How to create an app that can easily be modified with Modular Programming?

The design technique that is used to create such applications is called Modular Programming. Such technique highlights dividing functionality of a program into smaller sub-programs where each sub-program holds one functionality of a program. Before doing a research on Modular Programming, this technique was known to me as “Single Responsibility Principal” where I would separate my code such that each class holds on responsibility.

A screenshot of a computer

Description automatically generatedThis is very effective way of building programs and it is recommended for large applications as well as mid-size applications. According to GeeksforGeeks, “Some programs might have thousands or millions of lines and to manage such programs it becomes quite difficult as there might be too many of syntax errors or logical errors present in the program, so to manage such type of programs concept of modular programming approached.” Such method provides programmers to have more freedom in changing their code without worrying too much about changing the whole application. For instance, in a React application, a developer wants to create a form field that takes input from the user. Programmer can create a separate file that hold the format and functionality of the form and exports the file to a different page. Example can be visualized as follows:

The following image is a Contact Page for my portfolio website which holds the styling of the page. It imports a component called <Form /> which exports a form field for the Contact Page to use.

A screenshot of a cell phone

Description automatically generatedThe following Screen Shot holds the actual contact me page that is exported from this file as a component for the Contact Page to use. This saves a lot of trouble managing large chunks of code. Although this example is not shown on a larger project, I believe it applies to large projects similarly.

This image below is the final product of combining these two files together. Notice how if the form field is changed, the rest of the page (image, description, background) will stay the same. On the other hand, if the other aspects of the page are modified, the form field will stay the same.

A screenshot of a social media post

Description automatically generated

So far, this technique looks very appealing and very useful to use. It is true that this technique is considered to be a great programming paradigm. However, there are a few precautions developers should take when considering such technique. One such precaution is that if there are too many modules created, it would be challenging for the programmer to handle the communications between such modules. Therefore, programmer should draw the diagram of which modules connects and communicates with what module. This way, programmer would be able to identify which module needs to be changed to modify a certain functionality of a program without modifying the whole program.

I have used this technique for a while without even knowing the actual term used for it. As stated below, it was known to me as “Single Responsibility Principal.” The name derived from one of the YouTube tutorials I watched while learning the principals of an efficient programmer. I learned that this method helps my code look clean. Since, functionalities of the program are divided into smaller files, it would be easier for me to navigate through the code and make changes if I chose to. Even after finishing the project, if I choose to improve upon what I have done, it would not take me much time to understand my code.

Overall, Modular Programming is a very important design paradigm that programmers should user as much as they can. It makes it so much simpler to navigate through the code base. One file with over 200 lines of code can be simplified down into smaller files that works the same way but easier to read and modify. Here is the [link](https://github.com/Temurbekk/ATM-Machine/blob/master/Main.java) to one of my old school projects which can be a clear example of how you should not write code. This code was written in my first semester as I learned to code in Java. I did not know how a thing about Object Oriented Programming. I wrote all the methods and functionality in one class. This was a very poor way of writing code. However, I learned a lot ever since. Now, here is the [example](https://github.com/Temurbekk/temurbekk.github.io/tree/master/src) of how I used Modular Programming to make my projects look cleaner and easier to read. This example is a portfolio website I created using React JS. Although it would not be wise to use such big library like React to build such small portfolio website, I wanted to see how React and CSS is superior over combining HTML, CSS, and JavaScript.