Write a **Pass 1** of assembler for SIC, using the algorithm in the textbook.

1. **Input:** A SIC assembler program. **Output:** A simple two-column display showing all labels and their corresponding addresses. Example run: If your Pass 1 program is called *pass1* and the assembler program is called *EXAMPLE.SIC*, then
   
   `%pass1 EXAMPLE.SIC`

   will display the two-column labels/addresses.

2. The main structure of your program should closely follow the algorithm given in the book. **OPTAB and SYMTAB must be implemented with hash tables.**

3. Test your Pass 1 with the SIC program in Figure 2.1. Make sure it works, and then email it to my account, *wang@pegasus.montclair.edu*, with instructions for compilation. If it works for my test program, you’ll get no reply. If not, you’ll get a message from me.

4. Assumptions:

   - All labels start at column 1.
   - A comment line starts with a “.” (period) at column 1.
   - A non-labeled line does not start at column 1. There will be at least one tab or space before the opcode.
   - Between label and opcode, opcode and operand, there can be any number of spaces or tabs.
   - For now, do not consider any error checking, i.e., assume the source files are all correctly written.

5. You must complete the project independently. Similarity among projects will be detected using computer tools. Due March 9.