

**UNIVERSITY COLLEGE TATI (UCTATI)****FINAL EXAMINATION QUESTION BOOKLET**

COURSE CODE	: DCT1144
COURSE	: PROGRAMMING FUNDAMENTALS
SEMESTER/SESSION	: 1/2023-2024
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer ALL questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 8 PRINTED PAGES INCLUDING COVER PAGE

PROGRAMMING FUNDAMENTALS (DCT 1144)

Question 1

a) Write an output for the following C++ program.

```
i) #include <iostream>
    using namespace std;

    int main() {
        cout<<"DCT"<<endl<<"1144";
        return 0;
    }
```

(2 marks)

```
ii) #include <iostream>
    using namespace std;

    int main() {

        bool status= true;
        if(status)
            cout<<"DCT1144";
        else
            cout<<"BCS1013";
        return 0;
    }
```

(2 marks)

b) Represent the C++ program in a) i) as pseudocode.

(3 marks)

c) The program depicted in Figure 1 inputs UPSR grades and prints their respective status. Write the output for each of the inputs provided in Table 1.

Table 1

Input	Output
A	
c	
F	

(6 marks)

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```

//Program to input UPSR grade and output its status
#include <iostream>
using namespace std;
int main (void) {
    char grade;
    cin>>grade;
    switch(grade){
        case 'A':
            case 'a':cout<<" Lulus-Cemerlang";
            break;

            case 'B':
            case 'b':cout<<" Lulus-Baik";
            break;

            case 'C':
            case 'c':cout<<" Lulus-Memuaskan";
            break;

            case 'D':
            case 'd':cout<<" Lulus-Mencapai Tahap Minimum";
            break;

            case 'E':
            case 'e':cout<<"Gagal";
            break;

            default : cout<<"Input Salah";

    }
}

```

Figure 1

- d) Explain the usage of the keywords "break" and "default" in the program. (4 marks)

QUESTION 2

- a) Consider the C++ program in Figure 2 and answer the following questions.

```

#include <iostream>
using namespace std;

void info(){
    cout<<"(C) Programmed by Abu \n Version 1.0 "<<endl;
}

void warning(int n){

```

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```

        for(int i=1;i<=n;i++)
            cout<<" Please ensure that your CPA remains at 2.0
or above!"<<endl;
    }

    double calculate_cpa (double grade_points, int
credit_hours) {
        return (grade_points/credit_hours);
    }

    int main (void) {
        cout<< calculate_cpa(22.5,6);
        return 0;
    }

```

Figure 2

i) Write the output for the following function call.

(2 marks)

`info();`

ii) Write the output for the following function call.

(2 marks)

`Warning(2);`

iii) Write the output for the following function call.

(2 marks)

`cout<< calculate_cpa(22.5,6);`

iv) Determine the validity of the following function calls. If any of them are invalid, provide an explanation for the reason behind their invalidity.

1) `info(1);`

(10 marks)

2) `warning();`

3) `warning(0);`

4) `calculate_cpa(4.5,3.0,2);`

5) `calculate_cpa(4.5+3.5,4);`

v) Write a function prototype for all functions in a program (except function main).

(6 marks)

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b) Write the function header for the function as described below:

- i) Computing a sales commission, given the sales amount and the commission rate. (6 marks)
- ii) Testing whether a number is even, and returning true if it is.
- iii) Printing a string "welcome to Teluk Kalong" a specified number of times determined by the user.

c) Write the output for the following C++ program in Figure 3.

(6 marks)

```
#include <iostream>
using namespace std;

int main (void) {
    int counter;
    cout<<"Before Loops"<<endl;
    for(counter=1;counter<=20;counter+=2){
        cout<<counter<<" ";
    }
    cout<<endl<<"After Loops";
}
```

Figure 3

QUESTION 3

- a) The following C++ programs (Program A and Program B) in Figure 4 is to continuously input an integer. The program ends when -999 is entered. Differentiate the type of looping control statement used in the both program. (6 marks)

```
// Program A
#include <iostream>
using namespace std;

int main()
{
    int N;
    cout<<"Please enter an integer (-999 to end):";
    cin>>N;
    while(N!=-999){
        cin>>N;
    }
}
```

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```
    }

    return 0;
}

// Program B
#include <iostream>
using namespace std;

int main()
{
    int N;
    bool flag=true;
    cout<<"Please enter an integer (-999 to end):";
    while(flag){
        cin>>N;
        if(N== -999)

            flag=false;
    }

    return 0;
}
```

Figure 4

- b) Identify the appropriate loop controls (Counter Controlled, Sentinel Controlled, or End of File Controlled) for the following tasks.
- i) Print 1,2,3,4,520. (2 marks)
 - ii) Sum the following numbers, except the last number: **17, 32, 62,48, 58, - 999**. (2 marks)
 - iii) Read a file contains employees' salary. Update employees' salary. (2 marks)
- c) Write a function called 'tambah()' that takes two numbers as parameters. The function should calculate and return the sum of the two numbers. (5 marks)

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QUESTION 4

- a) Write a C++ program to input three integers and print the largest number among them. Implement the logic provided in the flowchart depicted in Figure 5. (8 marks)

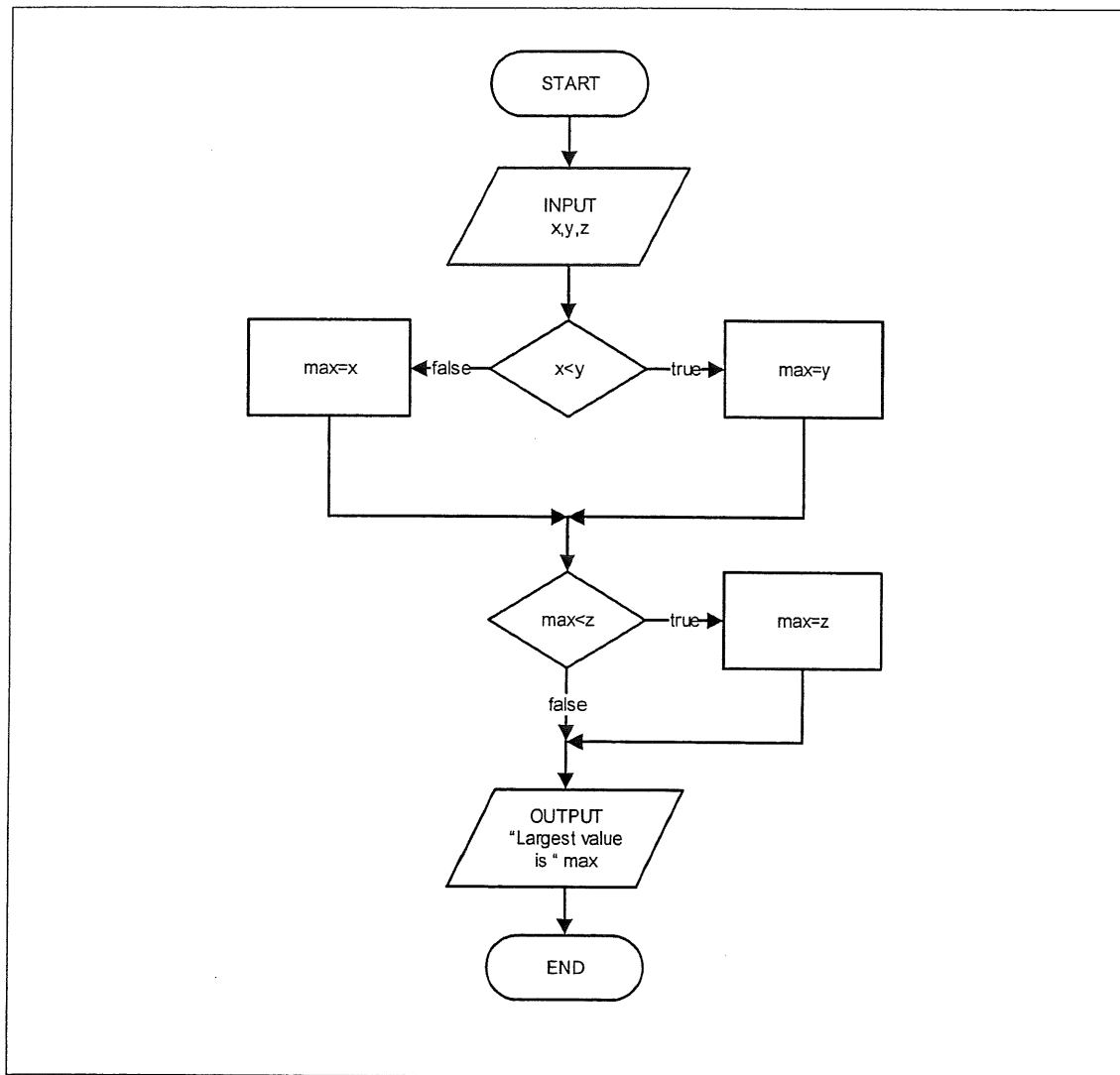


Figure 5

- b) Write a C++ program that reads a body temperature and print a health status on the screen based on the following Table 2. (8 marks)

Table 2

Body Temperature (Celsius)	Health Status
Below 30.0	Hypothermia
30.0 to 37.0	Normal
Above 37.0	Fever

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QUESTION 5

- a) Write a C++ program to input scores for ten (10) students and print the pass/failure status as well as the total number of students who passed and failed. The passing mark is 40 or above (16 marks)

Here is a sample run:

Please enter a score for 10 students:

90

pass

67

pass

45

pass

35

fails

39

fails

70

pass

67

pass

88

pass

86

pass

78

pass

Total of passed 8

Total of failed 2

-----End of question-----