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CS302 HW1

Problems 1,2,4

This file is going to have problems exercise 1,2 and 4. Exercise 3 is going to be on a separate file for the actual program itself. Exercise 1 and 4 were done on a text editor and a compiler so that's why my explanations are in comment format.

```
Ex1:
```

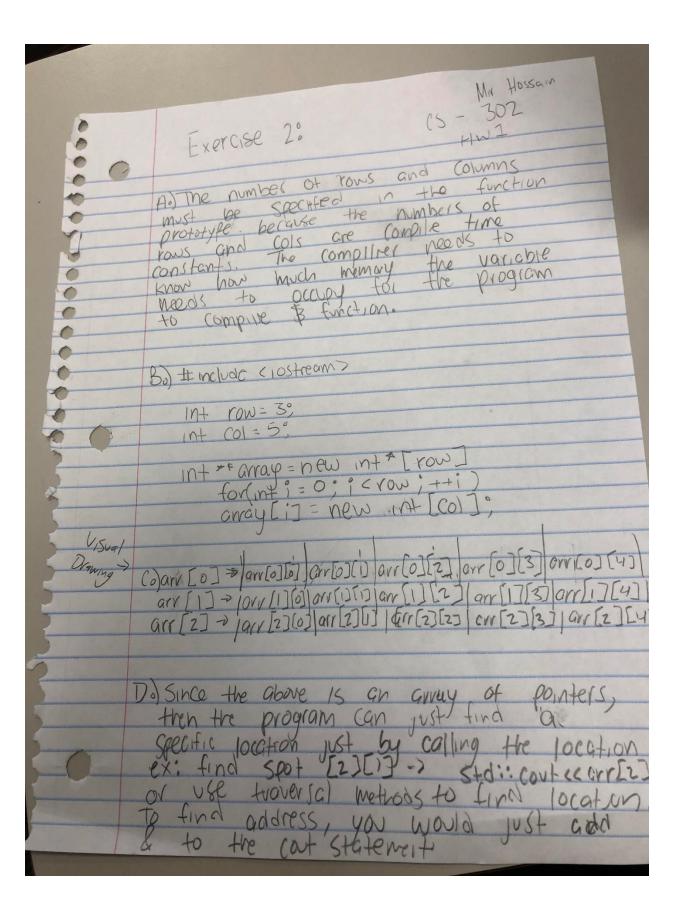
```
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First problem from the first homework assignment
CS302
*/
#include <iostream>
#include <stdlib.h>
using namespace std;
void twist(int a, int& b){
 int c;
 c = a+3; //c = 3 + 3 -> c now holds the value of 6
 a = a*3+c; //a = 3*3 + 6 -> a now holds the value of 15
 b = c+a; //b = 15 + 6 -> b now holds the value of 15
}
int main(){
 int r = 2;
 int s = 3; //s corresponds with a
 int t = 3; //t corresponds with b
 twist(t, s);
 cout << r << " " << s << " " << t << endl;
```

```
return 0;
}
/*
```

The output of this program is 2 21 3

The reason why the value of S changed is because b is passed by as reference so the function twist only affects the value of s. If a was passed by as reference then the output would 2 21 15. The function would only change the values of any variables if they were passed as reference.

*/



EX4:

```
#include <iostream>
using namespace std; /*Error #1: cout is used multiple times so including namespace
std was needed, or I could have just used std::cout
*/
int main()
{
int* ptr;
 int* temp;
 int x;
 ptr = new int;
 temp = new int; //dynamically allocated temp(for any possible memory issues)
 *ptr = 4;
 temp = ptr; //Got rid of * on both ptr and temp since it would cause type comparison issues
 cout << *ptr << *temp; //had to reference variables because they were pointers
 //output: 44
 x = 9;
 *temp = x; //Did not change anything
 cout << *ptr << *temp;</pre>
 //New output: 4499
 ptr = new int;
 *ptr = 5; //Had to add * to ptr since its original type was a pointer
 cout << *ptr << *temp;</pre>
```

```
//Output is: 449959 return 0; }
```

For this program, there were issues with dereference and memory allocation throughout the program. I commented out what I fixed throughout the program and noted where I added the *. I included reasons for editing the program. At the beginning of the program I allocated temp so there would be no memory leaks in the program.