name: " + expeditionName);
            System.out.println("Start Date: " + startDate);
            System.out.println("End Date: " + endDate);
            System.out.println("Total Distance (km): " +
totalDistance);
            System.out.println("Range Time (days): " +
rangeTime);
            System.out.println("Total Time (hours): " +
totalTime);
            System.out.println("Total Goods: " +
totalGoods);
            System.out.println("Cost per Goods: " +
costPerTime);
            System.out.println("Total Cost: " + totalCost);
            System.out.println("Cost per Kilometer: " +
costPerKilometer);

            // Additional Information
            if (totalDistance > 1000) {
                System.out.println("This is a long
expedition!");
```

```
            } else {
                System.out.println("This is a short
expedition.");
            }

            if (Double.parseDouble(totalGoods) > 50) {
                System.out.println("Large group! Special
arrangements may be needed.");
            } else {
                System.out.println("Manageable group
size.");
            }

            if (costPerKilometer > 2.5) {
                System.out.println("The expedition may be
costly.");
            } else {
                System.out.println("The expedition is
reasonably priced.");
            }

            // Switch case
            System.out.println("\nPlease select an
option:");
            System.out.println("1. View expedition
details");
            System.out.println("2. View additional
information");
            System.out.println("3. Exit");

            int option = scanner.nextInt();

            switch (option) {
```

```
                case 1:
                    System.out.println("\nExpedition
Details:");
                    System.out.println("Name: " +
expeditionName);
                    System.out.println("Start Date: " +
startDate);
                    System.out.println("End Date: " +
endDate);
                    System.out.println("Total Distance (km):
" + totalDistance);
                    System.out.println("Range Time (days): "
+ rangeTime);
                    System.out.println("Total Time (hours):
" + totalTime);
                    System.out.println("Total Goods: " +
totalGoods);
                    System.out.println("Cost per Goods: " +
costPerTime);
                    System.out.println("Total Cost: " +
totalCost);
                    System.out.println("Cost per Kilometer:
" + costPerKilometer);
                    break;
                case 2:
                    System.out.println("\nAdditional
Information:");
                    if (totalDistance > 1000) {
                        System.out.println("This is a long
expedition!");
                    } else {
                        System.out.println("This is a short
expedition.");
```

```
                    }

                    if (Double.parseDouble(totalGoods) > 50)
{
                        System.out.println("Large group!
Special arrangements may be needed.");
                    } else {
                        System.out.println("Manageable group
size.");
                    }

                    if (costPerKilometer > 2.5) {
                        System.out.println("The expedition
may be costly.");
                    } else {
                        System.out.println("The expedition
is reasonably priced.");
                    }
                    break;
                case 3:
                    System.out.println("\nThank you for
using the Expedition Java Application!");
                    break;
                default:
                    System.out.println("\nInvalid option
selected.");
                    break;
            }

            scanner.close();
    }
}
```


Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Tugas_Akhir_Java_Semester1
Public
Watch 1
Fork 0
edit-member
2 branches
0 tags
Go to file
Add file
Code
About
Ayo kita bisa
This branch is 10 commits behind main.
Contribute
Readme
Activity
1 star
1 watching
0 forks
safrizalrahman46 Update Codingan
d5b2a0b 1 minute ago
5 commits
demoexpedition
Tambah Flowchart Dan Codingan By Safrizal Rahman
last month
CodinganKedua.java
Update Codingan
1 minute ago
CodinganUtama.java
Tambah Flowchart Dan Codingan By Safrizal Rahman
last month
Flowchart.docx
Tambah Flowchart Dan Codingan By Safrizal Rahman
last month
Index.java
commit pertama saya
2 months ago
README.md
Initial commit
2 months ago
flowchart.png
Tambah Flowchart Dan Codingan By Safrizal Rahman
last month
README.md
Releases
Packages