COSC 1560 – Computer Programming II

Mid-Term Examination #3 (Sample)

NAME:

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

[7 points]

1) Explain the following ways to open a file, named "Test.txt":

```
f.open("Test.txt", ios::out);
f.open("Test.txt", ios::app);
f.open("Test.txt", ios::in | ios::out);
```

[7 points]

2) There is a requirement to open a file named "Data.txt" for reading. If the file does not exist then the message "DOES NOT EXIST" should be displayed. Write the code to achieve this requirement.

[16 points]

3) Suppose a line of a file contains the following data:

Table Tennis&25.6;36.9&Cricket&

The line contains a ‘string’ and ‘double’ separated by a ‘&’, then a ‘;’, then a ‘double’ and ‘string’ separated by a ‘&’.

Suppose that the following variables have been declared:

```
fstream f(“File.txt”, ios::in);
string str1;
string str2;
double d1;
double d2;
```

Write code to store the two strings in variables ‘str1’ and ‘str2’, and the two numbers in variables ‘d1’ and ‘d2’.

[8 points]

4) Consider the following array:

```
const int SIZE = 5;
int numbers[SIZE] = {1,5,8,2,9};
```

Show how to open a TEXT file, called Data.txt, for writing. Then use a 'for' loop to write each value in the array 'numbers' to the file Data.txt.

[10 points]

5) Consider the following array:

```
const int SIZE = 5;
int numbers[SIZE] = {1,5,8,2,9};
```

Show how to open a TEXT file, called Data.txt, to "append" a value to the end of the current contents. Then write the following information to the file:

i) The 'length' of the array.

ii) The largest value in the array.

[16 points]

6) Consider the following structure:

```
struct Exam
{
        char name[20];
        int numStudents;
        int numQuestions;
};
```

Assume that the following array has been declared and populated by the user:

```
const int NUM_EXAMS = 10;
Exam tests[NUM_EXAMS];
```

Show how to complete the following tasks:

a) Open a file named “Exams.dat” as a binary file, for writing.

b) Write ‘NUM_EXAMS’ as the first value in the file.

c) Write the array ‘tests’ to the file.

[18 points]

7) Suppose that a binary file has been created with an ‘int’ as the first element, followed by a series of Exam structures. Write lines of code to do the following:

   a) Read the first value in the file and store it in a variable ‘numExams’.
   b) Read the information associated with the last exam and store it in a variable ‘lastTest’.
   c) Suppose the user has entered an integer, between 0 and numExams-1, and it is stored in the variable named ‘location’. Read the information associated with the value stored in the variable ‘location’ and store it in the variable ‘temp’.

[18 points]

8) Suppose a binary file, named "Integers.dat" is created as follows:

```
fstream f("Integers.dat", ios::out | ios::binary);
int values[5] = {5,8,2,3,9};
f.write(reinterpret_cast<char*>(values), sizeof(values));
f.close();
```

a) If it is intended to read and update single values in the file, without reading the whole file, how should the file be opened?

b) Show how to read the 3rd element of the file, store in a variable 'num', print out the value, prompt the user to update 'num', and write it back to the same location in the file.