



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FSD 23002
SUBJECT TITLE : PROGRAMMING FUNDAMENTAL
LEVEL : DIPLOMA
TIME / DURATION : 9.00am – 11.00am
(2 HOURS)
DATE : 06 MAY 2011

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 9 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer all questions.****Please use the answer booklet provided.****Question 1**

Answer the following questions correctly.

- (a) Define the term algorithm. (2 marks)
- (b) List down two (2) output devices. (2 marks)
- (c) Define the term array. (2 marks)
- (d) State two differences between *do while* loop and *while* loop. (2 marks)

Question 2

Identify whether the C++ statement result below is TRUE or FALSE. Show the working process.

- (a) `char key1 = 'A', key2 = 'a';`
`if(key1 == 'A' && key2 != key1)` (3 marks)
- (b) `int x = 0, y = 1, z = 3;`
`if (! (x * y && z * y - x) || x > 0)` (3 marks)
- (c) `int a = 5, b = 2, c = 4;`
`if (b % c > a / b)` (3 marks)
- (d) `if (float(6 / 5) <= float (6) / float (5))` (3 marks)

Question 3

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

```
float km = 1.61;
cout<<"1 miles = "<<km<<"km"
<<" = "<< km/1000<<"m"<<endl;
```

(2 marks)

- (b) Consider the following programmer-defined function declaration:

```
int totalNum (int x, int y);
```

Determine the return data type and number of parameter list for function *totalNum()*.

(2 marks)

- (c) Consider the following code segment:

```
int Totcount = 1, count = 1;
while ( count <= 5)
{
    Totcount += count;
    cout << "Total count = "<<Totcount;
    count++;
}
```

- i. Determine the output after the execution.

(5 marks)

- ii. Modify the code by replacing *while* loop statement with *for loop* statement.

(2 marks)

(d) Consider the following code segment:

```
char msg[ ] = {'H', 'E', 'L', 'L', 'O', '!'};
for( int j = 0; j < 6; j++)
{
    cout<<msg[j]<<"\t\n";
}
```

i. Show the output displayed after the code is executed.

(6 marks)

ii. Determine the value that `msg[3]` holds.

(2 marks)

Question 4

Consider the flowchart in **Figure 1**:

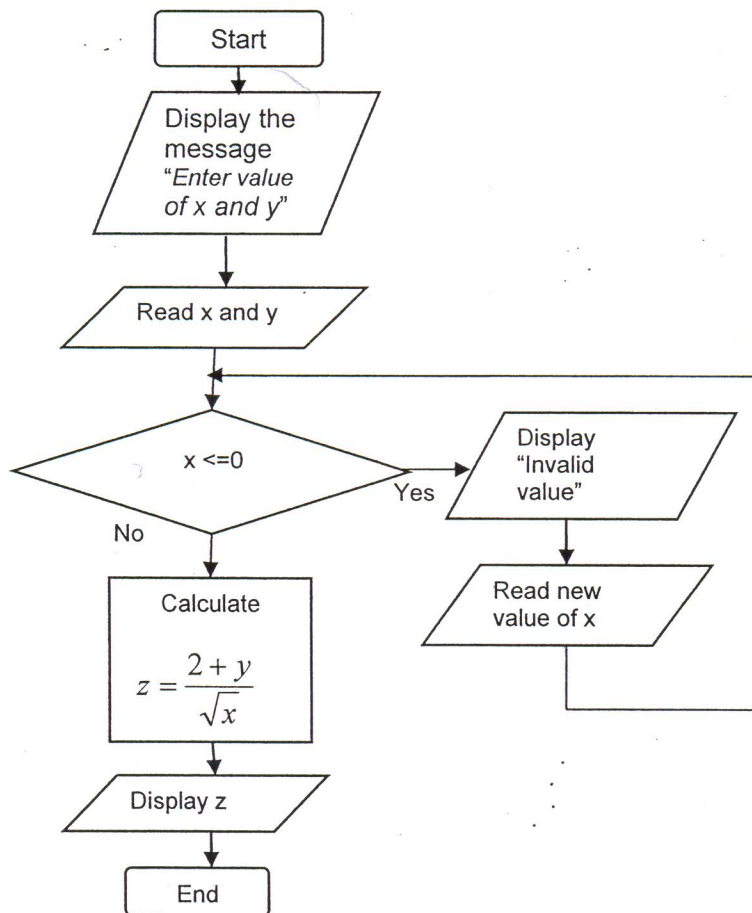


Figure 1: Flowchart to calculate a mathematical expression

- (a) Write a program based on the flowchart given in Figure 1. (Hint: use the repetitions statements to write the program) (12 marks)
- (b) Determine the output displayed if the value of x and y entered are 4 and 2 respectively. (4 marks)

Question 5

Below is a program in the main function that will find the minimum number from two (2) numbers entered by user. The programmer-defined function *FindMin()* is to find and display the minimum numbers between the two (2) numbers. Write the complete function definition of *FindMin()*.

```
#include <iostream>
using namespace std;
int FindMin(int x, int y);
int main()
{
    int a, b, minNum ;
    cout<<"Enter 2 integer numbers :\n";
    cin>>a >> b ;
    minNum = FindMin ( a , b ) ;
    cout<<"The Minimum number is "<<minNum<<endl;
    return 0;
}
```

(5 marks)

SECTION B (Total: 40 marks)**INSTRUCTION: Answer TWO questions only.****Please use the answer booklet provided.****Question 6**

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.

```
C:\Dev-Cpp\Project1.exe
This system will show the brand of the mobile phone
*****
Product Code                Mobile Phone Brand
-----
N                            Nokia
S                            Samsung
E                            Sony Ericsson
L                            LG

Please enter the product code : e

The mobile phone brand --> Sony Ericsson

THANK YOU FOR USING THIS SYSTEM
Press any key to continue . . .
```

Figure 2: Example of input and output of the system

```
C:\Dev-Cpp\Project1.exe
This system will show the brand of the mobile phone
*****
Product Code                Mobile Phone Brand
-----
N                            Nokia
S                            Samsung
E                            Sony Ericsson
L                            LG

Please enter the product code : H

The mobile phone brand --> Invalid Product code!!

THANK YOU FOR USING THIS SYSTEM
Press any key to continue . . .
```

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

(10 marks)

Question 7

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 8

In the UNIKL MFI Resource Centre registration system, there is a code that user has to key in, in order to enter the system. The code is 783152. If the user is able to enter this value, the gateway will open. Using the C++ language, develop a program that will read the value entered and decide whether he or she is the MFI student. In addition, the program should contain a programmer-defined function named *compare_code* () that will be used to compare the value entered. Use an appropriate parameter list and return value to declare and define the programmer-defined function. Refer to the output in **Figure 4** and **Figure 5**.

```

C:\Dev-Cpp\Q1_a.exe
WELCOME TO MFI RESOURCE CENTRE
Please enter your code
Code : 123456
Sorry, you are not the MFI student
Press any key to continue . . . _
    
```

Figure 4: Example of printed output when the user is not an MFI student

```

C:\Dev-Cpp\Q1_a.exe
WELCOME TO MFI RESOURCE CENTRE
Please enter your code
Code : 783152
You are MFI student
Door open!!
Press any key to continue . . . _
    
```

Figure 5: Example of printed output when the user is an MFI student

(20 marks)

END OF QUESTIONS