**Lab 01 Report**

**Data Structures LAB 004**

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**(Source Codes for Tasks 2 & 3 attached)**

1. The kind of concepts that were explored in this assignment include debugging, functions, arrays, structures, analysis of code, running code and analysis of output, modification of code. All these concepts are of extreme importance for a career in our major, Computer Science. Debugging is very important to test your code to make sure it is running properly. It is extremely important to check each step of the output to figure out where exactly you have gone wrong, so we can correct it exactly there instead of wasting our time trying to change other parts of the code. Functions are important for modular coding, to make our code as short and as efficient as possible. Arrays and structures are important data structures. A data structure is a process through which data is stored and arranged in the disk space of the computer or memory storage, in a way that the data can be easily used and manipulated in the future. It is an effective way of performing various operations related to data management. Analysis of code is an important skill because in our career, multiple people work on code, and it is important to analyse what other people have worked on and make necessary changes. Analysis of output is important to figure out where our output has gone wrong to change the code.

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Figure 1: Output post-debugging (TASK 1)

1. We first read the code from start to end to understand what exactly we were coding for, what variables were used and so on. I made a rough draft of what I thought the outputs would turn out to be. I then looked thoroughly at the output to see what was wrong and what was missing. Along with this, I read the document outlining what changes were to be made to the code. Putting all this information together, I started making a list of the things to be changed. I then went specifically to one portion of the code, edited it, and ran it immediately to see the kind of change in output it would create. I went through the list and took a final look at the code. A programmer may have made mistakes due to the similar nature of variable names which could have caused them to get confused, or the confusing nature of 2-D variables. Creating pseudo-code and naming your variables in a clear and concise manner can help us avoid such small errors.

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Figure 2- Output from LAB 1 Task 2

1. I examined the given code thoroughly to understand what our objective is. I proceeded to read through the prompt for Task 3. The first step was to create a struct *product* which contains 2 integers and 2 doubles- corresponding to each array. The second step was to create an array object of type *product* in int main () and populate it with the values of our four arrays. Then, change all the function definitions, declarations and the function bodies to have just 2 parameters- *product p [], int num.* After this, I ran the code- and the math seemed correct. There was no other process involved.

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