RESIT
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**January 2022**
Programme	:	Diploma in Computer Science (DCS) Diploma in Financial Informatics (DFI)
Course	:	**DCS1101/ICT1112: Programming Fundamentals**
Date of Examination	:	April 18, 2022 (Monday)
Time	:	8.00am – 10.30am Reading Time : Nil
Duration	:	2 Hours 30 Minutes

Special Instructions :

This section consists of **FOUR (4)** questions. Answer **ALL** the questions. **Write ALL your answers** in the foolscap papers.

Material permitted :

Non-Programmable Scientific Calculator

Materials provided :

Nil

Examiner(s)	:	**Koo Lee Chun,** Lusiana Syaiful
Chief Moderator	:	Ng Ruoh Ling

*This paper consists of **6** printed pages, including the cover page*

DIPLOMA IN COMPUTER SCIENCE PROGRAMME (DCS)
DCS1101: PROGRAMMING FUNDAMENTALS
RESIT ALTERNATIVE ASSESSMENT: JANUARY 2022 SESSION

Instruction: This paper consists of **FOUR (4)** questions. Answer **ALL** the questions. **Write ALL your answers** in the foolscap papers.

Question 1 (25 marks)

a) Produce a C++ statement for each of the following tasks:

i. $m[\frac{n+m}{j}]^{1}/_{2}$

(2 marks)

ii. $\frac{\frac{a}{b}-c}{d} - \frac{e}{f}$

(2 marks)

iii. $\frac{ax}{b}\ (c+a\ )^5$

(2 marks)

iv. $z\sqrt{x^2+y^2}$

(2 marks)

v. $\left(\frac{3-x}{x^2}\right)\left(\frac{9x+6}{x-6}\right)$

(2 marks)

b) You are required to write a pseudocode and draw a flowchart for a program that will obtain two integers from the user and display the larger number.

(15 marks)

Question 2 (25 marks)

a) By using `for` loop, you are required to write a program that will display the output below:

```
*****
 ****
  ***
   **
    *
```

(7 marks)

b) You are required to write a program for the teacher to input the final exam scores for his students. The teacher should enter the total number of students. Then, you need to determine the number of students who scores within the following range of marks:

Range of marks	Number of students
0 – 49	?
50 – 70	?
71 – 90	?
91 – 100	?

(18 marks)

Question 3 (25 marks)

a) The weight, in kilogram (kg), of 15 students is shown below. You are required to determine the percentage of students who are obese. The weight for each of the students should be stored in an array. Assuming that a weight of more than 90 kg is considered as obese. Your program should display the percentage of students who are obese by using formatting of output such as `setprecision()` and `fixed`.

98	55	75
97	70	85
62	76	69
68	99	58
65	100	80

(10 marks)

b) Given the segment of C++ program as below:

```
int main()
{
    int total_fisherman, total_collection;

    cout<<"Please enter the total number of fishermen : ";
    cin>>total_fisherman;

    total_collection = totalCollection(total_fisherman);

    cout<<"\nTotal collection from "<<total_fisherman<<" fishermen
    is "<<total_collection;
    cout<<"\nTotal cost of collection RM
    "<<costCollection(total_collection);

    return 0;
}
```

Based on the code given, you are required to write the code for the following functions:

i. `totalCollection()`:

- To receive the number of fishermen from `main()`.
- To get the total collection of squid, in kilogram (kg), from each fishermen.
- To calculate the sum of total collection of squids, in kilogram (kg), from all fishermen.
- To return the sum of total collection of squids, in kilogram (kg), from fishermen to `main()`.

(11 marks)

ii. `costCollection()`:

- To receive the sum of total collection of squids, in kilogram (kg), from `main()`.
- To calculate the total cost of squid collection whereby the price of squid per kilogram is RM 25.50.
- To return the total cost of squid collection to `main()`.

(4 marks)

Question 4 (25 marks)

a) You are required to write a program to store all information about students by applying the array of student's `struct` called `Student`. The data type for `Student` should consist of three attributes such as `studID`, `name` and `program`. The student's name also uses a `struct` called `Name`. The data type for `Name` should consist of two attributes such as `firstName` and `lastName`. Assume the array size is 20, store all students' information in the array of a variable by using the created data type.

(15 marks)

b) Assume you have a file named `studentDetails.txt` that consist of following information:

`studentDetails.txt`

```
121 IZZAT AHMAD 45.78
122 ALICE LEE 89.43
123 DAVID KUMAR 90.34
124 FLAIRE JOHN 76.77
125 ADAM FRANCO 34.82
```

Based on the above information, you are required to write a program to display the average mark for all students. The first attribute is the student ID, followed by the first name and last name. The last attribute is the total mark obtained by the student. The output should display as follows:

```
Student ID      First Name      Last Name       Marks
121             IZZAT           AHMAD           45.78
122             ALICE           LEE             89.43
123             DAVID           KUMAR           90.34
124             FLAIRE          JOHN            76.77
125             ADAM            FRANCO          34.82
Average mark is: 67.428
```

(10 marks)

~THE END~