



## UNIVERSITI PENDIDIKAN SULTAN IDRIS

### PENTAKSIRAN AKHIR FINAL ASSESSMENT

**SEMESTER 2 SESI 2021/2022**  
**SEMESTER 2 SESSION 2021/2022**

**KOD / CODE : MTS3063**

**KURSUS : PRINCIPLES OF PROGRAMMING**  
**COURSE : PRINSIP PENGATURCARAAN**

### ARAHAN / INSTRUCTIONS

1. Sila baca arahan pentaksiran dengan teliti.  
*Please read the assessment instructions carefully.*
2. Pelajar dikehendaki menyediakan skrip jawapan mengikut kepada pentaksiran akhir yang telah ditetapkan.  
*Students are required to prepare the answer scripts based on the predetermined the final assessment.*
3. Pelajar dikehendaki menyerahkan skrip jawapan kepada pensyarah dalam tempoh masa yang telah ditetapkan.  
*Students are required to submit their answer scripts to the lecturers within the specified time.*

PROGRAM / PROGRAMME: \_\_\_\_\_

TAHUN / YEAR: \_\_\_\_\_ KUMPULAN KULIAH / CLASS GROUP: \_\_\_\_\_

NO. PENDAFTARAN / REGISTRATION NO: \_\_\_\_\_

NO. KAD PENGENALAN / I.C. NO: \_\_\_\_\_

PENSYARAH / LECTURER: \_\_\_\_\_

**SECTION A: (30 marks)**

**Instruction:** Answer **all** questions.

*Arahan : Jawab semua soalan.*

1. Compare **Program Segment A** and **Program Segment B**. Which segment program is more efficient? Justify your answer.

*(Bandingkan Program Segment A dan Program Segment B. Segmen program yang manakah lebih efisien? Berikan justifikasi untuk jawapan anda.)*

```
if (score == 0 || score == 1) cout<<"moderate";  
if (score == 2 || score == 3) cout<<"good";  
if (score == 4) cout<< "very good";
```

**Program Segment A**

```
if (score == 0 || score == 1) cout<<"moderate";  
else if (score == 2 || score == 3) cout<<"good";  
else if (score == 4) cout<< "very good";
```

**Program Segment B**

**[4 marks]**

2. Permata Childcare Centre imposed charges for caring services based on the child age. The charge for children aged 2 years to less than 5 years old is RM180 per month and RM150 for children aged 5 years to less than 7 years old. While charges for child below 2 years old is RM250 per month. Create a program segment for this problem.

*(Pusat penjagaan Permata Child Care mengenakan bayaran jagaan berdasarkan umur kanak-kanak. Bayaran yang dikenakan ialah RM180 perbulan bagi kanak-kanak yang berumur 2 tahun hingga kurang dari 5 tahun dan RM150 bagi kanak-kanak yang*

[See next page

*berumur 5 tahun hingga kurang dari 7 tahun. Manakala bayaran bagi kanak-kanak berumur 2 tahun ke bawah ialah RM250 sebulan. Bina segmen atur cara untuk masalah ini.)*

**[4 marks]**

3. Let us that 40 students have assessed a lecturer where students are required to give either grade A, B, C or D. The assessment marks given to each grade are as shown in **Table 1**.

*(Seramai 40 orang pelajar telah membuat penilaian terhadap seorang pensyarah di mana pelajar dikehendaki memberi sama ada gred A, B, C atau D. Markah penilaian yang diberikan kepada setiap gred adalah seperti dalam Table 1.)*

**Table 1:** Grades and marks

Grade	Mark
A	4
B	3
C	2
D	1

Using the switch statement, complete the blank space in **Program A** below to calculate the total score obtained by a lecturer.

*(Dengan menggunakan pernyataan switch, lengkapkan ruang kosong dalam Program A di bawah untuk mengira jumlah markah yang diperolehi oleh seorang pensyarah.)*

```
# include <iostream.h>

void main ()
{
    char name[30], grade;
    int i, total = 0;

    cout<<"Enter lecturer's name : ";
    cin>>name;
    for ( i = 0; i < 40; i++)    {
        cout<<"Student "<<i+1<<": Enter the grade : ";
        cin>> grade;



    }
    cout <<"Lecturer's name : "<<name<<"\nTotal score : "<<total;
}
```

**Program A**

**[6 marks]**

4. Adam Sdn Bhd Company has 100 employees. Each employee is paid based on the numbers of working hours and their positions as shown in **Table 2**. A declaration of employee's information is shown in **Program Segment C**. By referring to this declaration, answer question a, b and c.

*(Syarikat Adam Sdn Bhd mempunyai 100 pekerja. Setiap pekerja dibayar gaji berdasarkan jam bekerja dan jawatan mereka seperti yang ditunjukkan dalam **Table 2**. Pengisytiharan bagi maklumat pekerja ditunjukkan dalam **Program Segment C**. Dengan merujuk kepada pengisytiharan tersebut, jawab soalan a, b dan c)*

**Table 2:** Working hour rate with position respectively

Position	Rate/hour
Supervisor (S)	20/hour
Assistant Supervisor (A)	15/hour
Operator (O)	8/hour

```
const int SIZE 100;  
string employee_number[SIZE];  
char position[SIZE];  
int working_hour[SIZE];
```

**Program Segment C**

- a. Write a program segment to input data into the arrays declared in **Program Segment C**.

*(Tuliskan segmen atur cara untuk menginput data ke dalam tatasusunan yang telah diisytiharkan dalam Program Segment C.)*

**[3 marks]**

- b. Write a program segment to calculate salary for each employee and store this information in the array.

*(Tuliskan segmen atur cara untuk mengira gaji untuk setiap pekerja dan simpan maklumat ini dalam tatasusunan.)*

**[4 marks]**

- c. Write a program segment to display employee number, position and salary earned by each employee.

*(Tuliskan segmen atur cara untuk memaparkan no pekerja, jawatan dan gaji yang diperolehi oleh setiap pekerja.)*

**[3 marks]**

5. For each sale, the salesperson will earn 20% of the commission from the sale price. If the sales amount exceeds RM25,000, an allowance of RM1000 will be given. **Program B** is to calculate commissions for each sale. The program will calculate and display the total amount of commission earned along with the allowance if any. Study **Program B** to answer questions a and b.

(Untuk setiap jualan, jurujual akan memperoleh 20% komisyen daripada harga jualan. Jika jumlah jualan melebihi RM25,000, elaun sebanyak RM1000 akan diberikan. **Program B** adalah untuk mengira komisyen bagi setiap jualan. Program ini akan mengira dan memaparkan jumlah keseluruhan komisyen yang diperolehi beserta dengan elaun jika ada. Kaji **Program B** untuk menjawab soalan a dan b.)

```
#include <iostream.h>
void main()
{
    char respond;
    float sales=0.0, commission=0.0, total_sales=0.0, total_commission=0.0;
    do
    {
        cout<<"please input sales";
        cin>>sales;
        commission = sales*0.20;
        total_sales+=sales;
        total_commission+=commission;
        cout<<"Commission earned by sales RM";
        cout<<sales<<"is RM"<<commission;
        cout<<"\nIs there any sales Y/N";
        cin>>respond;
    } while ( respond != 'N' );
    cout<<" Total commission earned RM"<<total_commission;
}
```

**Program B**

- a. What are the logic error(s) occurring in this program?  
(Apakah kesilapan logik yang berlaku pada program ini?)

[2 marks]

- b. Correct the logic error(s) in 4(a).  
(Betulkan kesilapan logik dalam 4(a).)

[4 marks]

**SECTION B: (50 marks)****Instruction:** Answer **all** questions.*(Arahan: Jawab semua soalan.)***Question 1**

Shamira Company sells five types of vehicles for May 2022. Each vehicle is given a discount as shown in **Table 3**. For each vehicle sold, the salesperson is given a commission of RM1000. The company has 4 salespersons and the calculation of each salesperson's salary is based on this formula:

$$\text{Salary} = \text{RM1500} + \text{commission}$$

At the end of the May, the company must make a report consisting of the total sales for each type of vehicle, the price of each type of vehicle after discount along with the discount given, the salary of each salesperson, gross profit and net profit earned by the company. The monthly management cost of the company is RM30000.00. This cost does not include the salesperson's salary. Example of input files and output are as shown in **Figure 1**. Write a complete C++ program to solve this problem.

*(Syarikat Shamira menjual lima jenis kenderaan untuk bulan Mei 2022. Setiap kenderaan diberi diskaun seperti yang ditunjukkan dalam **Table 3**. Bagi setiap kenderaan yang dijual, jurujual diberi komisen RM1000. Syarikat ini mempunyai 4 orang jurujual dan penggiraan gaji setiap jurujual adalah berdasarkan formula ini :*

$$\text{Gaji} = \text{RM1500} + \text{komisen}$$

*Pada akhir bulan Mei, syarikat perlu menghasilkan laporan yang terdiri daripada jumlah jualan bagi setiap jenis kenderaan, harga setiap jenis kenderaan setelah diskaun beserta diskaun yang diberikan, gaji setiap jurujual, keuntungan kasar dan keuntungan bersih yang diperolehi oleh syarikat. Kos pengurusan bulanan syarikat adalah sebanyak RM30000.00. Kos ini tidak termasuk gaji jurujual. **Contoh** fail input dan output adalah seperti yang ditunjukkan dalam **Figure 1**. Tulis atur cara C++ yang lengkap bagi menyelesaikan masalah ini.)*

**Table 3:** Vehicles Price

Vehicle Name	Cost Price	Selling Price	Discount
Nova	RM45,000	RM55,000	5%
Power	RM53,500	RM74,000	5%
Ultimate	RM67,000	RM84,000	10%
Yimo	RM89,500	RM105,500	10%
Savvy	RM131,000	RM150,000	5%

**Input files**

purchase\_record.dat

S203 savvy  
 S101 yimo  
 S101 ultimate  
 S101 yimo  
 S201 power  
 S203 nova  
 S101 ultimate  
 S201 nova  
 S101 yimo  
 S202 nova  
 S101 ultimate  
 S101 ultimate  
 S101 yimo  
 S101 power  
 S101 ultimate

employeeInfo.dat

S201 Ali bin Musa  
 S202 Harith bin  
 S203 David Alfonso  
 S204 Lim Bee Choo

**Output**

Shamira Company Report for May 2022

-----  
 Sales of each type of vehicle:

Nova : 3  
 Power : 2  
 Ultimate : 5  
 Yimo : 4  
 Savvy : 1

Employees Salary for Mei 2022

Ali bin Musa (S201) : RM3500  
 Harith bin Ghazali (S202) : RM7500  
 David Alfonso (S203) : RM5500  
 Lim Bee Choo (S204) : RM4500

Nova price after discount is RM52250. Discount given is RM2750.  
 Power price after discount is RM70300. Discount given is RM3700.  
 Ultimate price after discount is RM75600. Discount given is RM8400.  
 Yimo price after discount is RM94950. Discount given is RM10550.  
 Savvy price after discount is RM143000. Discount given is RM7000.

Gross profit earned by Shamira company is RM132150  
 Net profit earned by Shamira company is RM81150

**Figure 1:** Example of Input files and output

**[25 marks]**

[See next page]



## Question 2

Three (3) candidates have been short listed for Multimedia Club president. Every member of the club needs to vote only one candidate for the post. Every vote will be kept in a file name President.dat. Example of input file is as shown in **Figure 2** which consists of serial polling number and the chosen candidate's name. Write a program to read the content of this file and then calculate and display the total votes for each candidate. Lastly display the candidate's that name has been elected to be the president. You are required to use at least three (3) functions in this program.

*(Seramai tiga(3) calon pelajar telah disenarai pendekkan untuk jawatan presiden Persatuan Multimedia. Pengundian dilakukan iaitu setiap ahli persatuan perlu memilih hanya seorang calon untuk jawatan presiden ini. Setiap undian disimpan di dalam fail bernama Presiden.dat. Contoh fail input adalah seperti yang ditunjukkan dalam **Figure 2** yang terdiri daripada nombor siri undian dan juga nama calon yang dipilih. Tuliskan atur cara untuk membaca kandungan fail Presiden.dat dan seterusnya mengira dan mencetak jumlah keseluruhan undian bagi setiap calon. Akhir sekali cetak nama calon yang terpilih sebagai presiden persatuan. Anda dikehendaki menggunakan sekurang-kurangkan tiga(3) fungsi dalam atur cara ini.*

	S0001	Rahman	
	S0002	Adam	
	S0003	Ali	
	S0004	Adam	
	S0005	Adam	
Polling serial number	S0006	Rahman	Chosen candidate
	:	:	
	:	:	
	:	:	
	S0100	Rahman	

**Figure 2:** Example of Content of input file President.dat

- a) Analyze the given problem and identify what is the input, output and process.  
(*Analisis masalah yang diberi dan kenal pasti apakah input, output dan proses.*)

**[5 marks]**

- b) Write a complete C++ program for the given problem.  
(*Tulis atur cara C++ yang lengkap bagi masalah yang diberi.*)

**[20 marks]**

***END OF QUESTIONS***

***(SOALAN TAMAT)***