Design Principles and Patterns

In my development process, I have re-worked my specification document and implementation several times. This was due to critical analysis, optimization, debugging and new feature iterations. As a software engineer - my job is not just to implement all given requirements and features, but to construct a well-oriented program with efficient code patterns and structures.

In my project I believe I have maintained strong clean design patterns and principles. For example, on most functions I have tried to keep the code clean and as much efficient as possible. Not only that but the logic which I have implemented in the Hardware Database component is very similar to the one for the Software Database component. A big mistake is to implement two similar functions in different ways, instead of keeping to one logical algorithm.

Another point in my project is that I have tried to keep all logic as simple as possible and divide the algorithm into several parts to avoid long/spaghetti code. Not only that, but this way the code is more efficient and easier to understand for other engineers.

Another principle I have maintained is that I have iterated several times through the whole code and checked for unnecessary code, which is not needed and just makes the algorithm bigger and not understandable without any needs of it. For example, instead of creating many new variables, I try to reuse the old ones, so I do not overcomplex the program itself.

I have also created functions which use switch cases for several logic implementations (such as the different use of different buttons), instead of having many if statements and additional checking.

Graphical user interface, text

Description automatically generated

Other important patterns and approaches towards a better implementation were taken such as more comments (to make it easier for other programmers) and in terms of the visual design – a very simplistic, easy to understand concept. All panels are very clear and simple, and I have added alerts for nearly every event triggering so the user can get response from all events occurring.

To conclude, I believe I have gained much knowledge during the development process of this Unit. I have understood and iterated throughout many different patterns and principles and more to it – understood better why this is a very important topic.