

# 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 small segment of C++ code (as if you were in main(), you do not need to do #include and such) that reads in two integers. Then swap the value of these integers, except increase the value of the first number by one and the second by two. For example, if your variables are x and y and you cin a 2 then 8 so x=2 and y=8, then at the end of your code these variables should store: x=10 and y= 3. Your program needs to work for any pair of numbers input, not just the example above.

**Problem (2)** [10 points] Write a C++ program that reads a number from the keyboard, then evaluates and prints the following polynomial at that value:  $x^3 + 5 \cdot x8$ . For example, if the user input 2.5, you should display 20.125 since  $(2.5)^3 + 5(2.5)8 = 20.125$ .

**Problem (3)** [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: ... 0, 1, 2, 3, 10, 11, 12, 13, ...

(b) int i: ... -2, 0, 2, 4, 6, 8, 10, ...

(c) int i: ... -2, -1, 0, 1, 3, 4, 6, 7, 8, 9, 10, ...

(d) int i: ... -5, 0, 5, 10, 15, 20, ...

(e) int i: ... -7, -3, -1, 1, 3, 7, 9, 11, 13, 17, ...

**Problem (4)** [10 points] Write a C++ program that asks for a day of the month, then prints what day of the week that is. Assume they will only enter days for the February 2017. (Note: the 1st was a Wednesday, 2nd a Thursday, ....)

Example (input is 14):

What day? 14

Tuesday

**Problem (5)** [10 points] What is the output of this code segment?

```
bool x = 7;
int y = 5;
if( y > 2) {
    cout << "A";
    if(x == 1 || y < 3) {
        cout << "B";
    } else if (y > 0 && y < 10) {
        cout << "C";
    }
} else {
    if(x%3 == y%3) {
        cout << "D";
    }
} if (x%2 == 1 && y != 7) {
    cout << "E";
}
```

**Problem (6)** [10 points] (a) Identify and explain a problem with this code:

```
double x, y;
cout << "Enter two numbers: ";
cin >> x >> y;
if(x+y == 2.4) {
    cout << "Their sum is 2.4" << endl;
}
```

(b) Identify and explain a problem with this code:

```
double average;
int x, y;
cout << "Enter two numbers: ";
cin >> x >> y;
average = (x+y)/2;
cout << "Their average is " << average << endl;
```

**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() {
    double len, area;
    cout << "Enter side length:";
    cin >> len;
    cout << "Triangle or square?";
    cin >> shape;
    area = (len)(len);
    if (shape == t) {
        len /= 2;
    }
    cout << "Area: area";
}
```