CS 455 Spring 2014 Team Programming Project

Create a windows based GUI environment for the development, debugging, saving, editing, and printing of assembly language programs written for the "ASSIST" assembler which emulates System/360/370 execution. **ASSIST** (the **Assembler System for Student Instruction and Systems Teaching**) is an IBM System/370-compatible assembler and interpreter developed in the 1970s at Penn State University by John Mashey and a group of Mashey's student assistants. Originally, ASSIST was available only to universities and was implemented at several hundred of them, but was occasionally used elsewhere. In 1998, Penn State declared that ASSIST was no longer copyrighted and that the program was freely available.

Referring to the DOS version, all actions given within the currently used emulator (or equally useful actions) should be supported along with additional windows oriented IDE tasks. These actions should be delineated extremely early in the process. This software is to be developed for use by future CS 310 classes at the University of North Alabama.

The life-cycle model and team organization to be used will also be presented as a recommendation from the development team.

Other features which may be desirable can be found in the MARIE Machine Simulator system used in CS 311.

The IDE should support the "standard" features.

Other useful features would be:

Set tabs to implement correct code layout
Opcode completion/hinting
Hotkey that invokes calculator
(hex, octal, binary, decimal, modes)
Online help documentation (comprehensive, of course)

Another important task could be the disassembly process implemented. This would take hexadecimal object code and convert to an equivalent assembly program.

Full screen editing with the mouse and keyboard should be supported.

File open, close, save, and print
Cut and paste
Copy and paste
Search
Search and replace
Delete line(s)
Insert line(s)
Line numbers in the left margin
Ruler (columns not inches) in the top margin
Syntax highlighting (color)
...

The IDE would have options for:

Editing a file

Exiting from a file with saving the file

Exiting from a file without saving the file

Assemble (possibly implying a save operation first)

Assemble and execute in a debugging mode

Assemble and Execute with final execution which would create a saved output file along with sending the results to the screen. The output file would need to be able to be adjusted in order to support the "TITLE", "EJECT" and the "SPACE" assembler directives in both page orientations.

Configuration of assembler (specify path and arguments)

Setting certain assembler options which are currently supported in the DOS version.

Saving the output listing

Maximum number of lines

Maximum number of instructions

Maximum number of pages

Maximum size in bytes

Important websites to consider:

http://www.cbttape.org/features/assistmn.htm

http://www.jaymoseley.com/hercules/compiling/compile.htm#topic16

http://portal.acm.org/citation.cfm?id=569933

ASSIST - Assembler System for Student Instruction and Systems Teaching, is a self-modifiable IN-CORE Assembler F compatible System/360 assembler-interpreter. It allows students to replace portions of the assembler using a process which is economical and provides good diagnostics. It has the capability of assembling a subroutine written in assembler language, linking the routine to itself and then executing another program utilizing the newly linked subroutine. The replaceable subroutines perform many of the basic functions required in an assembler, e.g. symbol table management, general expression evaluator, etc. The new subroutine results are compared with standard results and thus explicit diagnostics are available. Performance figures are supplied.

Assist: a self modifiable assembler for instructional purposes