

CSI 32 Final Exam, Review Session 1

1. Given two objects of the `class Record`:

```
Record a(18273, "Alan Rondrigues", 45.40);  
Record b(8473, "Jessica Mendoza", 48.20);
```

and a `vector` `myRecords` of `Record` objects,

give the code to add these two `Record` object to the `vector` `myRecord`:

2. Consider the following definition of the function `f`:

```
void f(double* a, int n) {  
    int i{0};  
    for ( ; i < n; i++){  
        cout << a[i] << " "; }  
    cout << i << endl;  
}
```

What does it do (i.e. what is displayed)?

3. Select the *false* statement. The `write` function:

- (a) Creates unformatted data.
- (b) Expects data type `const char*` as its first argument.
- (c) Writes to files in hexadecimal format.
- (d) Takes an argument of type `size_t`.

4. Consider an interface of `class Record`, which records the information about a book: its id in the repository, its title and author name, and its price:

```
class Record {
public:
    Record(int idNumber, std::string t, std::string name, double p) :
        id{ idNumber }, title{ t }, author{ name }, price{ p } {

        if (p < 5) { price = 10; }

        std::string getTitle();
        std::string getAuthor();
        void setPrice(double newPrice);
        double getPrice();
        void setID(int newID);
        double getID();

private:
    int id; // a unique id number of the book
    std::string title, author;
    double price;

};
```

(a) write the statements display the information of a `Record book1`, namely, the *id* of the book, its *title* and *author*, and its *price*.

(b) Assume that we have three `Record` objects: `Record book1, book2, book3`. Write the code to append the three records into a file `records.txt` (it already exists), using *formatted file output*.

For each record, the *id*, the quoted *title*, the quoted author's *name* and the *price* should be in the file, separated by one white space. One record per line.

(c) if you want to opt for *random-access file output*, with *fixed-size records*. What do you need to change in the `class Record`?

5. You are given a file **movies.txt** with the records:

<"movie title"> <"movie director">

listed one per line, with title and director name are quoted text and are separated by the white space.

You are asked to read the content of the file and store its contents in a container.

(1) What container would you use for storage?

(2) Write the code fragment that opens the file movies.txt for reading, reads all content of the file into an appropriate container.

6. Consider the following code that generates 100 random values in the range [-100,100] using uniform distribution:

```
#include<iostream>
#include<vector>
#include<random>

using namespace std;

int main() {
    default_random_engine generator;
    uniform_int_distribution<int> distribution(-100, 100);
    vector<int> myV;
    int n; // used to determine whether an element is counted or not
    int counter = 0; // used to determine how many elements satisfy
    // the condition

    cout << "Enter an integer value between -99 and 99, including: ";
    cin >> n;

    if (n < -99 or n > 99) { n = 0; }

    for (int i{ 0 }; i < 100; i++) {
        myV.push_back(distribution(generator));
    }

    // put the code here
}
```

Put the code where shown to count how many elements of the vector are greater than or equal to n. Use **for_each** algorithm and the **counter** variable.