**Manchester Baby: 718 words**

**Coursework Assignment 3**

In this final group assignment, we were tasked as a group to develop a program that would simulate the Manchester Baby. The program would allow the end results capability to convert assembly code into machine code.

At the start of this assignment, we approached it by watching video and researching all data sources given to us by our lecturer as well as checking online sources. This was done so every member in the group would understand the background research required to implement a solution for the Manchester baby.

During this project we met as a group to discuss how were going to approach this project such as discussing what language we would write the program in and allocating roles. We as a group agreed we should that we should use C++ to program the Manchester baby as this was the language we learning to program in our shared module for this semester. Our group had a total of 6 members in total, with this in mind we divided 3 group members to work on each of the two sections the first one being the simulator and the second one being the assembler.

To make it easier to collaborate within the group we made a private group chat on Discord where would have 3 meeting during the duration of this assignments to assist each group member as discuss what has been completed and what next in the project to be implement. We also used a GitHub to create repository for us as a group to be able to share our work within the group and collaborate.

To run the simulator, an input file should be provided in the same directory as the simulator files (one provide called “BabyTest1-MC.txt”, which will be written in machine code, and can be run under a terminal using the following command:

$ g++ -std=c++17 -Wall -Wextra -pedantic main.cpp processor.cpp store.cpp

$ ./a.out

The assembler itself will require an input file as well, but written in the appropriate Assembly language, which will convert a given file into machine code that can be used in the Simulator (input.txt). Output will be placed into a file in the same directory under the name “output.txt.”

$ g++ -std=c++17 -Wall -Wextra -pedantic assembler.cpp

$ ./a.out

One of the biggest problems we faced as a group in this project was understanding the concept of the Manchester baby; few members of the group were quick to understand the concept behind the Manchester, but others struggled to understand it. This did delay the starting of the implementation of the project; during the assignment individual members did have to go back and forward between online research sources on how the Manchester baby worked to get better understanding of it.

For the assembler, much of the work behind it came from the fact that the nature of the program is confusing. Several times we found ourselves programming a hardware simulator, or simply programming the wrong thing. It took many explanations and talking out loud and through the processes of an assembler to finally understand how the program worked. However, past this hurdle, the assembler itself was put together with relative ease and was completed within only a night.

Another problem we faced as a group was a lack of contribution of work from a few members of a group. This lack of contribution made it difficult for the team who had the implementation of assembler; as this meant they had one less person to contribute and help with the implementation of the Manchester baby assembler. This slowed down the pace and completion of the additional extensions.

To summarize this report, we did finish implementing this project with a working solution for the Manchester baby with the expected output which felt a good achievement for the group to complete. The performance of working as a team to complete this project was great, although initial problems with communication led to some difficulties in beginning the project with members not attending meetings and labs, but the group swiftly overcame this. The feedback from the group was that the introduction and the delivery of the project aims could have been explained a bit better has the group did struggle to understand what was required for the completion of this assignment and struggled to find the right direction to complete the assignment, but we managed. But overall, it was a great and challenging project we undertook as a team.

**References**

**(Instruction set)**

<https://www.reddit.com/r/learnprogramming/comments/3tg744/manchester_baby_instruction_setc/>

**(File validation concept)**

<https://cplusplus.com/forum/general/39473/>

**(Manchester baby research)**

<https://www.youtube.com/watch?v=cozcXiSSkwE&ab_channel=computingheritage>

**(Manchester baby research)**

<http://curation.cs.manchester.ac.uk/computer50/www.computer50.org/mark1/new.baby.html>

**(Manchester baby research)**

<https://www.futurelearn.com/info/courses/how-computers-work/0/steps/49284>

**(Help with coding)**

<https://www.w3schools.com/cpp/cpp_class_methods.asp>