Assembly Language Interpreter for Simple Assembly Language (in C++)
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1. Abstract

This project is about building an Assembly Language Interpreter (ALI) for a Simple Assembly Language (SAL) in C++11. ALI reads a SAL program from a file and executes the program either one line at a time (in debug mode) or all the way to completion (normal run mode). ALI interacts with the user through a command line interface with a list of commands. The user can give the following commands:

- i - To read the input file.
- d - To execute instructions in debug mode.
- r - To run the program to completion.
- s - To save the program state.
- q - To quit.

It consists of the following components: Memory, Accumulator, Additional register, Program Counter, Zero bit, Overflow bit. An abstract superclass SAL is used with concrete subclasses for each particular instruction.

2. Usage Manual

1) This project was done using Windows OS. Open the project in CodeBlocks/ CLion / MS VS C++ IDE.

2) Build and Run the project.

3) Give a command from the list of commands.

4) First, read the program from the input file. Then, run the program either in debug mode or to completion. Enter 's' to save the state of the program to file.

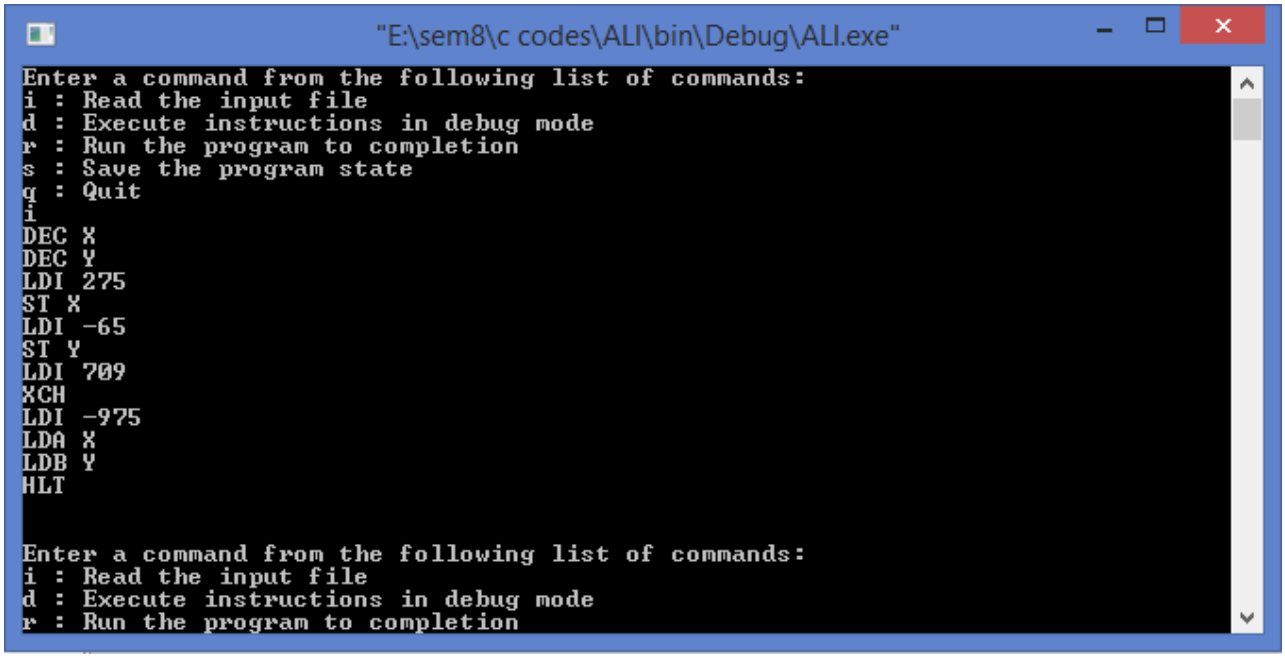
   E.g. (i -> d/r -> s -> q)

3. Sample text file (input.sal):

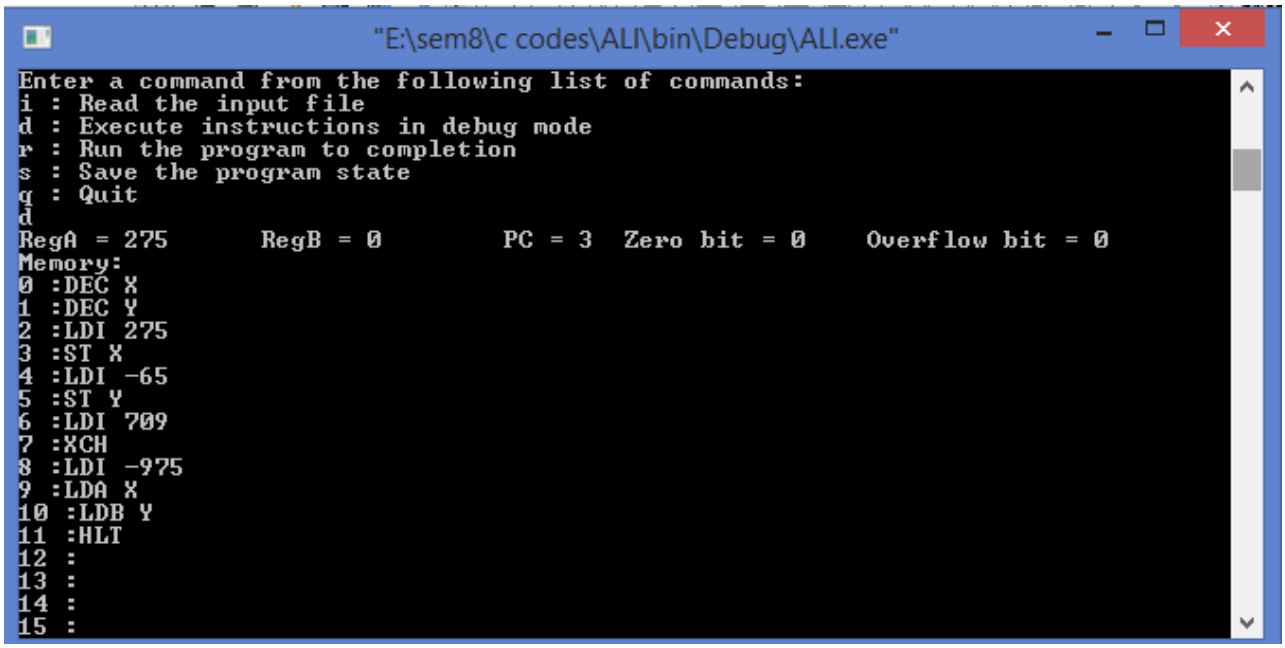
```
DEC X
DEC Y
LDI 275
ST X
LDI -65
ST Y
LDI 709
XCH
LDI -975
LDA X
LDB Y
HLT
```

4. Output:

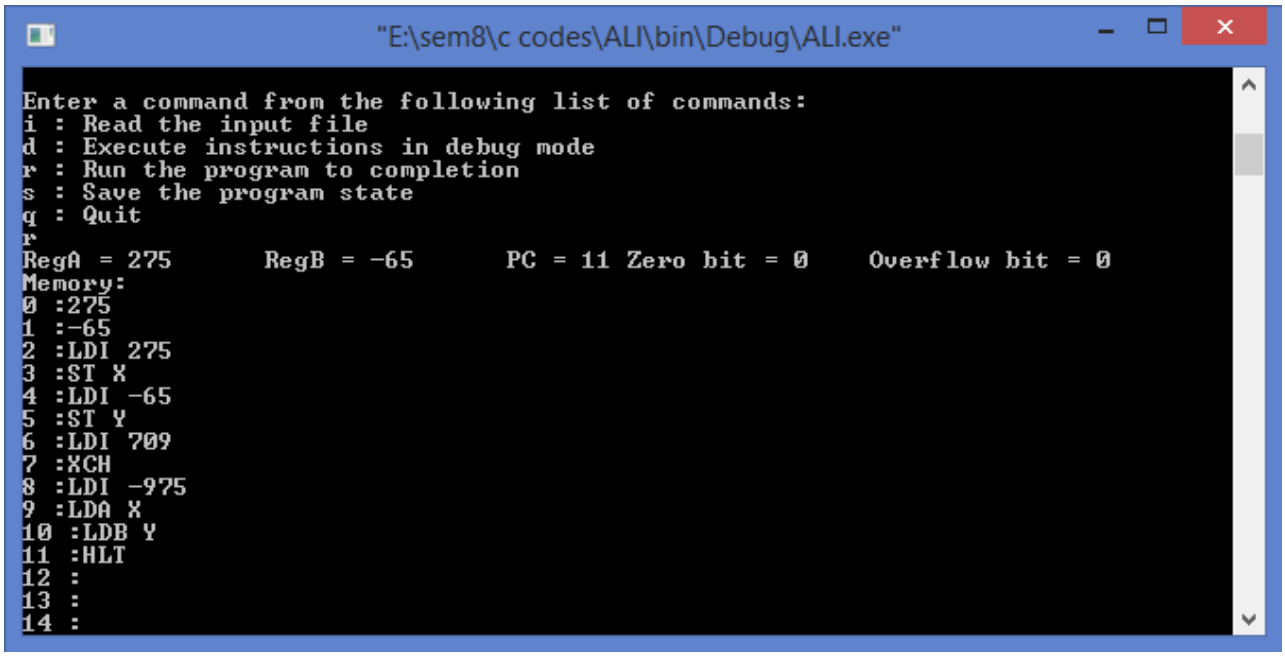
1. Reading from file:



2. Debug:



3. Run to completion:



4. Save: