

SC025  
Computer Science 2  
Semester 2  
2024/2025  
2 hours

SC025  
Sains Komputer 2  
Semester 2  
Sesi 2024/2025  
2 jam

Nama :										Tutoran :									
Nama Pensyarah Tutoran :																			
No. Matrik										No. Kad Pengenalan									
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**KOLEJ MATRIKULASI PERAK**  
**PERAK MATRICULATION COLLEGE**

**PRA PEPERIKSAAN SEMESTER PROGRAM MATRIKULASI**  
**MATRICULATION PROGRAMME TRIAL EXAMINATION**

**SAINS KOMPUTER**  
**2 jam**

1. A programming language is a formal language designed to communicate with a machine, particularly a computer.
- a. Based on the **TABLE 1** below, identify the **type of translator**.

[2 marks]

CODE A	CODE B
System.out.println("Enter grade:"); String grade = scanner.nextLine();	MOV AH, 09h ; LEA DX, INT 21h ; MOV AH, 01h ; INT 21h ;

**TABLE 1**

CODE A - \_\_\_\_\_  
CODE B - \_\_\_\_\_

- b. State **one (1)** characteristic of the translator used in CODE A.

[1 mark]

\_\_\_\_\_

\_\_\_\_\_

2. Identify the input, process and output for the following problems :

- a. Bella wants to figure out her monthly car payment. She has the car price, down payment, loan term, and interest rate. The car price is reduced by the down payment to find the amount that needs to be financed. The interest rate is used to calculate how much she will pay each month based on the loan term. Find the total monthly payment that Bella will pay.

[6 marks]

<b>INPUT</b>	
<b>PROCESS</b>	
<b>OUTPUT</b>	

- b. The Gerak Gempak Club (GEC) is registering participants for a training course with  $n$  registrations. The course fee for each participant depends on the number of the participants, as shown in the table below:

Number of Participants	Fee per Participant (RM)
1 – 9	70.00
10 or more	50.00
0 or negative value	"Invalid Value"

#### Sample input and output

Enter number of registration : 3  
 Enter number of participant : 7  
 Fee is : RM490.00  
 Enter number of participant : 10  
 Fee is : RM500.00  
 Enter number of participant : 0  
 Invalid value

[6 marks]

<b>INPUT</b>	
<b>PROCESS</b>	
<b>OUTPUT</b>	

3. Designing a solution is the initial stage in moving toward actual implementation. It provides a detailed plan for what needs to be developed.

a. A freelancer is paid based on the number of hours worked. The pay rate is RM200 per hour. A 7% tax will be charged on the total income. Calculate and print the net income received by the freelancer.

i. Write a pseudocode for the above problem statement.

[4 marks]

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ii. Modify the pseudocode from question 3(a)(i) to accumulate total income for 180 freelancers working in A2Z Company. The program should display the total income earned by all freelancers. Additionally, if the total income exceeds RM25,000, the program should display the message "Achieve the target".

[6 marks]

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- b. Mat Salleh parks his car at residential parking areas throughout the month. The parking charges are determined based on the duration of parking, as shown in the table below.

Parking Duration (hours)	Charge (RM)
$\leq 2$	3.00
$\leq 5$	6.00
$> 5$	10.00

Draw a flowchart to calculate the total parking charges for Mat Salleh over n days in a given month.

[10 marks]

4.

- a) The JAVA segment below does not print the “Goodbye” message as expected. Write the correct code to print the “Goodbye” message.

```
public static void main(String[ ] args){  
    /* System.out.print("Goodbye"); */  
}
```

[1 mark]

- b) Consider the following statement and then write the appropriate Java input statement for **Breed** and **Gender** variables. Assume : Scanner mata = new Scanner (System.in); has been created in the program.

Sample of input

**breed : American shorthair**  
**gender : M**

[2 marks]

- c) Rewrite the mathematical expression below into a Java expression.

i)  $w = x^4 + \frac{(2my - x^2)}{3m}$

[2 marks]

- d) State the output for the given code segment

[3 marks]

```
int j = 24, sum = 3, m;  
for(int x=32; x>=j; x = x - 4) {  
    m = x * 2;  
    sum= sum + m;  
}  
System.out.println(m);  
System.out.println(sum);  
System.out.println(x);
```

5. Write a Java code segment for each situation in (a) and (b).

- a. You are creating a loan approval system for a bank. Write a Java code segment that checks if a customer is eligible for a loan. The customer is eligible if they have a credit score greater than 700 and have been employed for at least 2 years. If both conditions are met, the loan is approved. Otherwise, the loan is denied

[5 marks]

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- b. Write a code segment using the most suitable control structure to check whether each number in the range of **A to 20** is an **even or odd** number. The code should produce the following sample output:

[6 marks]

Enter the starting number (A): 15  
Number 15 is odd  
Number 16 is even  
Number 17 is odd  
Number 18 is even  
Number 19 is odd  
Number 20 is even

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6.

- a. Write a method definition named **convertHour** that will **convert hours into minutes**. The method will receive value through its parameter to be used in the calculation. Then the method will **return the result**.

[4 marks]

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- b. Syed Sideq is planning to host an open house for Syawal and is looking to hire a catering company for the event. He has researched multiple catering companies and obtained different pricing based on the number of guests. With a budget of RM3000, he wants to determine how many companies offer catering services within his budget. Additionally, he aims to find the most affordable catering option.

Create **an array to store the names and prices of n catering companies**, then identify the company **with the lowest price and the number of companies** offering catering services within his budget. Determine the output of this problem.

#### **Sample input**

Enter the number of catering companies: 3  
Enter the name of company 1: ABCD Catering  
Enter the price for company 1: 5000  
Enter the name of company 2: BASS Catering  
Enter the price for company 2: 2000  
Enter the name of company 3: XOXO Catering  
Enter the price for company 3: 2500

#### **Sample output**

The cheapest catering company is BASS Catering with a price of RM2000.0  
The number of companies within budget is 2

[12 marks]

```
import java.util.Scanner;  
class CateringCompany {  
public static void main(String[] args) {
```

**END OF QUESTION PAPER**