



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JULY 2011 SESSION**

SUBJECT CODE : FSD 23002
SUBJECT TITLE : PROGRAMMING FUNDAMENTAL
LEVEL : DIPLOMA
TIME / DURATION :
(2 HOURS)
DATE :

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of TWO (2) sections, Section A and B. Answer all questions in Section A. For Section B, answer two (2) questions only.
6. Answer all questions in English.

THERE ARE 8 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer all questions.

Please use the answer booklet provided.

Question 1

(a) Answer the following questions correctly.

- (i) Define the term algorithm. (2 marks)
- (ii) State 2 (two) methods to represent algorithm. (2 marks)
- (iii) Define the term program. (2 marks)
- (iv) Give two (2) examples of high level language. (2 marks)
- (v) Define the term array (2 marks)

(b) Figure 1 is the memory overview of an integer array named grades []. Explain and state the array saiz, array offset number and array content of the array grades [].

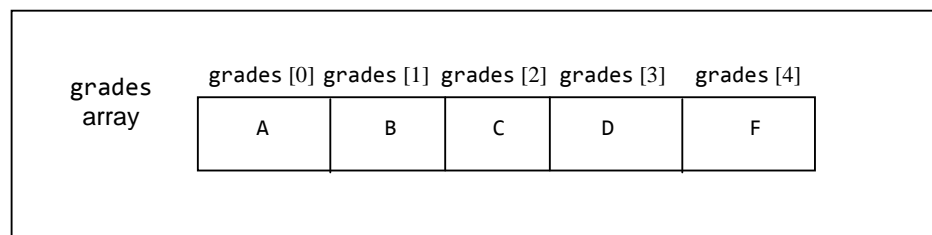


Figure 1: memory overview of array grades []

(4 marks)

(c) Let say you are asked to prepare a program that able to determine a bigger number between the 2 (two) numbers entered by user. Outline the algorithm by sketching a flowchart to indicate the algorithm of the program.

(6 marks)

Question 2

- (a) State the output that will be produced after the execution of the statement below.

```
/*This is Hello World Program*/;  
cout<<"Hello World\n"  
  <<"\tI Love C++"<<endl; //End of program
```

(2 marks)

- (b) Write a C++ program that will declare and initialize a variable character *myChar* to the value of Z. The program must be able to output the variable *myChar*.

(2 marks)

- (c) Write a C++ program that first prompts a user to key in and read 2 (two) integers and store into the variables *integer_1* and *integer_2*. Your program must also display the difference of the integers. Assume that variable *diff*, *integer_1* and *integer_2* have been declared as integer.

(6 marks)

- (d) State the output that will be produced after the execution of the statement below.

```
int a, b, c, d;  
a=4;  
b=9;  
c=3;  
while (a > 0)  
{ d = (b%c)+a;  
  --a;  
  cout<<d<<endl; }
```

(4 marks)

(e) Consider the flowchart in Figure 1.

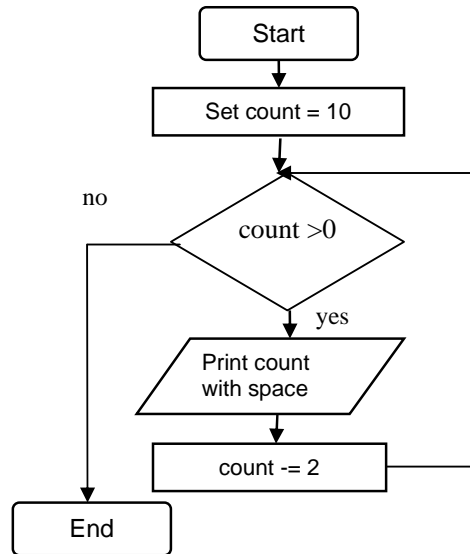


Figure 1: Flowchart to display value of variable *count*

i. Write a repetition statement of the above flowchart (5 marks)

ii. Show the output display of the above repetition statement. (2 marks)

(f) Consider the following code segment:

```

int Storage1 [ ] = {3, 6, 12, 8, 4, 7};
for( int j = 0; j < 6; j++)
{
    cout<<Storage1[j]<<" , ";
}
    
```

i. Show the output displayed after the code is executed. (5 marks)

ii. Determine the value that *Storage1[2]* holds. (2 marks)

(g) Consider the following segment of program:

```
#include <iostream>
using namespace std;
int main()
{ int myNum[10], i = 0;
  cout<<"Please input 10 numbers : "<<endl;

  //complete the code

  return 0;
}
```

Using the *for* loop statement, Complete the program above in which it able to read 10 integer numbers and store in an array *myNum[]*.

(5 marks)

A program below is use to calculate the total of 2 numbers entered by user.

```
#include <iostream>
using namespace std;
int total_2_num(int x, int y);
int main()
{ int total = 0, num1, num2;
  cout<<"Please input 2 numbers : "<<endl;
  cin>>num1>>num2;

  //function call

  cout<<"Total is "<<total<<endl;

  return 0;
}
//function definition
```

A programmer-defined function *total_2_num()* is used to calculate the total and return the total value to the main function.

(i) Write the function call of the above code

(2 marks)

(ii) Write the function definition of *total_2_num()*.

(5 marks)

SECTION B (Total: 40 marks)**INSTRUCTION: Answer TWO (2) questions only.****Please use the answer booklet provided.****Question 3**

In a mobile phone packaging factory, the product is sorted according to the brand of the mobile phone. The operator must first search the product number on the packaging and key in into the computer to know the brand of the mobile phone. As a software engineer, you are asked to develop the system so that it can be used by the operator. The system must work as follows:

- i. Display the list of product code and its brand(refer to **Table 1**);
- ii. Read the product code;
- iii. Display the brand of the product code;
- iv. Display "Invalid code" if the product code is not the system.

Table 1: Message will be displayed based on the product code entered

Product Code	Mobile Phone Brand
N	Nokia
S	Samsung
E	Sony Ericsson
L	LG

- a) Draw a flowchart that will represent the above system.

(10 marks)

- b) Write a complete C++ program based on the flowchart in Question 6 (a). The system must be able to accept either upper case letter or lower case letter as the product code. Refer to **Figure 2** and **Figure 3** as the input output example of the system.

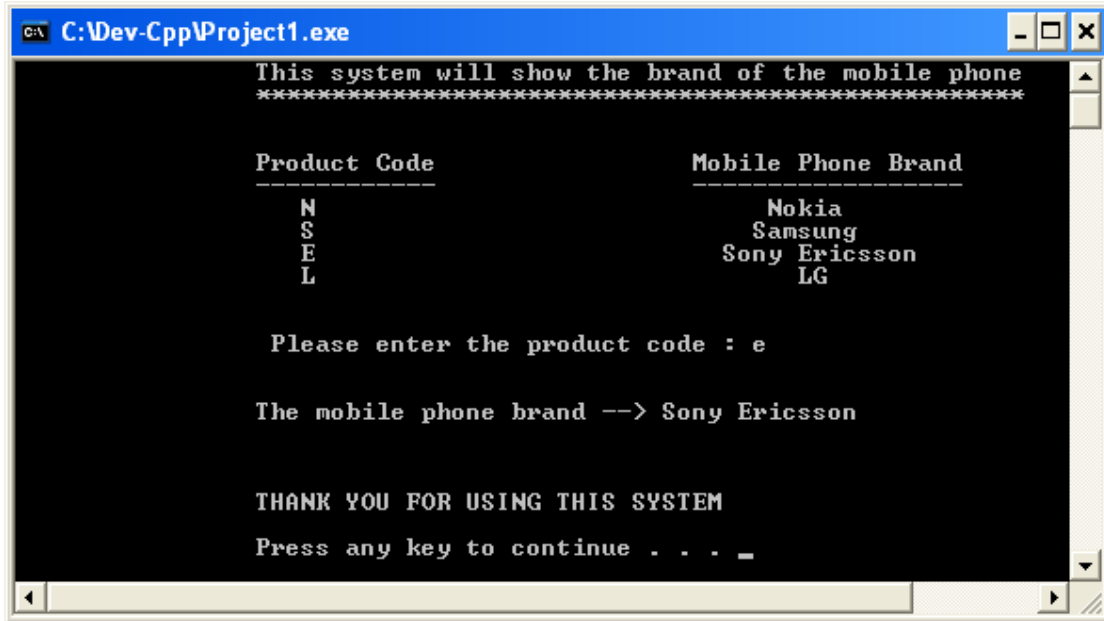


Figure 2: Example of input and output of the system

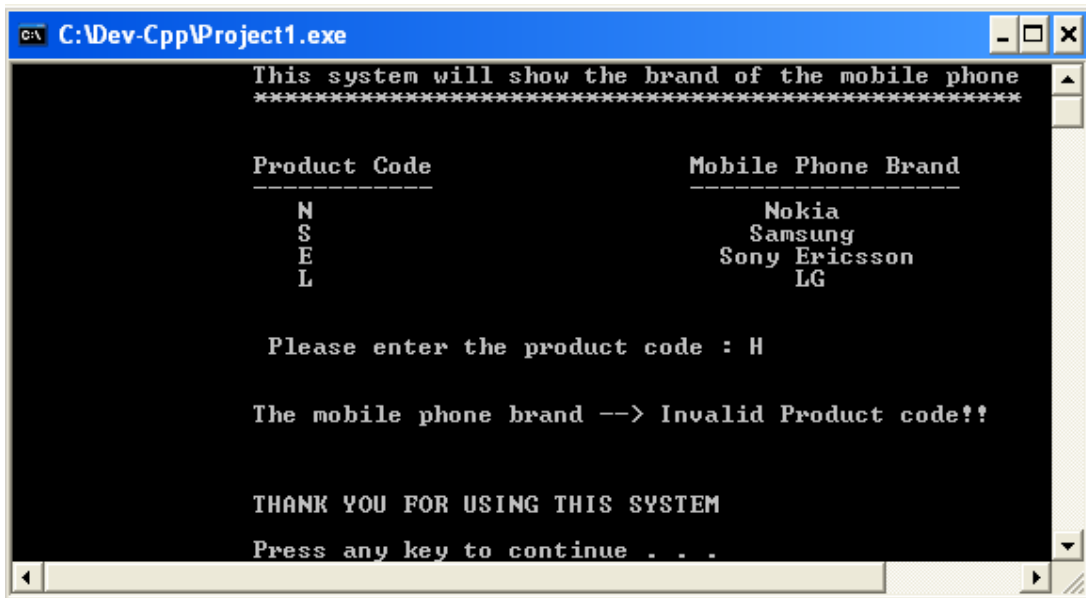


Figure 3: Example of input and output when product code H is entered

(10 marks)

Question 4

Consider the following **Table 2** relations :

Table 2: Relation between Number, Square and Cube

NUMBER	SQUARE	CUBE
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

Using the application of repetition statement, you are asked to develop a program that able to generate the data in **Table 2**.

- a) Write a C++ program that will generate the data in **Table 2**.

(10 marks)

- b) Draw a flowchart based on the program in Question 7 (a).

(10 marks)

Question 5

A program is developed to calculate the area and volume of a box. The program will work in a way that user is required to input the value of width, length and height of a box. The area and volume will be calculated using the given formula. Then the calculated values will be displayed.

$$area = width * length$$

$$volume = width * length * height$$

- (a) Write a simple program that able to display the area and volume of a box as explain above.

(5 marks)

- (b) Let say that the above program need to be constructed using programmer-defined function. The details of the program are as follows:

- (i) The main function will read the value of width, length and height of a box.
- (ii) A programmer-defined function *calcArea* (), will be used to calculate the area of the box. The function will received the value of width and length. The calculated area value will be return to the main function.
- (iii) A programmer-defined function *calcVol* (), will be used to calculate the volume of the box. The function will receive the value of width, length and volume. The calculated volume value will be return to the main function.
- (iv) The main function will display the value of area and volume.

Develop the program from the above program's details. Use the formula below to perform the area and volume calculation.

(15 marks)

END OF QUESTIONS