UNIVERSITI TEKNOLOGI MALAYSIA
FACULTY OF COMPUTING

SKILL-BASED TEST 2

SEMESTER I 2017/2018

SUBJECT CODE	: SCSJ1023
SUBJECT NAME	: PROGRAMMING TECHNIQUE II
YEAR/COURSE	: 1 (SCSJ / SCSR / SCSV)
TIME	: 2 p.m. – 3 p.m. (1 Hour)
DATE	: 30 NOVEMBER 2017
VENUE	: MPK8, N28

INSTRUCTIONS TO THE STUDENTS:

- This test consists of only **ONE** question.

- This is a **CLOSED-BOOK** test. References to any resources by any means are strictly prohibited.

- You are given **ONE HOUR** to complete the test inclusive the submission of your program.

SUBMISSION PROCEDURE:

- Only the source code is required for the submission.

- Submit the source code file via the **UTM's e-learning system**.

Consider the class diagram in Figure 1 which shows the data model for a car rental company. Note that the company has set the rule that each customer can only rent one car at a time.
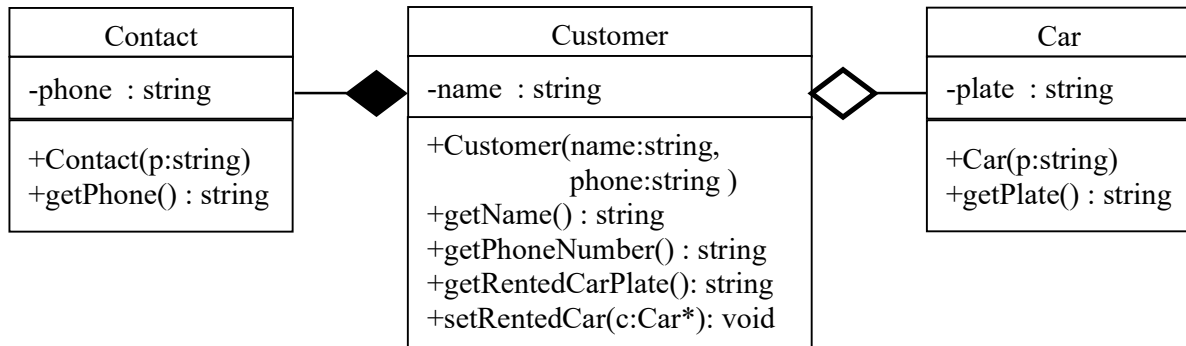
Contact	Customer	Car
-phone : string	-name : string	-plate : string
+Contact(p:string) +getPhone() : string	+Customer(name:string, phone:string) +getName() : string +getPhoneNumber() : string +getRentedCarPlate(): string +setRentedCar(c:Car*): void	+Car(p:string) +getPlate() : string

Figure 1: Class diagram for a car rental service

Based on the class diagram, write a C++ program which performs the following tasks:

1. Implement all the three classes with the given attributes and operations. Note that, the purpose of each operation is as the name implies.

2. Test the classes by creating an object of `Car` and an array of customers with the following data.

Customer's Name	Phone Number	Rented Car Plate
Ahmad Kamal	015-75769800	JSQ245
Siti Nurdiana Abdullah	014-8889900	

Note that, the column **"Rented Car Plate"** for the second customer is empty because she does not rent any car at the moment.

3. Print the array of customers onto the screen. The screen output should look like as in Figure 2.

```
Customer's Name: Ahmad Kamal
Phone Number: 015-75769800
Rented Car  : JSQ245

Customer's Name: Siti Nurdiana Abdullah
Phone Number: 014-8889900
Rented Car  :
```

Figure 2: Screen output

The assessement criteria are given in Table 1.

Table1: Assessment Criteria

Item	Criteria	Marks
A	The program is able to run properly	1
	The code has been written with an appropriate structure including the indentation.	1
B	**Class definitions:**	
	`Contact`	4
	`Car`	4
	`Customer`	7
C	**Implementation of OOP Concepts:**	
	Aggregration	3
	Composition	2
D	**The main program:**	
	Creating the `Car` object.	1
	Creating an array of customers.	2
	Assigning a rental car for the first customer	1
	Printing the array	4
	Total	**30**