Homework 2: Basic C++

CS16 - Summer 2021

Due:	Thursday, July 8, 2021 (11:59 PM PDT)
Points:	60
Name:	_____
Homework buddy:	_____

- You may collaborate on this homework with **at most** one person, an optional "homework buddy."
- **Submission instructions:** All questions are to be written (either by hand or typed) *in the provided spaces* and turned in as a single PDF on Gradescope. In other words, you must edit this file directly! Reach out on Slack if you want some suggestions on how to do this. Do not copy and paste the text into a word processor; we will not accept this and your homework may not be graded. If you submit handwritten solutions, write legibly. We reserve the right to give 0 points to answers we cannot read.

1. (3 points) Is this variable declaration OK to do in C++? Why or why not?

```
double const = 30;
```

2. (4 points) Show 2 different ways to initialize variables in C++.

3. (12 points) Mark up this code to show (at least) 4 things that are missing in order to compile.

```
#include <iostream>

int main()
    int a(0), b(0), c(0);

    string quote;

    cout << "Enter 3 numbers separated by spaces ";

    cin >> a, b, c;

    sum = a + b + c;

    quote = "The sum of these 3 numbers is "

    cout << quote << sum;

    return 0;
}
```

4. (15 points) The program below intends to do the following: Repeatedly prompt the user to input an integer. When the user no longer wants to continue, output the sum of all the positive numbers, followed by the sum of all the negative numbers. However, the given program has errors. Mark all logical and syntax errors in the program and provide corrections in the space provided to the right. Add missing statements if any.

```
#include <iostream>
using namespace std;

int main() {

    int a, sumPositive, sumNegative;

    string promptContinue = "\nTo continue, enter Y/y\n";

    string promptNum = "\nEnter a number: ";

    char response;

    while (reponse = 'y' || 'Y') {

        cout << promptNum;

        cin >> a;

        if (a)
            sumPositive += a;
        else
            sumNegative += a;

        cout << promptContinue;



    }

    cout << "Sum of all positive numbers: " << sumPositive << endl;

    cout << "Sum of all negative numbers: " << sumNegative << endl;

    return 0;
}
```

5. (4 points) What is the resulting output from the following C++ statements? Explain why.

```
int x(35), y(5);
bool v, w;
v = (x < y * y);
w = ((x/y) == 7);
cout << (v && w) << endl;
```

6. (6 points) Write code with **one** `while` loop that prints out these 5 lines like this (remember a newline after each line):

```
COUNTDOWN TO ZERO: 4
COUNTDOWN TO ZERO: 3
COUNTDOWN TO ZERO: 2
COUNTDOWN TO ZERO: 1
COUNTDOWN TO ZERO: LIFT OFF!
```

7. (4 points) What is the exact output of the following statements?

```
int s = 1;
do {
    cout << s << "+";
}
while (s++ < 5);
```

8. (4 points) Same question as (7.) but the last statement now reads:

```
while (++s <= 5);
```

9. (4 points) Explain via an example what a "type mismatch" is. Also, explain how compilers handle C++ statements that have a type mismatch.

10. (4 points) Write an if-else statement that outputs the string "Grade is B" if the variable `score` is between 80 and 90 (both limits included). Otherwise, the if-else statement should output "Grade is not B".