COSC 1560 – Computer Programming II

Mid-Term Examination #2 (Sample)

NAME:

Attempt all 8 questions. The number of points for each question is shown. The total is 100 points.

[15 points]

1) Consider the following variable declarations:

```
int size;
int* values = nullptr;
```

Provide code to address the following requirements:

```
// Prompt the user to input a required array size and input into 'size'
```

```
// Use 'values' to dynamically create an array of 'int' of the size input by the user
```

```
// Write a function to enable a number to be read into each element of the array
```

[15 points]

2) Explain the following lines of code:

```
double values[4] = {2.3, 5.6, 8.9, 3.3};        //

double* pDouble1 = &values[3];                  //

const double* pDouble2 = &values[2];            //

double* const pDouble3 = &values[1];            //

const double* const pDouble4 = &values[0];//
```

Indicate which of the following lines of code will cause compilation errors, and explain the reason for any error:

```
*pDouble1 = 1.8;                //

pDouble1++;                     //

*pDouble2 = 1.8;                //

pDouble2++;                     //

*pDouble3 = 1.8;                //

pDouble3++;                     //

*pDouble4 = 1.8;                //
```

[12 points]

3) The following function is designed to take an array of a particular size as an argument, create an array of the same size as the one passed as an argument, populate the newly created array with values that are double those in the array argument, and return a pointer to the newly created array. Write the necessary code to implement this function.

```
int* doubleArray(const int numbers[], int size)
{









}
```

[8 points]

4) Suppose that a character array is declared as follows:

```
char name[10];
```

If input typed from the user is "Mona Suray", what is read into 'name'?:

```
cin >> name;                    //
```

Show a way to input a full name into a character array.

What is the maximum number of characters in a name that can be stored in this array?

[10 points]

5) Suppose the following character array is declared, and initialized:

```
char str[20] = "ABC101";
```

Give a brief explanation, as well as return value, of the following function calls:

```
strlen(str)              //


isalpha(str[1])          //


isupper(str[0])          //
```

Give function calls to determine the following:

```
If str[5] is a digit.                    //

Find the index of the second '1'         //
in the string 'str'.
```

[10 points]

6) Suppose that a string variable is declared and initialized as follows:

```
string str("Number 101");
```

Indicate the values that are output in the following lines of code:

```
cout << str.at(2) << endl;               //

cout << str.size() << endl;              //

cout << str.front() << endl;             //

str.erase(1, 3);
cout << str << endl;                     //

str.append("ABC");
cout << str << endl;                     //

cout << str.back() << endl;              //
```

[15 points]

7) Define a ‘struct’ data type called Test that includes: name, score (an integer between 0 and 100), and grade.

Declare a variable of type Test.

Write code to prompt the user to enter the necessary values for a Test and store them in the variable.

[15 points]

8) Write a function to take an array of ‘int’ as the first argument, and the size of the array as the second argument. The function should return a pointer to the element of the array that contains the highest number.

Show how to call the function and display the highest number in the array.