**System Design Document**

**Assignment 2: XE Link Editor**

**CS 530 Spring 2022**

**Team**:

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**Overview & Goals:**

Overview: We will build, test, and deliver a link-editor program for the XE variant of

the SIC/XE family of machines. The program will open SIC/XE assembler listing files and generate executable object file(s) for the XE machine and the ESTAB for the project.

**Goals**:

1. Open appropriate listing files through command line arguments. IF no arguments are present, end the program with a message why.
2. Scan file and run a check on memory mapping to check that all format 3 and 4 instructions are making memory references within the program's memory. If it is not in the scope of the program, end the program with a message why.
3. Output the SIC/XE object file(s) generated by the program based on the listing files provided by the user.
4. Print the ESTAB in another file with a .st extension.
5. Create README file up to specifications outlined on Canvas.

**Project** **Description**:

This project is a SIC/XE Disassembler that will open a SIC/XE listing file based on the user's specified command line arguments. The files will then be scanned to ensure the memory references are within the scope of the project. In the scenario of no command line arguments or incorrect memory mapping, the program should end and print a message stating why. This project should output SIC/XE object files as well as print the ESTAB in a separate file.

**Timeline**:

*Wednesday March 9th - Monday March 21st*

* Brainstorming ideas
* Create a flowchart to lay out the logic of our system
* Generating rough draft of Systems Design Specification document

*Monday March 21st - Friday April 1st*

* Create structs to store ESTAB data and create header file for main
* Create MakeFile
* Begin programming the main module

*Friday April 1st - Monday April 4th*

* Finalize creation of ESTAB output
* Start creating obj files

*Monday April 4th - Monday April 11th*

* Finish each section needed to be printed in .obj files
* Iron out any last minute bugs
* Finalize README file and SDS document
* Test system and verify it meets the requirements

*Monday April 11th - Friday April 15th*

* Debug and fix errors in ESTAB and object files
* Finalize README file and SDS document
* Test system and verify it meets the requirements

**Requirements:**

* C++ with compatible compiler installed (gcc recommended)
* Listing file to translate should be in the same folder as the compiled program
* An operating system that is capable of doing an ssh connection to the EDORAS server

**Development Environment:**

Operating Systems

* + Developed using Windows 10 and Linux Mint
  + Server running Linux

Integrated Development Environments

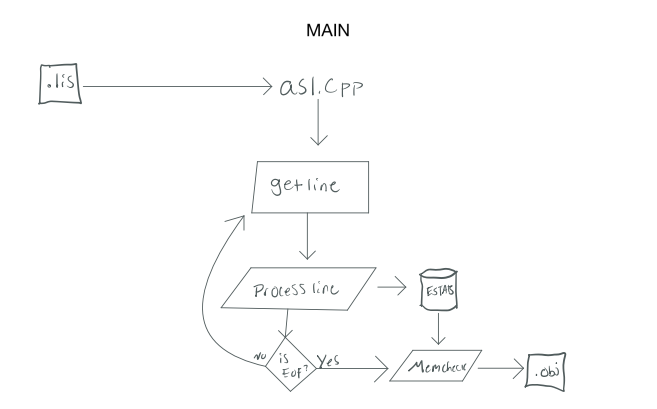
* + Visual Studio
  + Visual Studio Live Share
  + CLion

Compiler

* + GCC Compiler

EDORAS server from SDSU for submission

**System Design / Specification:**

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