JOBSHEET I
Programming Fundamentals Review

1. Learning Outcome

After completing this session, students must be able to:

1. Implement selection, looping, arrays, and functions in Java programming language.

2. Labs Activity

2.1 Selection

Times: 50 minutes

The material covered in this laboratory session has been explained actually in the Fundamentals Programming course, in semester 1. Therefore, no experimental steps will be conducted in this laboratory session. Answer the following questions:

2.1.1 Questions

1. Create a program to calculate the final grade of a student with the following conditions: 20% for assignments, 20% for quizzes, 30% for mid-term exams, and 40% for final exams. Each input grade should be within the range of 0 to 100. If the user inputs a value outside this range, the output will be "invalid value". Once the final grade is obtained, proceed with the grade conversion according to the following criteria:

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

If the letter grades are A, B+, B, C+, or C, the student passes. If the letter grade is D or E, the student fails.

- The input consists of **assignments**, **quiz**, **mid-term exams**, and **final exams**.
- The program will output "**invalid grade**" if the entered grade is outside the specified range.
- The program will output the **final grade result**, **letter grade**, and **pass/fail status**.

Example of Program Output:

```
Program Menghitung Nilai Akhir
======================
Masukkan Nilai Tugas: 85
Masukkan Nilai Kuis: 90
Masukkan Nilai UTS: 120
Masukkan Nilai UAS: 70
======================
======================
nilai tidak valid
======================
======================
Mamluatuls-MacBook-Air:Praktikum
```

```
Program Menghitung Nilai Akhir
======================
Masukkan Nilai Tugas: 90
Masukkan Nilai Kuis: 40
Masukkan Nilai UTS: 75
Masukkan Nilai UAS: 85
======================
======================
nilai akhir : 74.0
Nilai Huruf :B+
======================
======================
SELAMAT ANDA LULUS
```

2.2 Looping

Times: 50 minutes

The material in this session has been explained in the Basic Programming course. So, in this session, there is no experimental steps will be carried out. Just directly answer the following questions:

2.2.1 Looping

Questions:

1. Write a program that can output a series of numbers from **1** to **n** except numbers **6** and **10**, **odd numbers** will be printed with an asterisk "*", while **even numbers** will be printed the number itself, with **n** = the **last 2 digits** of your NIM. If **n<10** then add **10** (n+=10)

   Example 1:

   Input NIM: 2341720102 then n=12 (the last 2 digit is 02 then add 10)

   OUTPUT: * 2 * 4 * * 8 * * 12

   Example 2:

   Input NIM: 2341720113 maka n=13

   OUTPUT: * 2 * 4 * * 8 * * 12

   Example of Program Output

```
Masukkan Nim :2341720102
======================
n : 12
 * 2 * 4 * * 8 * * 12
```

2.3 Array

Times: 50 minutes

2.3.1 Array

Questions:

1. Write a program to calculate the **IP Semester** for the courses you took last semester. The formula for calculating **IP Semester** as follows:

$$IP\ Semester = \frac{\sum_i (Nilai\ Setara_i * \ bobot\ SKS_i)}{\sum SKS}$$

Nilai setara follows the following rules:

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

Input from the program is the **courseName**, the **bobotSKS**, and the **letter grade** of the course.

Example for Program Output:

```
======================
Program Menghitung IP Semester
======================
masukkan nilai Angka untuk MK Pancasila: 75
masukkan nilai Angka untuk MK Konsep Teknologi Informasi: 85
masukkan nilai Angka untuk MK Critical Thinking dan Problem Solving: 70
masukkan nilai Angka untuk MK Matermatika Dasar: 85
masukkan nilai Angka untuk MK Bahasa Inggris: 85
masukkan nilai Angka untuk MK Dasar Pemrograman: 62
masukkan nilai Angka untuk MK Praktikum Dasar Pemrograman: 62
masukkan nilai Angka untuk MK Keselamatan dan Kesehatan Kerja: 85
======================
hasil Konversi Nilai
======================
MK                                  Nilai Angka      Nilai Huruf    Bobot Nilai
Pancasila                           75.00              B+            3.50
Konsep Teknologi Informasi          85.00               A            4.00
Critical Thinking dan Problem Solving  70.00            B            3.00
Matermatika Dasar                   85.00               A            4.00
Bahasa Inggris                      85.00               A            4.00
Dasar Pemrograman                   62.00              C+            2.50
Praktikum Dasar Pemrograman         62.00              C+            2.50
Keselamatan dan Kesehatan Kerja     85.00               A            4.00
======================
IP :  3.42
```

2.4 Function

Times: 50 minutes

2.4.1 Function

Questions:

RoyalGarden is a flower shop with many branches. In everyday Flower Stock in every branch listed as follows:

Row = Branch, Column = Flower sotock in a day

	Aglonema	Keladi	Alocasia	Mawar
RoyalGarden 1	10	5	15	7
RoyalGarden 2	6	11	9	12
RoyalGarden 3	2	10	10	5
RoyalGarden 4	5	7	12	9

The price of Aglonema =75.000, Keladi = 50.000, Alocasia =60.000, Mawar =10.000.

1. Create a function to display the income of each branch if all the flowers are sold out.
2. Create a function to find out the number of stock for each type of flower on the royalgarden branch 4. If there is additional information in the form of a reduction in stock because the flower dies. With details of Aglonema -1, Keladi -2, Alocasia -0, Mawar -5.

3. Assignments

Times: 100 minutes

1. Write a program to create two arrays with the contents as follows. The first array is a one-dimensional char array CODE[10], containing the car plate code. The second array, the two-

dimensional array char CITY[10][12] contains the city name paired with the car plate code. An illustration of the array display is as follows:

A	B	A	N	T	E	N					
B	J	A	K	A	R	T	A				
D	B	A	N	D	U	N	G				
E	C	I	R	E	B	O	N				
F	B	O	G	O	R						
G	P	E	K	A	L	O	N	G	A	N	
H	S	E	M	A	R	A	N	G			
L	S	U	R	A	B	A	Y	A			
N	M	A	L	A	N	G					
T	T	E	G	A	L						

When the user inputs the number plate code, the program will output the city name from the number plate code.

2. Write a program to calculate **speed**, **distance** and **time** formulas. The following are the equations for calculations:

   Speed formula:

   $$v = \frac{s}{t}$$

   Distance formula:

   $$s = v.t$$

   Time formula:

   $$t = \frac{s}{v}$$

   Note:

   $v = speed$

   $s = distance$

   $t = time$

   The program created has the following functions:

   a. Menu (To select the formula to be calculated (speed/distance/time)

   b. Calculates the results of Speed calculations

   c. Calculates Distance

   d. Calculates Time

   Call these functions in the main function!