**CS 2341 – Fall 2020**

**Homework Assignment 1**

Due: Sep 2, 2020 @ 11pm

Uploaded to Canvas

*Submission Directions:*

* **Put your name inside the document in the header of the Word doc (or some equally**

**conspicuous place)**

* Complete the questions below. Point values are indicated in square brackets.
* For questions that require diagrams, create the diagrams on your computer (no hand-

drawn/scanned diagrams). You can do this with PowerPoint, Google Draw, LibreOffice Draw, etc. Then copy-and-paste the diagrams into the correct place in the document you submit.

* For any code or pseudocode, please use a fixed-point mono font (courier for example) and consider

appropriate spacing and indentation.

* Please **submit a PDF** file of your solutions.

1. There are some issues in the following program, but none are compile time errors. What’s wrong? [5]

#include <cstring>

#include <iostream>

using namespace std;

class HW1

{

public:

char \*word;

HW1() { }

~HW1() {

delete [] word;

}

};

void foo(HW1 a)

{

//some operation here

}

int main()

{

HW1 a;

a.word = new char[80];

strcpy(a.word, "abc");

foo(a);

return 0;

}

2. What is the output of the program below? Give any output, any errors, and an explanation or a memory diagram of what occurred. [5]

void foo(int a)

{

cout << a << endl;

}

int main()

{

int \*b = new int;

foo(\*b);

\*b = 5;

foo(\*b);

b--;

foo(\*b);

b++;

(\*b)--;

foo(\*b);

foo(reinterpret\_cast<int>(b));

return 0;

}

3. What is the output of the code shown above? Give the output, any errors, and an explanation or a

memory diagram of what occurred. Bonus: show an explain the memory leak that occurs in the code

above. [5]

void foo(int \*&a)

{

int \*b = a;

int c = 5;

a = &c;

\*b = 6;

}

int main()

{

int \*a = new int;

foo(a);

cout << \*a << endl;

return 0;

}