



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

FINAL EXAMINATION
SEMESTER 2, SESSION 2021 / 2022

PART A
(PRACTICAL-PARTIALLY COMPLETED PROGRAM)

SUBJECT CODE : SCSJ 2154
SUBJECT NAME : OBJECT ORIENTED PROGRAMMING
SECTION : 2 (SECJ / SECV / SECB / SECR / SECP)
DATE/DAY : 12 JULY 2022 (TUESDAY)
TIME : 09.50 AM – 11.10 AM

INSTRUCTIONS:

- You are given **1 HOUR 20 MINUTES** to complete the exam inclusive the submission of your answers.
 - ✓ Download the question: 09.50– 10.00 am (10 minutes)
 - ✓ Answer the question: 10.00 – 11.00 am (1 hour)
 - ✓ Final answer submission: 11.00 – 11.10 am (10 minutes)
- A candidate who is suspected of cheating in examinations is liable to disciplinary action including (but not limited to) suspension or expulsion from the University. All materials and or devices which are found in violation of any examination rules and regulation will be confiscated.

IMPORTANT NOTES:

- All the **COMMENT STATEMENTS** in the submitted program **WILL NOT BE EVALUATED**.

SUBMISSION PROCEDURE:

- Compress all files using ***.zip format**. Only the compress file is required for the submission and the file shall be named as follows: **PartA_FinalAnsSCSJ2154_Name_matricesNo_section.zip** (for final submission).

Name	
I/C No.	
Year / Course	
Section	
Lecturer Name	

PROBLEM SOLVING

(40 Marks)

Based on UML class diagram presented in **Figure 1**, you are required to complete the java program source code in provided templates. The provided template files are as follows; **ClinicApp.java**, **Doctor.java**, **Patient.java**, **Availability.java**, **Consultation.java** and **Medication.java**. Your program should be able to produce the output shown in **Figure 2**.

Complete the program based on the following tasks. Note that, the tasks are also stated in the program source code. The tasks are labeled as Task 1 to Task 7.

IMPORTANT NOTE: Do not modify existing code in the given templates. Only modify the codes based on the comments/instructions listed in Task 1 to Task 7.

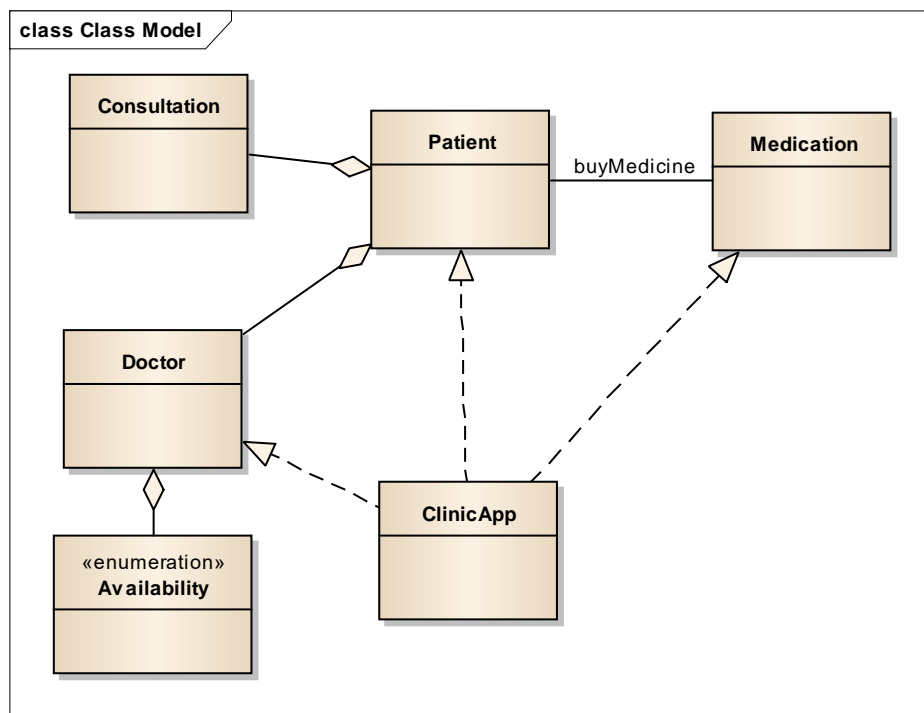


Figure 1: UML class diagram

```
***** KLINIK MESRA *****
Enter patient name: SITI RAHIMAH BINTI AHMAD
Enter patient address : 12, JALAN MULIA, TAMAN BAHAGIA
Enter patient phone number: 011222333
Enter patient phone age: 45
```

```
***** KLINIK MESRA *****
1. Consultation Detail
2. Medication Details
3. Payment Detail
4. Exit
```

Please enter your choice (1-4) : 1

***** Consultation Detail *****

```
Enter date (dd/mm/yy): 08/07/22
Enter time (24hour format):12
```

Doctor Detail:

```
Name :Dr. Hafiz Hakim, M.D
Specialized in: Infectious diseases
Room Number: C-311
Time available from 8.0 to 12.0
```

```
***** KLINIK MESRA *****
1. Consultation Detail
2. Medication Details
3. Payment Detail
4. Exit
```

Please enter your choice (1-4) : 2

LIST OF MEDICATION

Medication	Description	Price(RM)
1.Aspirin tablet	Reduce blood clotting	20.0
2.Allergy shots	Improve immune system	150.5
3.Antihistamines	Reduce blood clotting	40.8
4.Nasal sprays	Ease nasal congestion	70.0
5.Calamine lotion	Relieve itchy skin	25.5

How many type of medicine?: 2

Enter medicine id: 1

Enter quantity: 2

Item : Aspirin tablet Quantity : 2

Enter medicine id: 4

Enter quantity: 1

Item : Nasal sprays Quantity : 1

```
***** KLINIK MESRA *****
1. Consultation Detail
2. Medication Details
3. Payment Detail
4. Exit
```

Please enter your choice (1-4) : 3

<<<< PAYMENT DETAIL >>>>

```
Name :SITI RAHIMAH BINTI AHMAD
Phone Number: 12, JALAN MULIA, TAMAN BAHAGIA
Address: 011222333
List of medication :
```

```
[1]Item: Aspirin tablet
Description :Reduce blood clotting
Price : Rm20.00
```

```
[2]Item: Nasal sprays
Description : Ease nasal congestion
Price : Rm70.00
```

```
MEDICINE : RM110.00
CONSULTATION FEE : RM25.00
TOTAL : RM135.00
```

Figure 2: Sample Output

Task 1:

(6 Marks)

In **Availability** class;

Do the following task;

- i) Complete the enum declaration in **Availability** class using the data stated in Table 1.

Table 1: Data to be used in **Availability** enum

Constant	Session	Start Hour	End Hour
M	Morning	8.00	12.00
A	Afternoon	13.00	18.00
N	Night	19.00	23.00

Task 2:

(6 marks)

In **Doctor** class,

Do the following tasks;

- i) Modify the **if...else** statement in **displayDoctor()** . The modified statements must be able to display start hour and end hour for every session.

Task 3:

(4 marks)

In **Patient** class,

Do the following tasks;

- i) Define **buyMedication()**. The method establish the association relationship between **Patient** and **Medication** classes.
- ii) In **buyMedication()** , the medication objects are added to the *ArrayList*.

Task 4:

(2 marks)

In **Patient** class,

Do the following tasks;

- i) Modify the codes in **consultDisplay()** . The codes should be able to display the consultation date and time.

Task 5:

(6 marks)

In **Patient** class,

Do the following tasks;

- i) Modify the codes **display()** .The codes should be able to display the medication list, calculate and display the medicine total price, consultation fee and total cost (medicine + consultation fee) for a patient.

Task 6:

(6 marks)

In **ClinicApp** class,

Do the following tasks;

- i) Modify the array of object implementation to *ArrayList*.
 - ✓ Use the *ArrayList* medication to store all Medication objects.
 - ✓ Use the *ArrayList* doctorList to store all the Doctor objects.

Task 7:

(6 marks)

In **ClinicApp** class,

Do the following tasks;

- i) Complete the body of the **if** statements. The statement should be able to invoke method **displayDoctor()** based on the Doctor's availability. Other relevant methods such as **meetDr()** and **consultSet()** will be invoked once the condition is met.