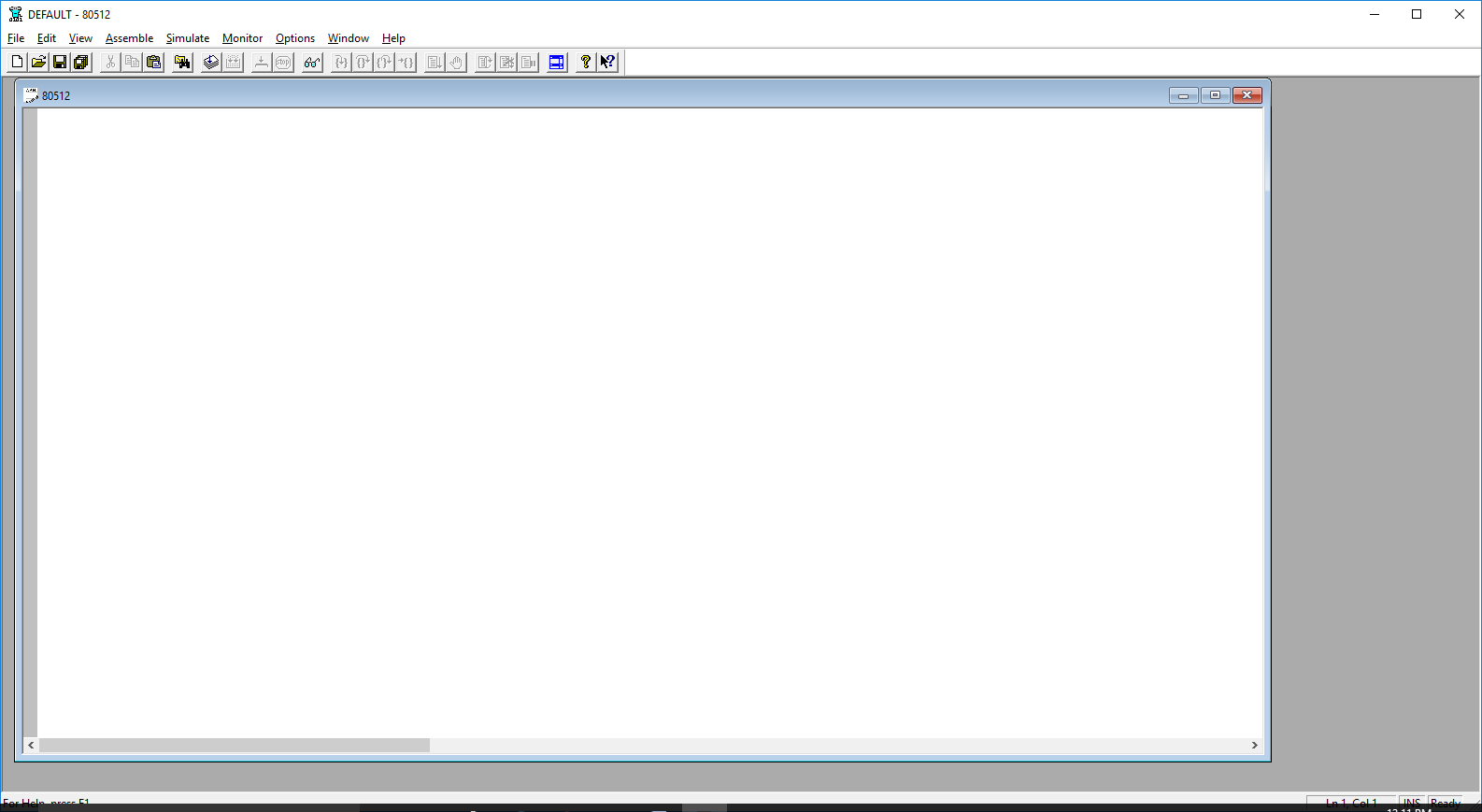
Introduction To The 8051 IDE System

**Objectives**: This experiment will familiarize the student with using the 8051IDE environment to develop object files, list files and assembling machine language programs. The experiment will also familiarize the student with the difference between machine language files and list files.

**Procedure**:

1. Open the 8051IDE program by click on the appropriate folder then clicking the 8051IDE icon.

2. A screen similar to the one below should appear. This is the Editor window.



3. If the white text area does not appear, click on the new page button or go to the File menu and select New.

4. *This will be the format used for writing programs.* Type the following into the text area.

;Program Name:

;Author(s): your name goes here

;Date of latest revision:

;File name: filename.ASM

;

;Program Description:

;

;Program description goes here

;

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

;

;EQUATES

;equates go here

;

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ORG 01000h

;PROGRAM

start

;main program goes here

;

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

;SUBROUTINES

;

;subroutines go here

;

END

5. Save the file twice, once as template\_backup.ASM and once as as template.ASM This will be the standard template for all programs in the course. It is recommended that this program be made read-only to avoid modifying it unintentionally.

6. The ORG statement tells the assembler where to locate the program in program memory. Two systems will be used in during this course, the EdSim simulator and the 8051-development board. Each requires the program to be in a different place in program memory. When using the simulator, ORG 0000h must be used. When using the development board, ORG 02000h must be used.

7. Change the ORG 1000h statement to ORG 0000h

8. The assembler will ignore anything after a semicolon (;), so a semicolon at the front of a line is a way to insert a blank line. Semicolons may also be used to add comments at the end of a line.

9. Delete the line that says ";main program goes here"

10. Type the following lines in place of that line.

mov A,#0x00 ;clear the accumulator

mov A,#027h ;load 27h into the accumulator

mov datal, A

mov data2,#0x11

mov A,datal

add A,data2

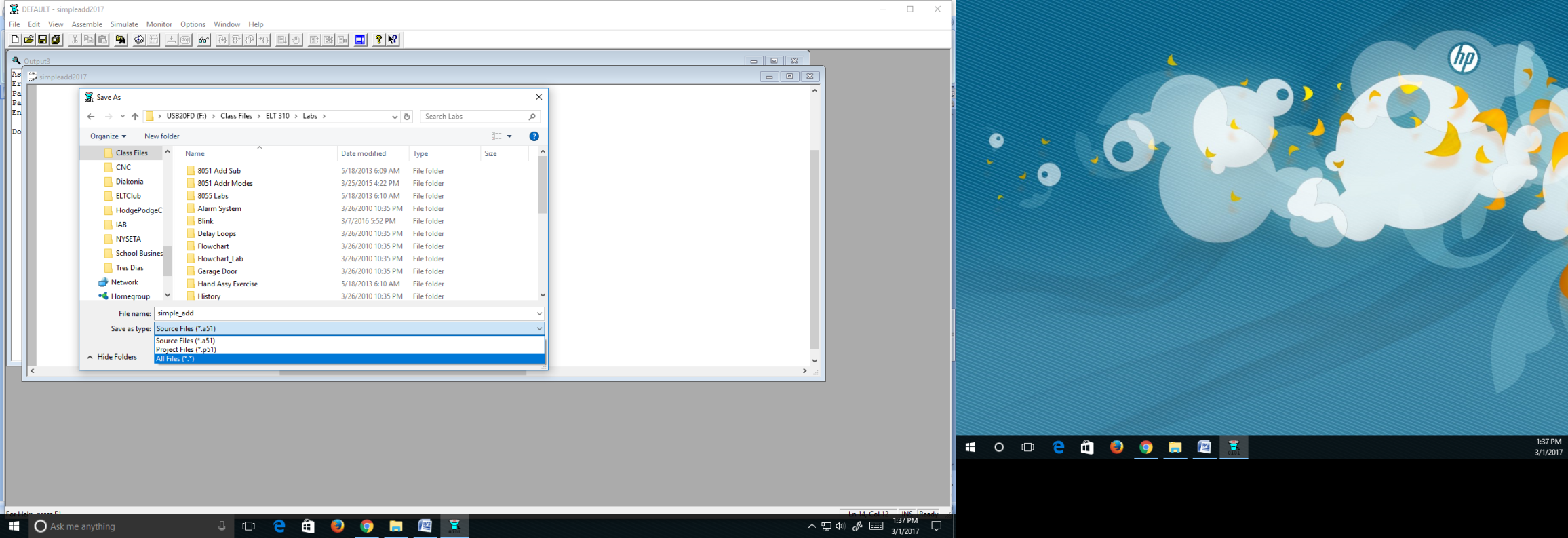
mov data2,A

11. Type the following after the line that says "; EQUATES"

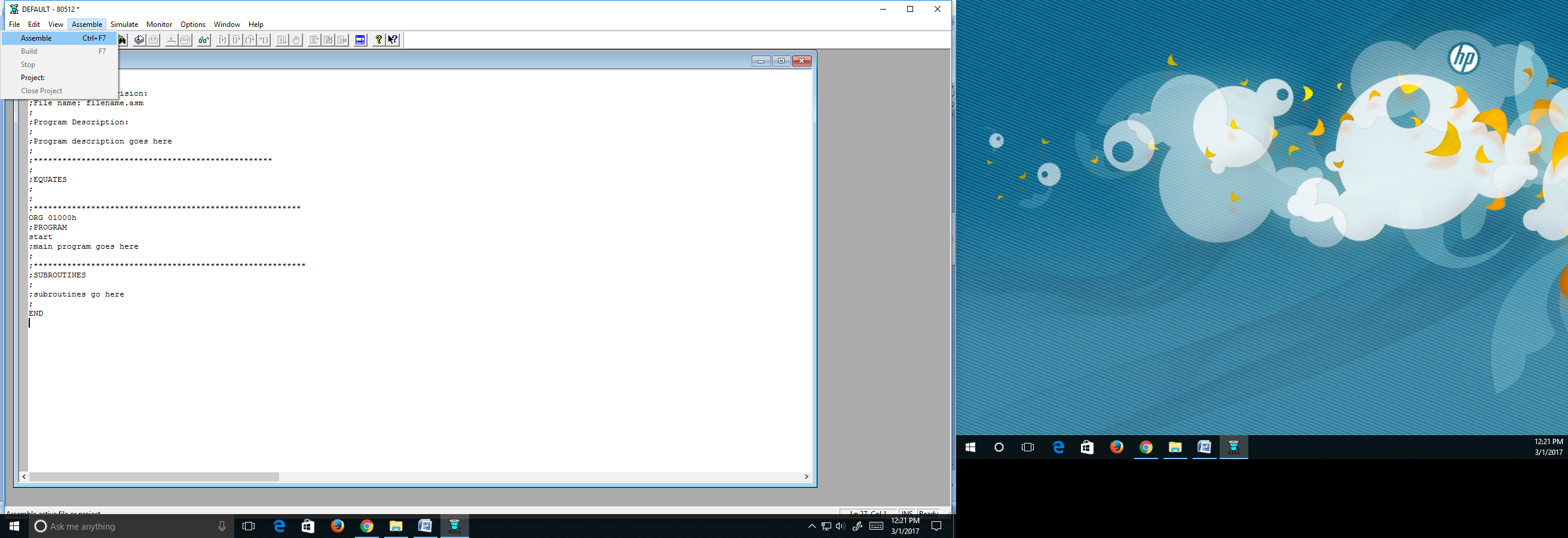
datal equ 0x0020

data2 equ 0x0021

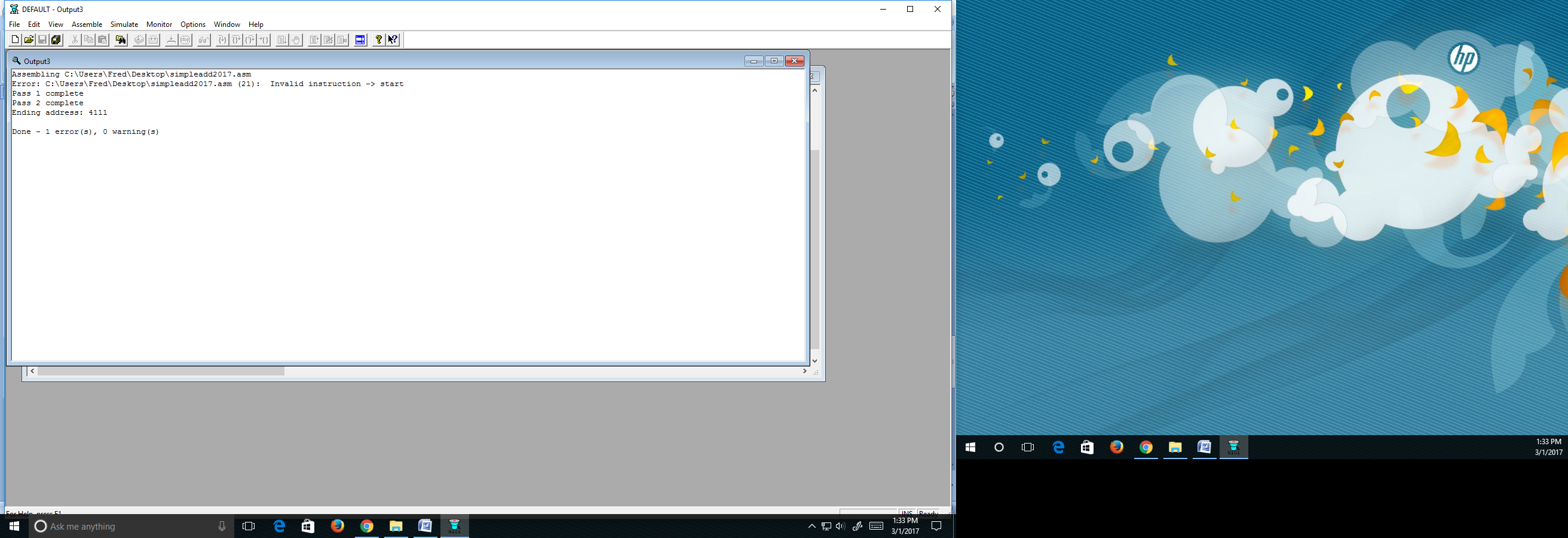
12. Save the file as "***simple\_add.ASM***" Be sure to change the drop down to All Files



13. Try to assemble the file by clicking the Assemble menu and select Assemble



14. You should get the following screen, which is the assembler output window.



15. Notice the assembler has complete two passes through the program. This is fairly typical. The first pass will interpret the mnemonics and identify labels and determine their locations. The second pass will map the label and address references and assemble the program.

16. Notice that there is one error and zero warnings. The error will not allow the program to run and must be fixed. The problem is listed on the second line.

17. Close the assembler output window by clicking the ***lower*** close X in the window. You should return to the editor window.

18. Change the line that reads:

start

to

start:

19. Save the program and try assembling the program.

20. The assembler output window should indicate 0 errors.

21. The assembler generates three files. Using right-click Start>>Explore go to the folder in which the file was saved and look for your file name. You should see three files with your file name. Note the extensions on the files.

22. Right click on the HEX file an select Open. When you get the window to select the program with which to open the file, click on select from list and choose Wordpad. Note the result of opening the file. Look carefully at the file contents.

23. Close Wordpad. Repeat step 22 for the LST file. Are any of the values from the HEX file present in the LST file? If so, note their location in the file.

24. Close Wordpad. Repeat step 22 for the ASM file. Are any of the values from the HEX file present in the ASM file? If so, note their location in the file. Is there any overlap between the contents of the ASM file and the LST file? If so, note their location in the file.

Report Format:

Write up a report clearly explaining what you did. Among other things, your report should include:

• Cover Page.

• Description of the Procedure.

* A clear descriptive statement, in paragraph form, of what you did for each section.

• Analysis

* All questions asked in the report are to be answered using appropriate annotations.
* Comment on the similarities and differences between the .ASM, .LST and the .HEX files.
* Which would be most useful if you were trying to explain the operation of the program? Explain your answer.
* Screen Shots as appropriate to support your statements
* Experiment Handout

3/18/20