



FINAL SEMESTER EXAMINATION

Student NRIC : _____

Student ID : _____

Programme	:	DIPLOMA IN COMPUTER SCIENCE (MQA/PA13808)
		DIPLOMA IN E-BUSINESS TECHNOLOGY (MQA/PA13807)
Intake	:	JANUARY 2021 (YEAR 1 SEMESTER 3)
Course	:	FUNDAMENTALS OF PROGRAMMING
Course Code	:	DCS1143 / DEB1343
Duration	:	3 hours

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper consists of **FOUR (4)** questions
3. Answer **ALL** questions in the question paper.
4. Answers to the questions are to be written into the examination booklet.
5. Electronic dictionaries, lecture notes, files or any unauthorised materials except writing equipment are strictly prohibited.

This question paper must be submitted along with all used and/or unused rough papers and/ or graph papers (if any). Candidates are **NOT ALLOWED** to take any examination paper(s) used or unused out of the examination hall.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a very serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in the accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(This booklet contains 4 printed pages including this page)

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For examiner's use only

QUESTION NO.	MARKS
1	/ 25
2	/ 25
3	/ 25
4	/ 25
Total	/ 100

Answer **ALL** questions on the separate sheet provided.

[100 marks]

1. a) Write a *function definition* for the declaration given below. The function should return how many numbers between `num1` and `num2` (inclusive) that are divisible by `div`.

```
int getDivisible(int num1, int num2, int div);
```

(7 marks)

- b) A function named `getPrice()` accepts the *price of a product*, the *quantity*, and a *discount rate*. The function accepts user input for quantity and price. The discount rate will be fixed at 10%. The function then returns the *total price* and the *price after discount* to the calling function. Write the function *declaration*.

(5 marks)

- c) What is the output of the following program?

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

void one(int, int&);
void two(int&, int);

int main() {
    int p = 6, q = 8;

    one(p, q); cout << p << " " << q << endl;
    two(p, q); cout << p << " " << q << endl;

    return 0;
}

void one(int p, int& q)
{ p = p + q; q = p - q; p = p - q; }

void two(int& q, int p)
{    int b;
  b = p + q; p = q - b; q = 3 * q; }
```

(4 marks)

- d) Construct a complete C++ program with a recursive function called `multiply()` that performs the multiplication of two positive integer numbers, `m` and `n`, using repeated addition. The program will finally display the result of multiplication.

(9 marks)

Total: [25 marks]

2. a) Write a C++ program to copy the entire content of a file named `orig.txt` into another file named `copy.txt`. (15 marks)
- b) Differentiate a `class` and an `object` in the context of C++ programming. Give an example of class and object. (6 marks)
- c) Given the following class.

```
class Shape {
    private:
        int sides;
        double length;
        string colour;
        void getData();
}
```

Instantiate an object `Square` with 1 side, length of 8.5cm and Green in colour.

(4 marks)

Total: [25 marks]

3. a) A zookeeper wanted to keep track of how many kilograms of meat needed to be provided to five tigers in a local zoo during a typical week.
- i) Write a suitable declaration of a two-dimensional array to be used in the survey mentioned above. (2 marks)
- ii) Write a function definition to input the data collected in the two-dimensional array declared above. (4 marks)
- iii) Write a function definition to count how many tigers eat more than 50kg of meat in a week. (9 marks)
- b) Consider the following function declaration:

```
bool compareArray(int [], int [], int, int);
```

Write the definition of the function `compareArray()` that receives two arrays of integers together with their respective sizes. The function should return `true` if both arrays are the same and `false` if otherwise. (10 marks)

Total: [25 marks]

4. a) Define a `struct` called `MovieRecord` to store the information about a movie that includes movie name, director, producer, year released, and number of copies in stock. Identify the appropriate data type for each `struct` member. (6 marks)
- b) Declare an array of `MovieRecord` structure named `newMovies` that can store 10 new movie records. (2 marks)
- c) Write a function named `getMovieInfo()` that receives the array declared above. The function should prompt the user for the information of 10 movie records and update the array with the information provided by the user. (9 marks)
- d) Write function to search for a movie with the name "The Armageddon" in the `newMovies` array. If the movie title is found, display "Available". If it is not found, display "Not Available". (8 marks)

Total: [25 marks]

- END OF QUESTIONS -