CS 2341 – Fall 2020

**Homework Assignment 2**

Due: Sep 9, 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. The first column of the table below contains assignment expressions involving the items declared above the table. Your task is to identify the data type of the expression on the left side of the assignment (LHS), identify the data type of the expression on the right side of the assignment, and finally determine if the assignment is legal in C++. NOTE that we are only concerned if the assignment will pass through a compiler. We are not concerned about if it might result in a segmentation fault or other run-time error. [1 pt per row]

int x[3];

int var;

int\* p;

|  |  |  |  |
| --- | --- | --- | --- |
| **Expression** | **Data Type of LHS** | **Data Type of RHS** | **Legal?** |
| x = p; |  |  |  |
| p = x; |  |  |  |
| var = \*(x+2); |  |  |  |
| x[1] = var; |  |  |  |
| \*p = \*x; |  |  |  |
| p[0] = (x + 1); |  |  |  |
| var = p[0]; |  |  |  |

2. Using the array **coffee**, determine the output of each of the expressions that follow. If the expression outputs a single letter, indicate which word it is from (ex: *the first s of espresso*).

[1 pt each]

char things[6][15] = {“espresso”,

 “cappuccino”,

 “latte”,

 “breve”,

 “french press”,

 “tasty”};

a) cout << things[1];

b) cout << things[1] + 3;

c) cout << \*things[4];

d) cout << \*(things + 2);

e) cout << \*(\*things + 2);

f) cout << \*(\*(things +4)+2);

3. Draw a complete memory diagram for the code below at the point indicated. [7 points]

void mystery(int a, int\* b, int\*& c, int \*\*d) {

 \*b = 5;

 c = new int[2];

 c[0] = 5;

 d[0][1] = \*c + a;

 a = \*\*d;

 **//Draw diagram at this point in execution**

}

int main() {

 int v = 3;

 int\* p = new int[v];

 int\*\* t = new int\* [4];

 p[1] = ++v;

 t[0] = p;

 t[1] = p + 2;

 mystery(p[1], &v, t[0], t);

 return0;

}