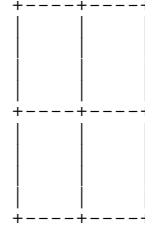


**Theme:** What is Computer Science? What is Comp11?  
**Topics:** Vocabulary, Syntax, Writing, Reviewing, Analyzing  
**Approach:** Action and Discussion  
**Main Ideas:** Procedures: Expressing, Creating, Comparing, Analyzing

0. What is computer science?
  - A field in which we solve problems by
  - (2) designing and (3) discussing (1) procedures machines can perform.
1. Here's the Problem
  - a. Creating crop squares with a programmable tractor
2. What can this tractor DO?
  - a. Move forward one unit of length, turn 90 degrees right
  - b. Controlling the machine:  
Write out a sequence of Fs and Rs  
Demo: FRF - shows where it starts, its direction, unit length
  - c. ☞ Group discussion : Do two versions of drawing 'T'
3. Now, *You Try It*
  - a. ☞ Write out two procedures to draw the four-pane window  
You can start at corner, center, side: pick and do two
4. Ok, what did you come up with?
  - a. For three solutions: one corner, one center, one edge  
write program on board  
type program into computer and run it  
trace procedure on board  
Describe how the designer viewed the problem/solution  
How do sections of code correspond to sections of action
  - b. Criteria for comparison:
5. Repeated actions -- look at the procedure or the program
  - a. Are there repeated actions? What do they mean?
  - b. We can give them abbreviations
  - c. ☞ Rewrite one of your solutions using an abbreviation
6. What did we just do?
  - a. We did three different things
    1. Learned what the machine can do and how to represent the operations (vocabulary and syntax)
    2. Created a procedure and expressed that procedure in code
    3. Reviewed, discussed, analyzed, simplified the procedure
  - b. Those three things are what this course (and CS) are about
    1. Learn what machines do and how to represent those actions
    2. Devise procedures and express those procedures
    3. Analyze/Compare/Discuss/Revise your solutions
  - c. How Do You Learn These Three Things?
    1. Vocabulary/Syntax: Like a learning foreign language
    2. Design, Expression: Like learning to write an essay
    3. Review/Improve/Clarify: Like proofreading/editing  
Method: drill, discussion, reading other code
7. Important Facts: Writing Computer programs is like writing essays
  - a. There is more than one way to do it
  - b. Some ways are simpler, shorter, clearer, cheaper
  - c. How you look at a problem affects how you solve it

**Problem**

Write in tractor code a program to draw this shape:



Solution 1:

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Solution 2:

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**Bigger Questions: Questions about Solutions**

1. What code sequence defines a square?  
Say you could tell the computer that *s* stands for that code, how would being able to use *S* change your solution?
2. Did you have to traverse any segments more than once?  
Could you do it without any retracing?

**Vocabulary: Terms You Must Understand**

procedure:

algorithm:

program:

source code:

instruction:

sequence:

syntax error:

logic error:

efficiency:

representation:

repeated code sequence:

**Fact: A program is a representation of a procedure**