ENGR 101 Lab 01

Lizzy Ettleson

ettleliz@umich.edu

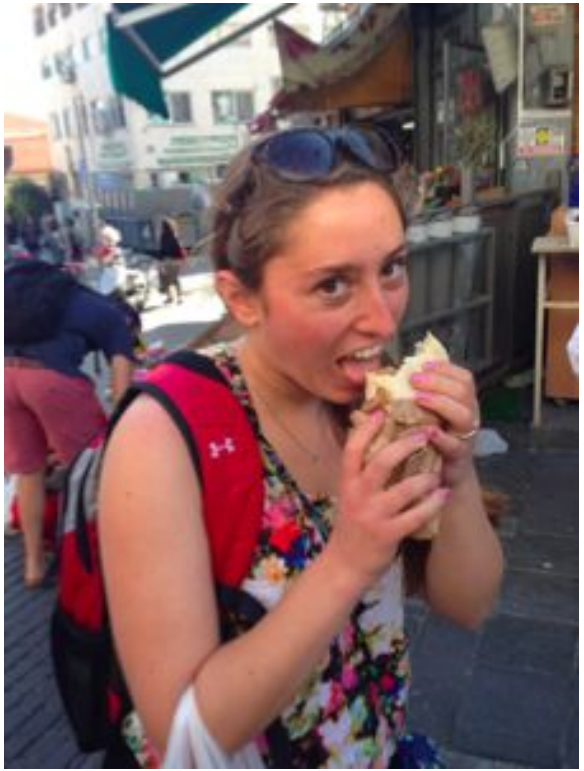
About Me

- Bachelors and Masters in IOE

Get Involved!
- President of Engineering Global Leadership
- Club Tennis
- Alpha Pi Mu Honors Society

Go Abroad!
- Volunteered South Africa
- Studied in Spain

Get Experience!
- Colgate-Palmolive Company
- Pricewaterhouse Coopers
- Boeing



Getting Help

Office Hours

- Tuesdays and Thursdays from 10:00am - 12:00pm in B519
- Wednesdays from 6:00 - 8:00pm in B519
- You can attend **ANYONE'S** Office Hours!

Piazza for technical questions (or Google)

- Follow Piazza guidelines

Email me at ettleliz@umich.edu for any nontechnical questions

What do you learn in ENGR 101?

1. Programming languages MATLAB & C++
2. Debugging
3. Automating repetitive processes

So...why labs?

- Practice what you learned in lecture
- Ask questions you didn’t get to ask in a ~200 people lecture
- Get your hands dirty through lab exercises
- Work with a team and enjoy your freshmen year!

How to lab 101

1. Sign in
2. Sit with your team
3. Lecture review
4. Group Activity
5. Read lab assignment on Google Drive/Canvas
6. Complete the lab - **Labs are due to Canvas at 11:59pm on Sunday night!**

Tips & Tricks

- Keyboard shortcuts are your friend!
  - **Copy** (ctrl + c) and **Paste** (ctrl + v)
  - **Save** (ctrl + s)
  - **Select all** (ctrl + a)
- MATLAB Keywords
  - **clear** (removes all variables from workspace)
  - **clc** (removes text from the command window)
- Write clean code
  - Treat your code like you would a final version of an essay
  - Put spacing (blank lines) to make it easy to read, **but be consistent**
  - Write comments with % so you remember what you wrote about

Introduce yourself to your neighbors.

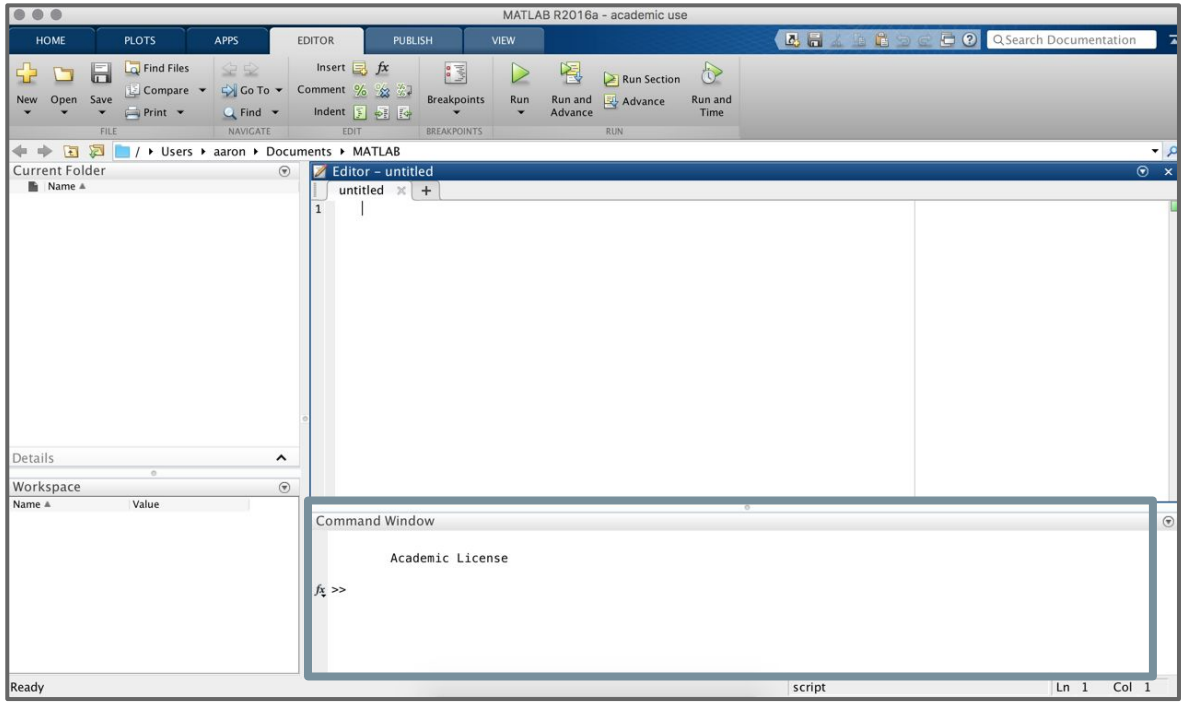
1. What's your name?
2. Where are you from?
3. What are you thinking about majoring in?

Lab 0 Recap...

1. Verify your CAEN account
2. Installing MATLAB
3. MATLAB Video

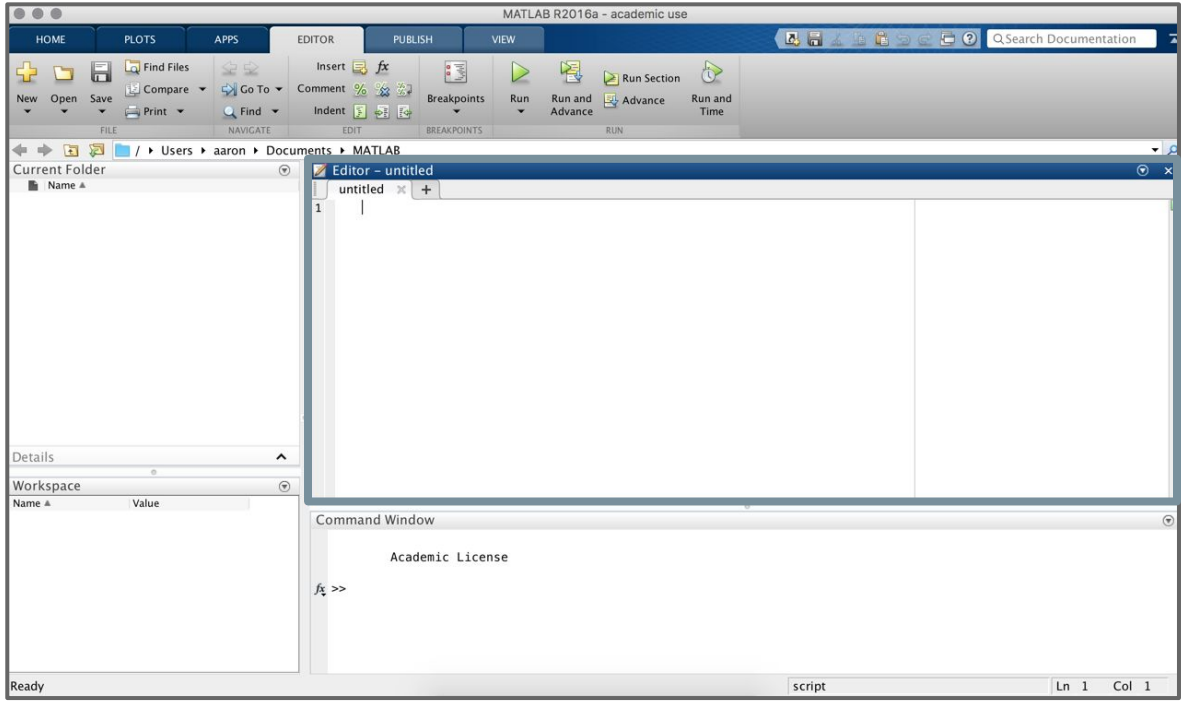
MATLAB Review

- Command Window (directly execute commands)



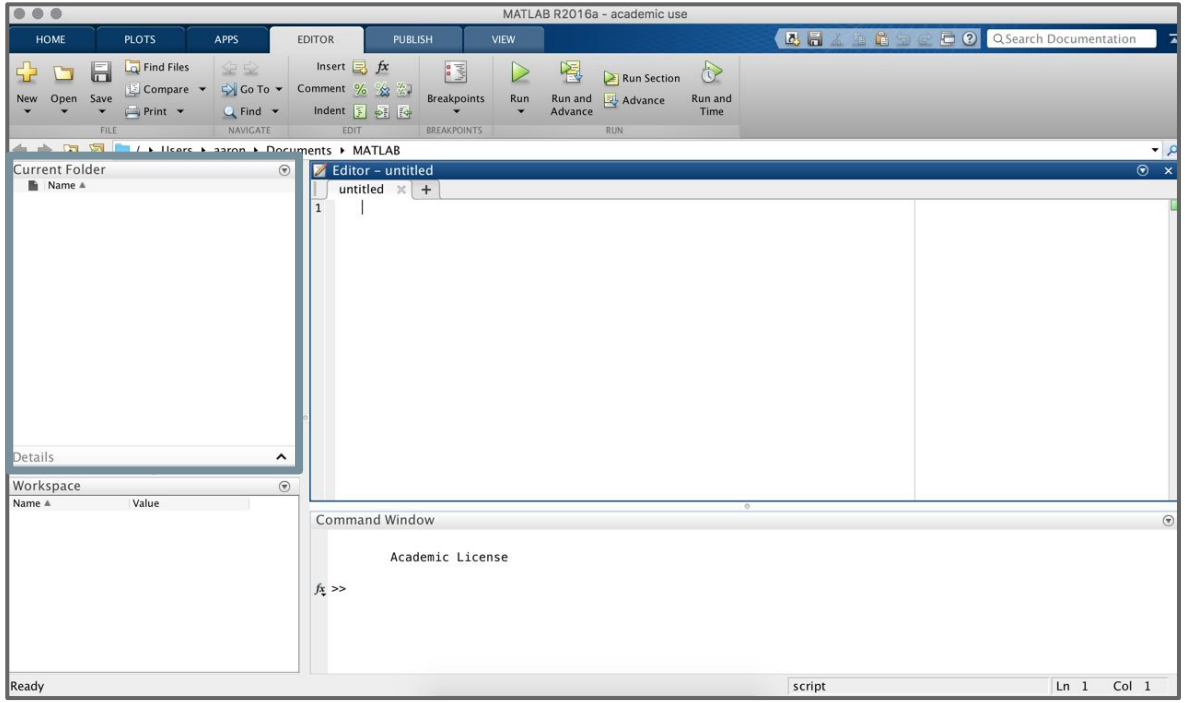
MATLAB Review

- Command Window
  (directly execute commands)
- Editor
  (write scripts)



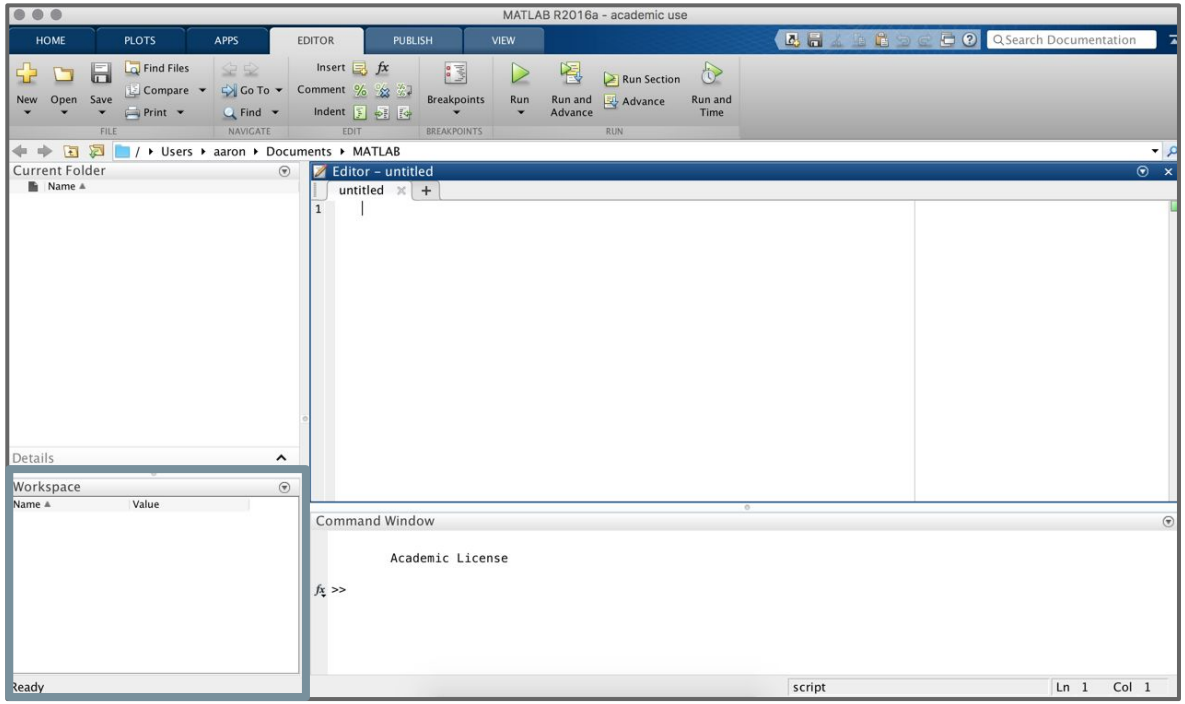
MATLAB Review

- Command Window
  (directly execute commands)
- Editor
  (write scripts)
- Current Folder
  (accessible files)

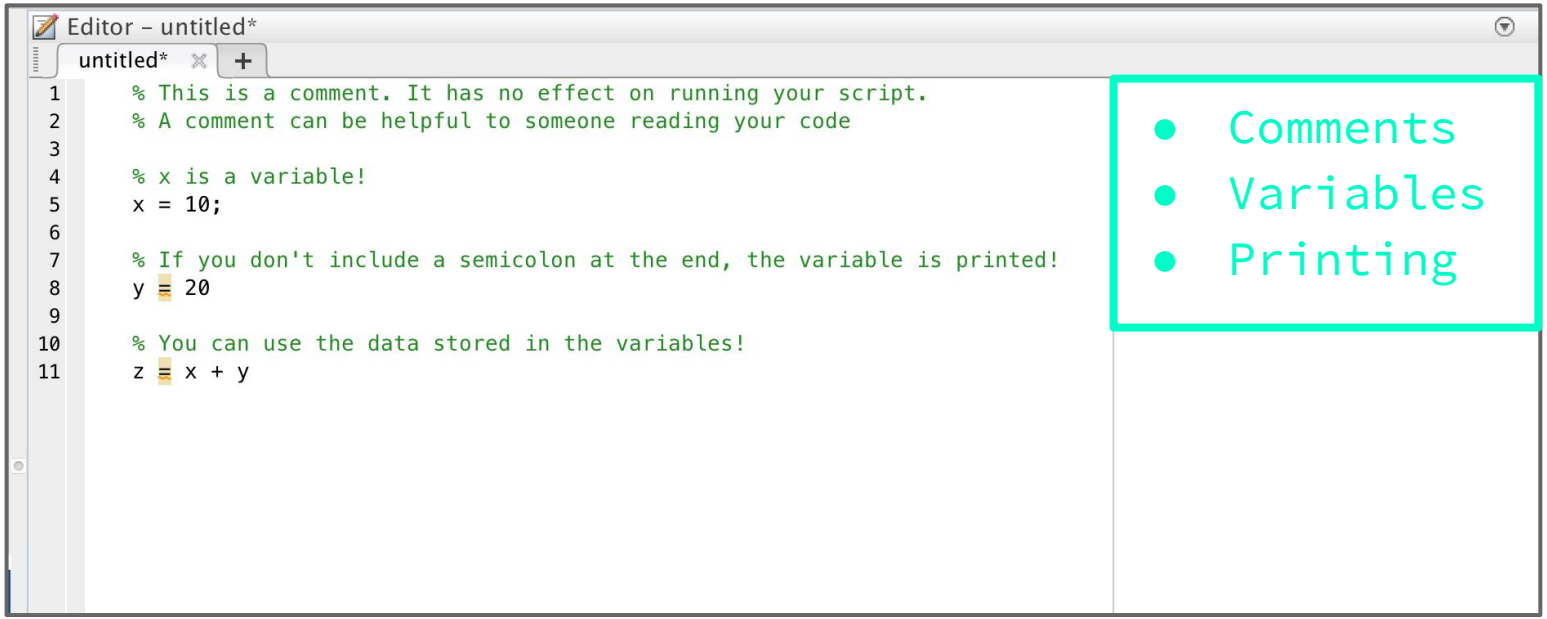


MATLAB Review

- Command Window
  (directly execute commands)
- Editor
  (write scripts)
- Current Folder
  (accessible files)
- Workspace
  (active variables)



MATLAB Review



→Group Assignments (025)←

Group 1
Loren Mata
Maxwell Perraut
Maria Khalaf
Sarthak Bansal

Group 2
Carter Fox
Jocelyn Ortiz
Joshua Verschleiser
Keylonnie Miller

Group 3
Wesley Chen
Andrew Urban
Travis Gurlik
Michael Reber

Group 4
Brentan Reynolds
Daniel Yu
Donato Mastropietro
Connor Inglis

Group 5
Emmanuela Houngbo
Spencer Pippin
Gracie Morris
Phunyawaj Niamtan

Group 6
Audrey Ladd
Montana Mott
Joel Harrison
Aleister Lenhardt

Group 7
David Well Jr
Zhewen Deng
Rakshit Gogia

Group 8
Juliet Carpenter
Havel Liu
John Stefan

→Group Assignments (026)←

Group 1
Lucas Baioni
Yu Ching Fuh
Benjamin Manley
Celia Osman

Group 2
Aydin Beste
Aaron Kelley
Neha Raju
Caiser Bravo

Group 3
Amay Bhansali
Jacob Hoffman
Kai Myran
Boyang Xu

Group 4
George Pierides
Rachel Kass
Jacob Thayer
Jonathan Demeter

Group 5
Noa Ben-Efraim
Santiago Vidaurri
John Landy
Christopher Huggins

Group 6
Mayukh Nath
Andrew Czapp
John Reider
Rachel Martin

Group 7
Luke Humphrey
Brian Epstein
Usman Khan
Eren Karaaslan

Introduce yourself to your GroupMates.

You'll be working with this group for the first half of the semester :)

Group Exercise

- **`Card Handler`**
  - Place the cards on a desk and spread them out in a horizontal line such that every card is visible and none are overlapping
  - Sort the cards in ascending order from Two to Ace
- **`Note Takers`**
  - Study the process of how the cards were sorted

Now...

- Attempt to sort the cards only using **compare** and **swap**

  1. **Compare** the value of two cards
  2. **Swap** the position of two cards

Group Exercise

1. How did the 2nd sorting compare to the 1st?
2. Do you think you could have sorted better?
3. How did your algorithm determine the cards were in order?

Bubble Sort

One possible solution…

1. **Compare** every pair of neighbors from left to right
   a. If the left card is larger than the right, **swap** them
2. After comparing all pairs of neighbors, the highest card is on the end
3. Repeat until no swaps are made

6 5 3 1 8 7 2 4

Deadlines

- Lab 1, complete in lab today, submit on Canvas, due **Sunday, September 10th at 11:59pm**
- Project 0, start now, submit to autograder, due Thursday, **September 14th at 11:59pm**
  - You can submit and get your score 5 times a day
  - Start now! Get it done so you don't have to worry about it last minute!
  - Project 0 is practice, it does NOT count towards your ***project*** grades

Lab 1

Your group will learn...

1. MATLAB variables, output, assignment
2. Piazza etiquette

Have a great weekend!