**Name:** Rohan Patel

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**Course:** CSS343 B

**Assignment:** Assignment 4 Implementation

**Program Report:**

**Overview:**

Through the design phase and implementation phase of this program I was able to practice and learn new design patterns that can be used in objected oriented programing. The final product in terms of design didn’t change much outside of one section which can be examined when comparing **Figure 1** and **Figure 2**. Instead of I\_Person, I\_Student, I\_Course, I\_Instructor being on the same level I decided that I\_Person should be inherited by I\_Student and I\_Instructor as keeping them on the same level was giving me issues when implementing. Outside of that change this program had a lot of ups and downs in terms of uncertainty if I would complete the assignment in time or not because of the vast amount of code that was written and the errors I was presented by which I talk about in the **Learnings** section of this report.

**Learnings:**

Through this program I was defiantly opened up to various design patterns to help me successfully complete this program like I talked about earlier, but while implementing I was faced with a well know design pattern issue called the Dimond problem which is when a grandfather class is being inherited twice in a child class. Another prominent error I faced was when deletion of objects and making sure I wasn’t accessing an object that was deleted which was solved by edge case checkers. Finally the biggest thing I can take away from this program and the other 3 this quarter is that I need to sometimes step back and try implementing a different way instead of trying to fix something I broke for various hours. I faced this when implementing add and remove methods and I learnt from the pasted and just removed all my code and started over which resulted in my code working.

**Figure 1: Old UML Diagram**

Diagram, schematic

Description automatically generated

**Figure 2: Updated UML Diagram**

Diagram

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