

Data Structures Lab 1

Vivek Kunapareddy(M08644070)

- a) The concepts explored in the assignment were:
- Installing and setting up an IDE: This concept is extremely important when moving into the workforce as a software engineer would require extensive use of an IDE so ease and familiarity with one would help in transitioning into that position
 - Modifying existing code: This concept is also of use to us as most of the projects we will work on are going to be existing codebases rather than files built from scratch. Hence being able to read and understand code written by someone else helps in transitioning into the workforce
 - Struct design: The initial concept of data structures was also explored in this assignment as basic struct design. This gives us strong fundamentals for further improving upon data structures

```
Lab1.cpp: C:\Users\Vineela\Documents\Visual Studio 2015\Projects\Lab1DataStructures\Debug\Lab1DataStructures.exe
File Edit View Project Build Debug Team Tools Test Analyze Window Help
Debug - x86 - Local Windows Debugger
Lab1.cpp: C:\Users\Vineela\Documents\Visual Studio 2015\Projects\Lab1DataStructures\Debug\Lab1DataStructures.exe
Solution Explorer
Solution 'Lab1DataStructures' (1 project)
  References
  External Dependencies
  Header Files
  Resource Files
  Source Files
  Lab1.cpp
Properties
main VCCodeFunction
  (Name) main
  File c:\Users\Vineela\Documents\
  FullName main
  IsDefault False
  IsDelete False
  IsFinal False
  IsInjected False
  IsInline False
  (Name) Sets/returns the name of the object.
Output
Show output from: Build
1>----- Build started: Project: Lab1DataStructures, Configuration: Debug Min32 -----
1> Lab1.cpp
1> Lab1DataStructures.vcxproj -> C:\Users\Vineela\Documents\Visual Studio 2015\Projects\Lab1DataStructures\Debug\Lab1DataStructures.exe
1> Lab1DataStructures.vcxproj -> C:\Users\Vineela\Documents\Visual Studio 2015\Projects\Lab1DataStructures\Debug\Lab1DataStructures.pdb (Partial PDB)
----- Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped -----
Build succeeded
```

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	

- b) The debugging in task 2 was approached by firstly reading through the code and trying to understand what operations might have gone wrong. Then in order to see if the assumptions were right the code was compiled and the output was compared to the expected output. Upon finding them different the problem was fixed and the entire process was repeated until there were no more bugs.
- The bugs fixed were pretty simple. Most of the fixes were slight error such as replacing div with qtr or forgetting to add the sales to the total sales. Finally the last problem was not initialising the int value to 0. Such problems can be avoided by compiling the program and checking if the output is as expected and if not it can be fixed.

```
27 cout << endl; // Print blank line.
28
29 }
30
31 cout << "C:\\WINDOWS\\system32\\cmd.exe" << endl;
32 cout << "This program will calculate the total sales of" << endl;
33 cout << "all the company's divisions." << endl;
34 cout << "Enter the following sales information:" << endl;
35
36 // Division 1, Quarter 1: $100
37 for (int i = 1; i <= 4; i++)
38 {
39     Division 1, Quarter 1: $100
40     Division 1, Quarter 2: $100
41     Division 1, Quarter 3: $100
42     Division 1, Quarter 4: $100
43
44     Division 2, Quarter 1: $200
45     Division 2, Quarter 2: $200
46     Division 2, Quarter 3: $200
47     Division 2, Quarter 4: $200
48
49     Division 3, Quarter 1: $300
50     Division 3, Quarter 2: $300
51     Division 3, Quarter 3: $300
52     Division 3, Quarter 4: $300
53 }
54
55 cout << "The sales for the company is: $" << endl;
56 cout << "Div    Q1    Q2    Q3    Q4" << endl;
57 cout << "1      $100.00 $100.00 $100.00 $100.00" << endl;
58 cout << "2      $200.00 $200.00 $200.00 $200.00" << endl;
59 cout << "3      $300.00 $300.00 $300.00 $300.00" << endl;
60
61 cout << "The total sales for the company are: $2400.00" << endl;
62 cout << "Press any key to continue . . ." << endl;
63 return 0;
64 }
```

Output

```
1----- Build started: Project: Lab1-task2, Configuration: Debug Min32 -----
1> Lab1 - Task 2.cpp
1> Lab1-task2.vcxproj -> C:\Users\Vineeta\Documents\Visual Studio 2015\Projects\Lab1-task2\Debug\Lab1-task2.exe
1> Lab1-task2.vcxproj -> C:\Users\Vineeta\Documents\Visual Studio 2015\Projects\Lab1-task2\Debug\Lab1-task2.pdb (Partial PDB)
----- Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped -----
```

Div	Q1	Q2	Q3	Q4
1	\$100.00	\$100.00	\$100.00	\$100.00
2	\$200.00	\$200.00	\$200.00	\$200.00
3	\$300.00	\$300.00	\$300.00	\$300.00

- c) In task 3 we had to introduce a struct which could replace the 4 arrays we had been using in task 1. This was pretty simple as we could just create a struct which holds 4 integer values and then create an array of these structs. The bugs introduced were that the functions used to modify the 4 arrays were now looking for non existent arrays instead of the array of structs introduced. So in order to get rid of those the functions were modified to use the struct we had introduced