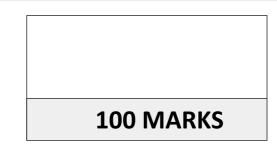


UNIVERSITI TEKNOLOGI MARA PRACTICAL TEST

COURSE	:	PROGRAMMING PARADIGMS
COURSE CODE	:	CSC305
DURATION	:	2 HOURS
NAME	:	
MATRICS NO	:	
GROUP	:	

INSTRUCTIONS TO CANDIDATES

- 1. This paper contains **TWO (2)** questions and a scoring rubric.
- 2. I know that plagiarism is wrong. Plagiarism is to use someone else's work and present it as your own.
- 3. This assignment/project/test/quiz/final assessment is my own work.
- 4. I have not been involved, nor will I allow anyone to copy my work with the intention of passing it off as their work.
- 5. I acknowledge that copying someone else's work (or part of it) is wrong and declare that my submission is my own.



DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

PRACTICAL TEST (20%)

SUBMISSION GUIDELINES

- 1. Answer script (.pdf)
 - Create a document and rename it as YourFullName_Id_Group.pdf
 Example: AliHassan_2025222333_4A.pdf
 - Your answer script must include the following information on the first page
 - o Full Name
 - o Matric Number
 - o Group
 - For each question:
 - Provide a screenshot of your answer
 - o Paste the screenshot into the answer script
 - Clearly label each answer according to the question number
- 2. Question 1 Scheme
 - Write the function definition using the installer
 - Copy your code to Notepad and save as :
 - Q1_FullName_ID_GROUP.txt
- 3. Question 2 Prolog
 - Write the facts and rules in txt file (Notepad)
 - Save your code as : Q2_FullName_ID_GROUP.pl

Files to upload to Microsoft Teams

- Answer Script PDF file (YourFullName_Id_Group.pdf)
- 2. Q1_FullName_ID_GROUP.txt
- 3. Q2_FullName_ID_GROUP.pl

QUESTION 1 - SCHEME PROGRAMMING LANGUAGE

A university wants to automate part of its student grading system. As a programmer, you are asked to implement a Scheme program that can generate the average score from THREE (3) assessments and display the appropriate grade for the average score.

- a. Create a function called **average** that receives **THREE** (3) assessment scores and calculates the average.
- b. Write a Scheme function called **grade** that takes **THREE** (3) assessment scores as arguments and displays the corresponding letter grade based on the average score. Function **grade** must use the function in (a) to calculate the average score.

Use the following grading scale to determine the grade:

- 90 and above $\rightarrow A$
- **80 to 89** → B
- 70 to 79 → C
- 60 to 69 \rightarrow D
- Below 60 → F
- c. Assume the three assessment marks are 70, 80, and 90. Call the function grade and show the output that will be displayed.

QUESTION 2 - PROLOG PROGRAMMING LANGUAGE

You are required to develop a program using logic programming (Prolog) for determining the monthly bill for mobile users based on their subscribed data plan and monthly data usage (in GB).

Plan Type	Base Price (RM)	Free Quota (GB)	Extra Rate (RM)
Basic	30	5	5
Standard	50	10	3
Premium	70	20	2

Table 1: Plan Pricing Table

Name	Plan Type	Data Used (GB)
Ali	Basic	8
Lisa	Standard	9
Kumar	Premium	25

Table 2: User subscription data.

a. Write Prolog facts to represent Table 1 and Table 2 using the following format:

%plan(PlanType, BasePrice, FreeQuota, ExtraRate).

%user(Name, PlanType, DataUsed).

- b. Create a rule to compute the extra charge incurred by a user who exceeds their allocated data quota. If the user remains within the quota, the extra charge should be zero.
- c. Using the predicate from Question (b), write a rule to calculate the total monthly bill using the following formula:

d. Write a query that lists the names of users whose total monthly bill exceeds RM50, along with the corresponding bill amount.

END OF QUESTIONS PAPER