Exercise 7: Arrays and Strings

1. An array is used to hold several data items together as one entity. Can data of different types be stored in a single array?

2. Explain the difference between the character '5' and the string "5" in C++ language.

3. Which of the following statements about arrays are TRUE?

   (a) The index of a 1-D array starts with zero.
   (b) Once an array has been initialized, its elements cannot be modified.
   (c) You cannot declare a character array with only one element.
   (d) A double array is initialized to store 4 numbers. The size of the array must be declared to be 4.
   (e) You must initialize all elements in a double-scripted array.

4. Study the code shown below:

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

int main()
{
   char myname[] = "Barney";
   char yourname[20];
   int i, length;

   length = strlen(myname);
   for(i=0; i<length+1; i++)
      yourname[i] = myname[i];

   cout << yourname;

   return 0;
}
```

   What does the program do? What is the output?

5. Given the following declarations:

```
int i, zero_count;
double data[5], max;
```

Follow the instructions below to write a C++ program. Codes for the 4 tasks are to be written in the main function. You are NOT expected to write other user-defined functions.

a. Use a for-loop to fill in each element of the array, **data**, with the value entered by the user. The user has to enter 5 data one at a time.

b. Use a while-loop to display each element of the array.

c. Find the largest value in the array, store it in the variable, **max**, and display **max** on the screen.

d. Count the number of zeros in the array, store it in the variable, **zero_count**, and display **zero_count** on the screen.

6. Write another C++ program for Q4. Follow the template below to write user-defined functions for the 4 tasks listed in Q4.

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

#define SIZE 5

//Function prototype
void enterData(double data[], int s);
void displayData(double data[], int s);
double findMax(double data[], int s);
int countZero(double data[], int s);

int main()
{
   int i, zero_count;
   double data[SIZE], max;
      ⋮
      ⋮
```

6. Group Activity on File IO (refer to Chapter 7- page 146). Presentation on the group work is optional in AY2021 Sem1 due to COVID-19. Please note that File IO will be tested in Quiz 7.