

# Computing for Math and Stats

Lecture 10.

# The “if” statement

- Conditional statements use conditional expressions
- The most common conditional expression is the if statement aka if ... end
- Allows a block of statements to be executed or not executed depending on a condition.

# The simplest version of if...end

- We use this to execute or not execute a group of statements
  - if <some condition>
    - Stmt 1
    - Stmt 2...
  - End
- We can have as many statements in the block as we want

# The if-then-else form

- We use this to choose between two blocks of statements
- if <condition>
  - Stmt1
  - Stmt2
- else
  - Stmt3
  - Stmt4
- end

# Other forms of if...end

- Other forms of if-else-end
  - If-elseif-...-elseif-else-end
  - Switch-case
- Not necessary but convenient
- See `piecewise.m`

# The for loop

- One of the most common loops
  - Especially for numerical computations
- There are similar things in practically every computer language
- In compiled languages (C, C++) it is very fast
  - The compiler knows how to optimize it

# The for loop

- The syntax
  - for loopvar=start:step:last
    - Stmt1
    - Stmt2
  - end
- The statements are repeated several times
  - Once for every value of the loop variable
  - Each time the loop variable is assigned a new value
- See prettyprintvec1.m, mysummation.m, vecintscript.m, ForFourier.m

# The for loop

- It is quite flexible
- Could also be
  - for i=A
    - Stmt1
    - Stmt2
  - end
- Where A is any array
- Matlab, sometimes tries to protect you from shooting your foot with for loops (not always successful)
- See mysummation1.m