



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DCT1123
COURSE	: PROBLEM SOLVING AND ALGORITHMS
SEMESTER/SESSION	: 1/2023-2024
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer **ALL** questions.
2. All answers should be written in the answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

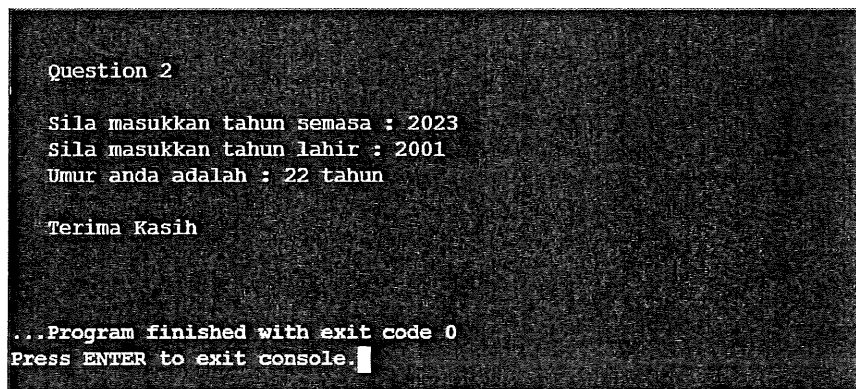
THIS BOOKLET CONTAINS 6 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

- a) A **pseudocode** consists of short English phrases used to explain specific tasks within a program's algorithm. List **THREE (3)** common keywords that are usually used in pseudocode. (3 marks)
- b) A **flowchart** is a diagrammatic representation that illustrates the sequence of operations to be performed for solving a problem. Illustrate and describe **THREE (3)** symbols that are used in flowcharts. (9 marks)

QUESTION 2

Kindly refer to the program in Figure 1.



```
Question 2

Sila masukkan tahun semasa : 2023
Sila masukkan tahun lahir : 2001
Umur anda adalah : 22 tahun

Terima Kasih

...Program finished with exit code 0
Press ENTER to exit console.
```

Figure 1

The program:

- Receives input in the form of current year and year of birth,
- Calculates age based on the formula below:

$$\text{age} = \text{current year} - \text{year of birth}$$

- Display age,
- Display "Terima Kasih", and
- Terminates.

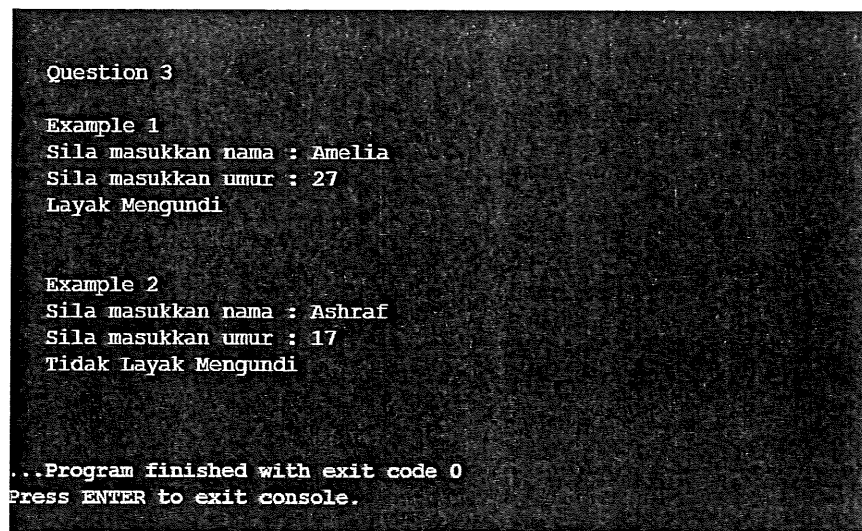
- a) Prepare the pseudocode for the above program. (8 marks)

b) Prepare the flowchart for the above program.

(14 marks)

QUESTION 3

Kindly refer to the program in Figure 2.



```
Question 3

Example 1
Sila masukkan nama : Amelia
Sila masukkan umur : 27
Layak Mengundi

Example 2
Sila masukkan nama : Ashraf
Sila masukkan umur : 17
Tidak Layak Mengundi

...Program finished with exit code 0
Press ENTER to exit console.
```

Figure 2

The program:

- Receives input in the form of name and age,
- Determines if the age is greater than or equal to 18,
- Display "*Layak Mengundi*" if the age is greater than or equal to 18,
- Display "*Tidak Layak Mengundi*" if the age is less than 18, and
- Terminates.

a) Prepare the pseudocode for the above program.

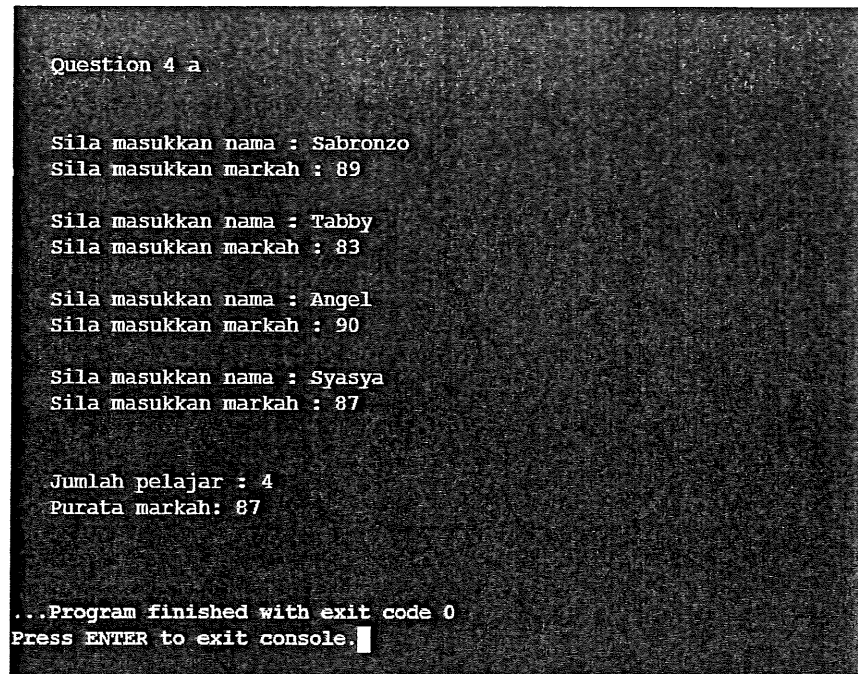
(8 marks)

b) Prepare the flowchart for the above program.

(14 marks)

QUESTION 4

Kindly refer to the program in Figure 3.



```
Question 4 a

Sila masukkan nama : Sabronzo
Sila masukkan markah : 89

Sila masukkan nama : Tabby
Sila masukkan markah : 83

Sila masukkan nama : Angel
Sila masukkan markah : 90

Sila masukkan nama : Syasya
Sila masukkan markah : 87

Jumlah pelajar : 4
Purata markah: 87

...Program finished with exit code 0
Press ENTER to exit console.
```

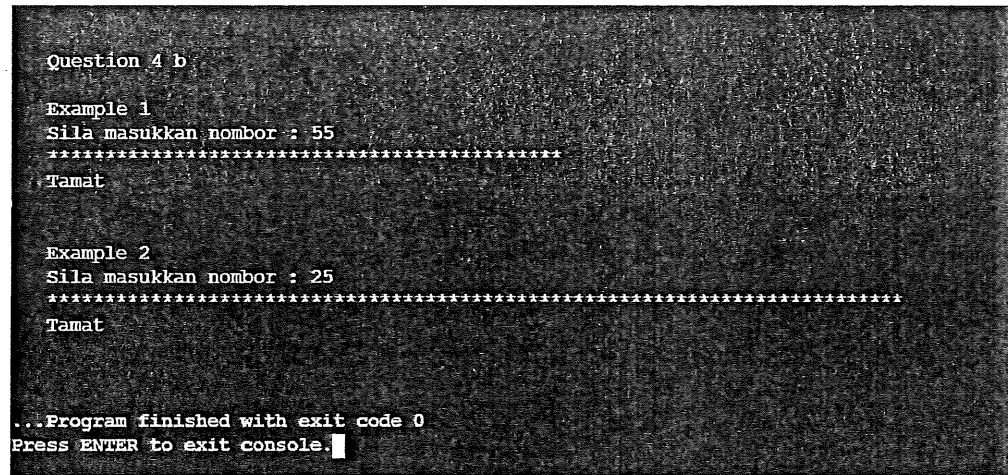
Figure 3

The program:

- Receives input in the form of name and marks for 4 students,
- Display the total number of students,
- Display the average mark, and
- Terminates.

a) Prepare the pseudocode for the above program. (Hint: use **for** loop). (12 marks)

Kindly refer to the program in Figure 4.



```
Question 4 b

Example 1
Sila masukkan nombor : 55
*****
Tamat

Example 2
Sila masukkan nombor : 25
*****
Tamat

...Program finished with exit code 0
Press ENTER to exit console.
```

Figure 4

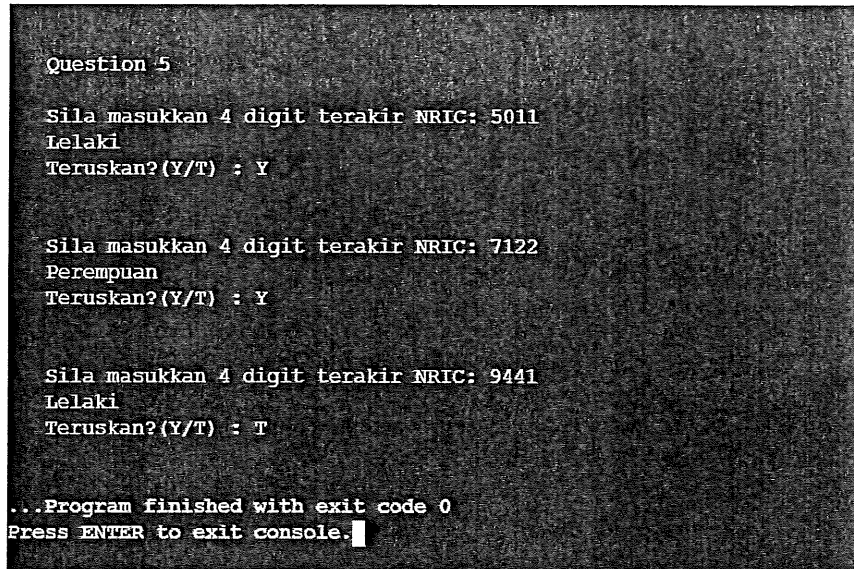
The program:

- Receives input in the form of an integer,
- Checks if the integer is less than 100,
- If it is, prints "*", adds 1 to the integer, and repeat until it reaches 100,
- If it is 100 or more, display "Tamat", and
- Terminates.

b) Prepare the pseudocode for the above program. (Hint: use **while** loop). (10 marks)

QUESTION 5

Kindly refer to the program in Figure 5.



```
Question 5

Sila masukkan 4 digit terakhir NRIC: 5011
Lelaki
Teruskan?(Y/T) : Y

Sila masukkan 4 digit terakhir NRIC: 7122
Perempuan
Teruskan?(Y/T) : Y

Sila masukkan 4 digit terakhir NRIC: 9441
Lelaki
Teruskan?(Y/T) : T

...Program finished with exit code 0
Press ENTER to exit console.
```

Figure 5

The program:

- Receives input in the form of the four last digit of the **National Registration Identity Card Number (NRIC)**,
- Checks if the digits are even or odd,
- Displays "*Perempuan*" if it is even,
- Displays "*Lelaki*" if it is odd, and
- Continues receiving input as long as the user wants to.

Prepare the flowchart for the above program. (Hint: use **do..while** loop)

(22 marks)

----- End of Question -----