Computer Systems Report

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Approach

When we first were assigned this project, we decided to meet at the next lab and read through the coursework specification together. This was to make sure everyone had a clear understanding of the task we had been set. After this we read through it again and made a checklist of all the things we had to achieve. This led to us discussing what tasks we would all be best suited to do. We all agreed and made sure every member was comfortable with completing their task. For the rest of the lab we discussed approaches to the more challenging tasks and brainstormed ideas on possible ways to approach them. One being what date structures we would be best to use. Another being how to extend the memory addressing modes available by adding. This was very productive as everyone knew what they were doing and we had a rough idea of how we would do it so when putting the code together it would not be as difficult.

Problems

Throughout the assignment we ran into several problems. One being how we started holding our information in 1D arrays. We could not come up with a better idea of how this should work and ran into many errors. We kept running into lots of problems with them not being the correct values when we would pass them into the methods. Another problem was when we were running our binary to decimal function it was returning very large and unexpected values. Lastly was how we would know how to just collect the information we needed from the assembly language file. We had not put a great deal of thought into how to do these when planning our approach to these aspects of the assignment.

Solutions

We would discuss them in our group chat to notify the other members that we were have difficulties with parts we had been assigned. If the problem could not be solved though this we would all approach it together in the next lab. This worked out well and proved to be effective to make sure we could complete as much of the project as we could. As previously mentioned we had problems with our 1D arrays holding certain information from memory. So this was one of the things we all attempted in person. After looking at the code the person had done so far and researching online for inspiration we finally decide on an approach on how to achieve this. It was to use vectors (instead of using arrays like we were previously) this helped greatly as they were able to be read into methods far easier and had lots of useful functions. This is what we decided would be the best solution and the person who was assigned this continued and completed this after the lab. Another problem that we had to tackle was also previously mentioned in the task of making our decimal to binary method to work. We figured out the program was reading the binary the wrong way around. So when we expected the program to return “1” we actually received “16”. This was an easy fix when we noticed as we just had to make it read the binary the correct way around. As mentioned before we were having trouble knowing how to only extract what we needed from the assembler language file. We finally noticed that the file was separated by semi-colons so we were able to use a delimiter to just extract the pieces of information before them as this was all we needed for the assembler to work. One of the best solutions we found to making sure all our code would work together and know what everyone had done was GitHub. It was easy to know if things weren’t going to be compatible and easier to share work we had completed. The other small problems we were able to solve by asking in the chat and researching (online and in the lecture notes) which ended with finding commands that we had either forgotten or did not know about.

Word count: 698.