

CS 115 Midterm 2 Review Quiz

November 6, 2008

Group members:

Rules

- You must briefly explain your answers to receive partial credit.
- When a snippet of code is given to you, you can assume that the code is enclosed within some function, even if no function definition is shown. You can also assume that the `main` function is properly defined and that the `iostream`, `fstream`, `iomanip`, `string`, and `cmath` libraries have been included at the beginning of the program.
- When you are asked to write *a snippet* of code, you may also assume that it is enclosed within some function that any necessary libraries have been included.
- When you are asked to write *a complete program*, you must write the `#include` statements, the `int main()`, etc. in your solution to receive full credit.
- A line consisting solely of “...” represents one or more unspecified C++ statements, some of which may change the values of program variables.

Problem 1: 12 points.

What is the output of each of the following snippets of code?

(a)

```
int a = 5;
int *ptr = &a;
cout << *ptr;
```

(b)

```
int a[3] = {5, 8, 7};
cout << a[2];
```

(c) If the following function is defined somewhere in the program and prototyped above main....

```
int increment(int x) {
    return x+1;
}
```

...what does the following code print?

```
int x = 5;
increment(x);
cout << x;
```

Problem 2: 13 points.

(a) For the snippet of code...

```
char c[50];
```

...what is the datatype of `c[5]`?

(b) For the snippet of code...

```
int a;
```

...what is the datatype of `&a`?

(c) Assume that the following declaration appears above the main program:

```
struct flightInfo {  
    string airline;  
    int flightnum;  
    string from_city;  
    string to_city;  
};
```

For the snippet of code...

```
flightInfo f;
```

...what is the datatype of `f.flightnum`?

Problem 3: 25 points.

The snippets of code in this problem do not successfully accomplish the task described in their accompanying comment. Correct the code so that it performs the task described in the comment. The code may have more than one error.

(a)

```
// Initialize all array elements to zero
int a[50];
for (int i=1; i <= 50; i++) {
    a[i] = 0;
}
```

(b)

```
/* Ask the user for a name, then print "You rock,
[username]! " until the user types "q". */
string name;
do {
    cout << "Enter a name (q to quit): ";
    cin >> name;
    cout << "You rock, " << name << "!" << endl;
} while (name == "q");
```

(c) For this problem, assume that the struct `flightInfo` from Problem 2c has been declared above the main program.

```
/* Function that has two inputs: an array of
flightInfo and the size of the array. Function
changes the to_city to "San Francisco" for the last
element of the array. Function does not return
anything. */
int visitSF(flightInfo f, int size) {
    string flightInfo.to_city[size] = "San Francisco";
}
```

Problem 4: 25 points.

Write short snippets of code to accomplish the following tasks:

(a) Define a data structure named `music_cd` with the following fields. You should decide which data types to use for the fields.

- `artist` (the name of the recording artist)
- `cd_title` (the name of the CD)
- `year` (the year of recording)
- `track_names` (an array of track names. You may assume that no CD ever has more than 30 tracks.)

(b) For an array that has been declared as

```
float floatArr[MAX_SIZE];
```

where `MAX_SIZE` has been defined as some constant integer, write a snippet of code that does the following:

Search the array `floatArr` for the number 12.5. If the number 12.5 is one of the elements of `floatArr`, you should print "Yes!" **once**. If the number 12.5 is not one of the elements of the array, you should print "No!" **once**.

(c) For an array that has been declared as

```
int intArr[5][5];
```

write a snippet of code that adds up all of the elements in the first column.

Problem 5: 25 points.

For this problem, you must write a **complete program** that contains the following:

- A function called `InitArray` that has no return value and two input parameters:
 - `inputArr`, an array of integers
 - `size`, the size of the array`InitArray` initializes each element of the input array to zero.
- A function called `PrintArray` that has no return value and two input parameters:
 - `inputArr`, an array of integers
 - `size`, the size of the array`PrintArray` prints out each element of the array on its own line. For each element of the array, it prints the array subscript, followed by a colon, followed by the value of that array element. For example, for an array with size 3 whose values are 4, 5, and 6, it would print

0: 4
1: 5
2: 6
- Prototypes for `InitArray` and `PrintArray`
- A main function that does the following:
 - Declares two integer arrays, one with 10 elements and one with 50
 - Calls `InitArray` to initialize each array
 - Calls `PrintArray` to print each array