

Review for Final Exam

The final exam is cumulative. It will include everything covered in the lectures, labs and homework assignments. The lecture notes, labs and homework assignments can be found at: <http://www.sci.brooklyn.cuny.edu/~dzhu/cs151/>

The chapters that we have covered are listed below:

Chp. 1.1 ~ 1.6

Chp. 2.1 ~ 2.15, 2.17

Chp. 3.1 ~ 3.8, 3.11

Chp. 4.1 ~ 4.12, 4.15

Chp. 5.1 ~ 5.8, 5.10 ~ 5.13

Chp. 6.1 ~ 6.5, 6.13, 6.6 ~ 6.10

The format of the exam will be:

- 1) multiple choice
- 2) true / false
- 3) short question & answer
- 4) find the errors
- 5) programming

Some sample questions have been included in this review starting next page.

The final exam counts for 30% of your overall grade. Your overall grade = homework (30%) + labs (20%) + midterm (20%) + final exam (30%).

The following is the schedule for the final:

Wedn. 5/21/2025 (8:00am – 10:00am) in room A1/C09

NO electronic devices are allowed during the exam. Phones must be turned off. You are allowed to bring ONE page of notes (one sided & letter-sized 8.5” x 11”) to the exam. The notes can be in any size font as long as you can read them.

Sample Final Exam Questions

MULTIPLE CHOICES

1. In a function header, you must furnish _____.

- a. data type(s) of the parameters
- b. data type of the return value
- c. the name of function
- d. names of parameter variables
- e. All of these

2. What is the output of the following program? _____

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

void doSomething(int);

int main()
{
    int x = 2;

    cout << x << endl;
    doSomething(x);
    cout << x << endl;
    return 0;
}

void doSomething(int num)
{
    num = 0;
    cout << num << endl;
}
```

- | | |
|------|------|
| a. 2 | c. 0 |
| 0 | 0 |
| 2 | 0 |
| b. 2 | d. 2 |
| 2 | 0 |
| 2 | 0 |

TRUE / FALSE

3. One reason for using functions is to break programs into manageable units, or modules.

True _____ False _____

4. Changes to a function parameter always affect the original argument as well.

True _____ False _____

SHORT ANSWER

5. How do you return a value from a function to the calling function?
6. What is the difference between a local variable and a global variable?

FIND THE ERRORS

Each of the following functions has errors. Locate as many errors as you can.

7.

```
void total(int value1, value2, value3)
{
    return value1 + value2 + value3;
}
```

8.

```
double getValue(int value&)
{
    cout << "Enter a value: ";
    cin >> value&;
}
```

PROGRAMMING

9. Write a program that lets the user enter the monthly rainfall repeatedly until -1 is entered. The program should then print out the total months used, calculate and display the total rainfall for these months and the average monthly rainfall. (*Input validation: Do not accept negative numbers for monthly rainfall figures.*)

Sample running result:

```
Enter rainfall for month #1: 20
Enter rainfall for month #2: -15
Invalid input! Positive numbers only!
Enter rainfall for month #2: 15
Enter rainfall for month #3: 25
Enter rainfall for month #4: 20
Enter rainfall for month #5: -1
Total months is 4
Total rainfall for the 4 months is 80
Average monthly rainfall is 20
```