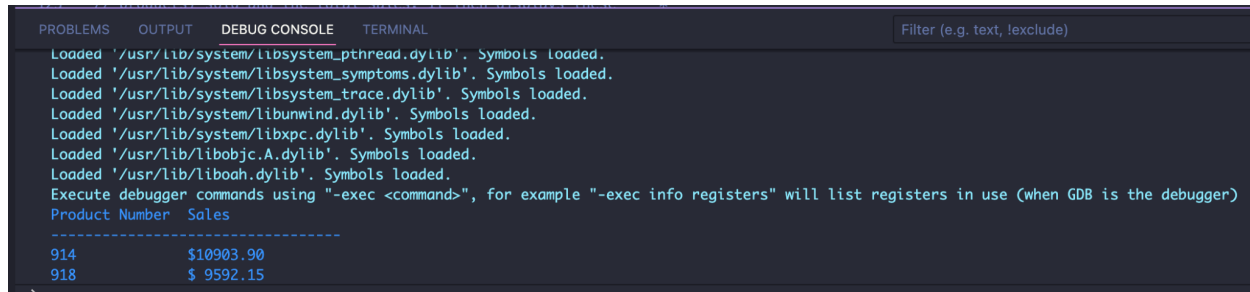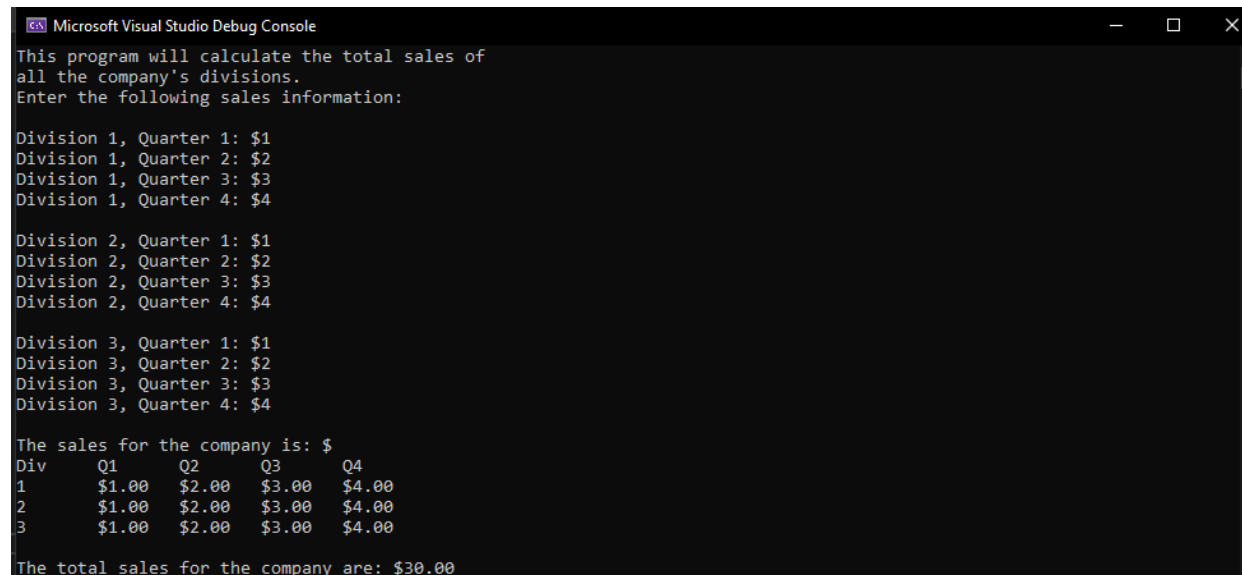a. description of the objectives/concepts explored in this assignment including why you think they are important to this course and a career in CS and/or

- Debugging and structures. Debugging is one of the most crucial aspects of coding, having the ability to quickly debug and correct mistakes is insurmountably important to being competent in coding. Structure creation was fun and is important, because although similar in many aspects to classes, they are much lighter and more efficient than classes, which can give unique advantages over classes and/or Engineering. Include screen shot(s) from Task 1.

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL                                          Filter (e.g. text, !exclude)
Loaded '/usr/lib/system/libsystem_pthread.dylib'. Symbols loaded.
Loaded '/usr/lib/system/libsystem_symptoms.dylib'. Symbols loaded.
Loaded '/usr/lib/system/libsystem_trace.dylib'. Symbols loaded.
Loaded '/usr/lib/system/libunwind.dylib'. Symbols loaded.
Loaded '/usr/lib/system/libxpc.dylib'. Symbols loaded.
Loaded '/usr/lib/libobjc.A.dylib'. Symbols loaded.
Loaded '/usr/lib/liboah.dylib'. Symbols loaded.
Execute debugger commands using "-exec <command>", for example "-exec info registers" will list registers in use (when GDB is the debugger)
Product Number  Sales
--------------------------------
914             $10903.90
918             $ 9592.15

b. A description of how you approached debugging Task 2, why you think a programmer may have made the mistakes and how you think they can be avoided in the future. Include screen shot(s) from Task 2.

- The mistakes are quite common if not thinking about how arrays are accessed and the var you used in for loop iteration. These mistakes seem to be a culprit of quickly written code without taking a moment to realize the outcome of the implementation. The output should've used div instead of NUM_DIVS. The output was wrong because we were accessing the array in [col][row] instead of [row][col].

Microsoft Visual Studio Debug Console                                    —    □    ✕
This program will calculate the total sales of
all the company's divisions.
Enter the following sales information:

Division 1, Quarter 1: $1
Division 1, Quarter 2: $2
Division 1, Quarter 3: $3
Division 1, Quarter 4: $4

Division 2, Quarter 1: $1
Division 2, Quarter 2: $2
Division 2, Quarter 3: $3
Division 2, Quarter 4: $4

Division 3, Quarter 1: $1
Division 3, Quarter 2: $2
Division 3, Quarter 3: $3
Division 3, Quarter 4: $4

The sales for the company is: $
Div     Q1      Q2      Q3      Q4
1       $1.00   $2.00   $3.00   $4.00
2       $1.00   $2.00   $3.00   $4.00
3       $1.00   $2.00   $3.00   $4.00

The total sales for the company are: $30.00

c. A description of what you had to do in Task 3 including any bugs you may have introduced and had to fix. Include screen shot(s) from Task 3.

- To implement a structure, I had to either hardcode or create an loop to add the previous data into the structure to be passed around. I then had to go and change the variables being accessed to using a dot operator so be able to retrieve the correct data at the desired index.

```
40
41        for (int i = 0; i < NUM_PRODS; i++) {
42            productArray[i].id = id[i];
43            productArray[i].units = units[i];
44            productArray[i].prices = prices[i];
45        }
46
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

```
Product Number  Sales
---------------------------------
914             $10903.90
918             $ 9592.15
917             $ 8712.30
919             $ 8594.55
921             $ 7355.40
915             $ 6219.20
922             $ 3593.40
916             $ 2406.65
920             $ 1450.15

Total units Sold:  3406
Total sales:      $58827.70
```

* I used clang++ to compile/run/debug these tasks.