

# CSci 1113

## Quiz

Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

*Instructions:* Please pick and answer any 6 of the 7 problems for a total of 60 points. If you answer more than 6 problems, only the first 6 will be graded. The time limit is 50 minutes. Please write your answers in the space provided. The exam is open book and notes. You may use electronic devices to ONLY look at either an e-book version or electronic notes. You may not use the internet, compiler or any other outside resources. (If you are typing on your keyboard/input device for anything other than ctrl-F to find words in the e-book or notes, this is probably not acceptable.)

**Problem (1)** [10 points] Write a C++ program to determine how old a person is. This person will input their information as: [full name] [month] [day] [year]. Your program should output their name and age. (Today is 2/17/17 and you can choose either appropriate age for people born on 2/17. For example, someone born on 2/17/2000 can be either 16 or 17.) You can assume the person's full name will only be two words (no spaces in their first or last name, and no middle name).

Example input: Samantha Fuller 3 18 1933

Example output: Samantha Fuller 83

**Problem (2)** [10 points] For each of the following state whether or not you can write it as a single if-else statement. If you can, do so (you cannot use more than one “if” per part). If it is not possible to write as a single if-else statement, you must clearly explain why.

```
(a) if(x < 7) {  
    z = 4;  
}  
    else if (x != 10) {  
        z = 29;  
    }  
    else {  
        z = 10;  
    }
```

```
(b) if(x > 2) {  
    if (x < 10) {  
        z = 4;  
    }  
}  
    else {  
        z = 9;  
    }
```

```
(c) if(x < 7) {  
    z = 4;  
}  
    else if (x != 10) {  
        z = 29;  
    }  
    else {  
        z = 4;  
    }
```

**Problem (3)** [10 points] Assume a variable  $a$  exists in your program (you may assume `cmath` has been included). Create and store the following value in a variable  $x$ :

$$x = \frac{5}{9}e^a - a^2$$

**Problem (4)** [10 points] Assume the user will input a positive number. Write a C++ program that displays if the first digit is a 1 or 4 and whether the number is 1337.

Example 1 input: 1234  
Example 1 output:  
first digit is 1 or 4

Example 2 input: 23  
Example 2 output:

Example 3 input: 4  
Example 3 output:  
first digit is 1 or 4

Example 4 input: 1337  
Example 4 output:  
first digit is 1 or 4  
number is 1337

**Problem (5)** [10 points] Give the output of running the following:

```
int x = 3;
int y = 2;
x = y++ * 2 - x;
y %= x-y;
y = y * 2.5;
double z = x/y;
cout << x << y << z << endl;
cout << (2 + 9) / ( 1/2 ) << endl;
```

**Problem (6)** [10 points] Write a single if-statement that is true on the range of *i* values shown and false on all other values. If there is an ellipsis (i.e. ...), this indicates the pattern of numbers continues in that direction.

(Example) `int i: ... -2, -1, 0`

Answer: `if(i <= 0)`

(a) `int i: 1, 5, 11`

(b) `int i: ... 1, 5, 11, 15, 21, ...`

(c) `int i: ... -1, 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, ...`

(d) `int i: 1, 3, 5, 7, 9, 11, 13, ... 91, 93, 95, 97, 99`

(e) `int i: 11, 15, 21, 25, 31, 35, ...`

**Problem (7)** [10 points] Find 3 possible places for errors in the following code (assume no issues with parts not shown, such as `#include`). Assume no user-defined global variables exist. Explain specifically what causes the error and whether it is a syntax, runtime or logic error:

```
int main() {
    char choice;
    cin << choice;
    if(choice == 'buy') {
        cout << "What would you like to buy?\n";
        string product;
        cin >> product;
        if(product == "an A in this class") {
            cout << "Fat chance... not with money!" << endl;
        }
    }
    else (choice != 'buy')
    {
        cout << "Fine then!\n";
    }
}
```