

CS 105

Introduction to Scientific Computing

Topic #12 – While Loops

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ASSIGNMENT 8

- Assuming that vector X already contains a set of numbers, write MATLAB code that determines the maximum and minimum values in the vector.
 - Do this using only MATLAB functions and no loops.
 - Do this using one for loop and no MATLAB functions.
 - Do this using one while loop and no MATLAB functions.

NECESSARY SKILLS

- Tracing and writing scripts with *for* and/or *while* loops
- Translating problems into *pseudocode*
- Converting *pseudocode* to Matlab code

TOPICS

- While Loops

READING

- Section 4.1: The While Loop

WHILE LOOPS

- Continue doing the body/block *while* condition is true
- Useful if we don't know how many times to do something beforehand

SPECIAL BLOCK STATEMENTS (REVISITED)

- We can force premature behavior in loops
- *continue*
 - Skip the rest of the body of the loop and do next *iteration*
- *break*
 - Get out of the block ASAP!
 - Works for *any* conditional block
- *return*
 - Exits scripts (or exits function)

TRACING WHILE LOOPS

- `x=[0 3 2 4];`
 `loc = 1;`
 `sum = 0;`
 `while loc <= length(x)`
 `sum = sum + x(loc);`
 `loc = loc + 1;`
 `end`

CONVERTING FOR TO WHILE

- Recall the example:
 - for i=1:10
 disp(num2str(i));
end
- We can re-write this as:
 - i=1
 while i <=10
 disp(num2str(i));
 i = i+1;
 end