https://www.youtube.com/watch?v=nKIu9yen5nc

ÖZYEĞİN UNIVERSITY

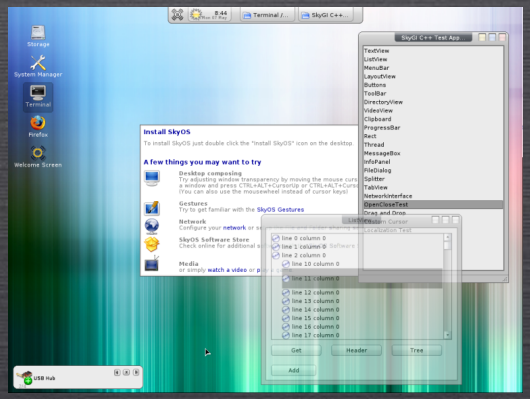
CS 100

INTRODUCTION TO ENGINEERING COMPUTATION

ASSISTANT PROFESSOR
GONCA GURSUN

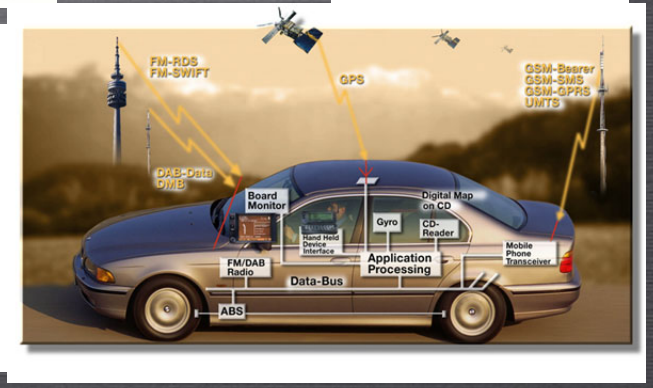
Why is programming so Important to an Engineer?

Computer Programs are everywhere

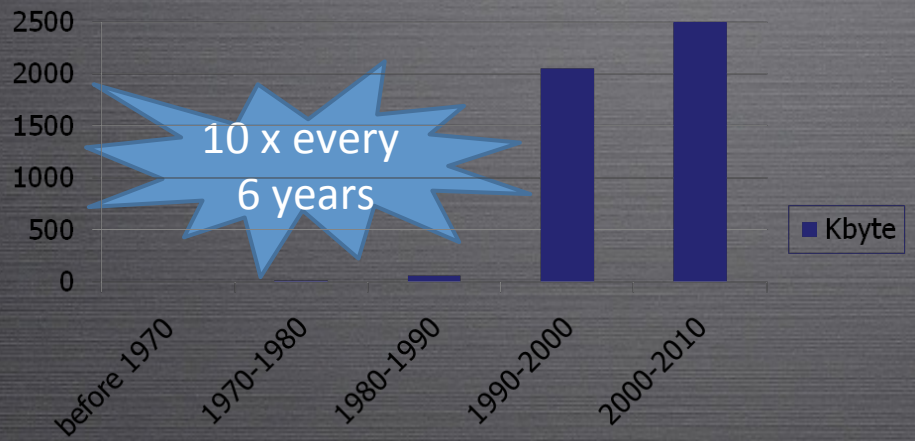


A380

iPod
Music
Photos
Extras
Settings
Shuffle Songs
MENU


FM-RDS
FM-SWIFT
GPS
GSM-Bearer
GSM-SMS
GSM-GPRS
UMTS
DAB-Data
DMB
Board Monitor
Digital Map on CD
Gyro
CD-Reader
Hand Held Device Interface
Application Processing
Mobile Phone Transceiver
FM/DAB Radio
Data-Bus
ABS

Example: software in a TV



CONVINCE YOURSELF THAT YOU NEED PROGRAMMING AND ALGORITHMIC THINKING

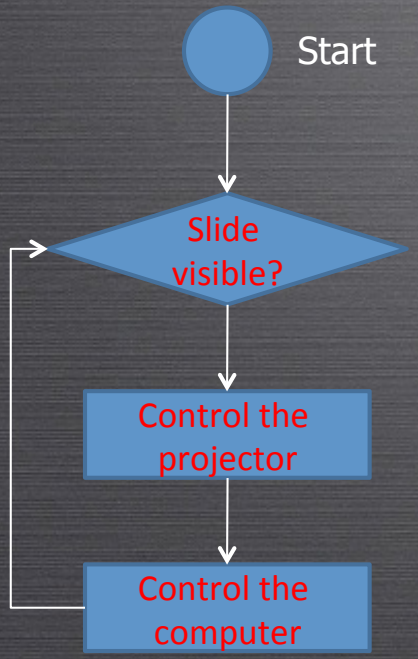
About this course

Learning objectives:

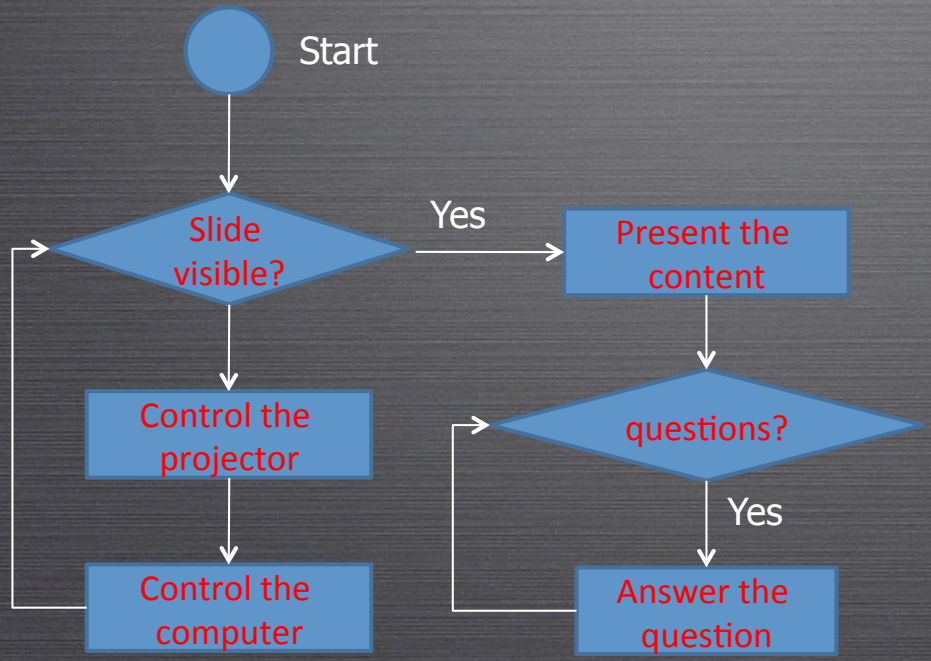
1. Acquire a **problem solving** perspective with **computational** thinking

2. Develop computer programs to solve (engineering) problems.

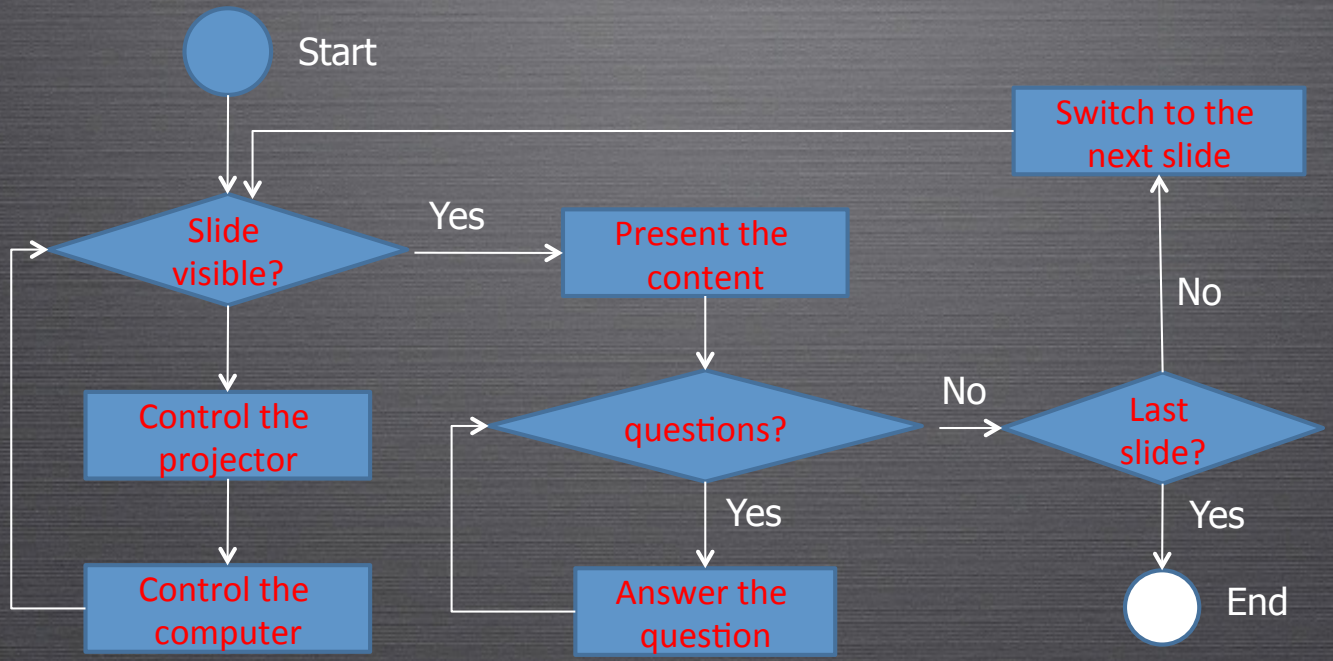
A SIMPLE ALGORITHM



A SIMPLE ALGORITHM



A SIMPLE ALGORITHM



Course Information

- Introduction to Computation
- Fundamental concepts of programming
- Extensive use of digital computation using MATLAB
- The goal is to give you an idea of how math and computation is used for engineering problem solving

Textbook

Computer Programming with MATLAB by J. Michael Fitzpatrick, Ákos Lédeczi, ISBN: 978-0-615-75113-9 (http://cs103.net/)

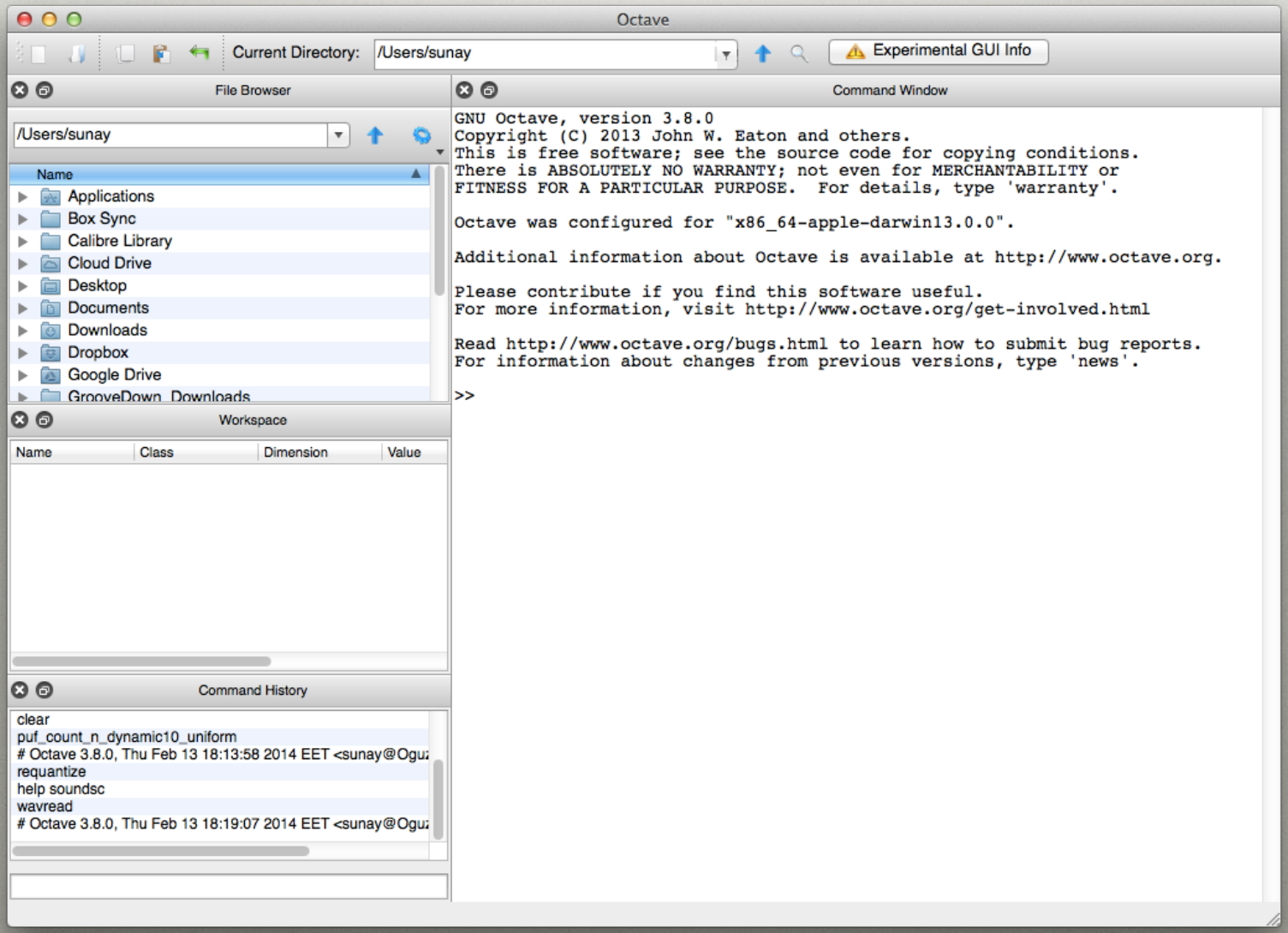
Topics To Be Covered

- MATLAB execution
- Vectors, arrays, matrices in MATLAB
- Statements, loops, expressions
- MATLAB built-in functions
- Writing your own functions
- MATLAB I/O
- Searching and Sorting

Matlab

- MATLAB is used extensively in all fields of engineering industry
- MATLAB licenses are expensive
- Since December 2013 there is GUI-enabled OCTAVE - a free version of MATLAB
- We will use OCTAVE this year

OCTAVE


Octave
Current Directory: /Users/sunay
Experimental GUI Info
File Browser
/Users/sunay
Name
Applications
Box Sync
Calibre Library
Cloud Drive
Desktop
Documents
Downloads
Dropbox
Google Drive
GrooveDown_Downloads
Workspace
Name
Class
Dimension
Value
Command History
clear
puf_count_n_dynamic10_uniform
Octave 3.8.0, Thu Feb 13 18:13:58 2014 EET <sunay@Ogu
requantize
help soundsc
wavread
Octave 3.8.0, Thu Feb 13 18:19:07 2014 EET <sunay@Ogu
Command Window
GNU Octave, version 3.8.0
Copyright (C) 2013 John W. Eaton and others.
This is free software; see the source code for copying conditions.
There is ABSOLUTELY NO WARRANTY; not even for MERCHANTABILITY or
FITNESS FOR A PARTICULAR PURPOSE. For details, type 'warranty'.
Octave was configured for "x86_64-apple-darwin13.0.0".
Additional information about Octave is available at http://www.octave.org.
Please contribute if you find this software useful.
For more information, visit http://www.octave.org/get-involved.html
Read http://www.octave.org/bugs.html to learn how to submit bug reports.
For information about changes from previous versions, type 'news'.
>>

Homework

- There will be regular homework (4-6)
- No late HWs, no excuses
- Submit your OWN work
- Submit it through LMS (dont email me or assistants your homework!!)

Labs / Problem Sessions

- There will be regular labs in Tuesday classes
- The labs will be MATLAB based
- You will be required to write working MATLAB scripts for certain applications
- The TA and instructors will guide you along the way
- There will be short quizzes

LABS

- Labs start next week.
- Labs will be usually shorter than 3 hours!

Midterms

- Three midterms & no final

Grading Policy

- MIDTERM 1: 25%
- MIDTERM 2: 25%
- MIDTERM 3: 30%
- HOMEWORK: 20%

Attendance

- Attendance is not mandatory
- Success is directly correlated to your attendance
- Some material from outside the textbooks
- In-class participation may be used to tip up/down your final grade if you are at the boundary

Missing Exams

Don't

Make-Ups

- MAKE-UP POLICY: Make-ups will be given for an exam, if a student has a valid excuse for missing the exam.
- However, students should note that the make-up exams will be significantly harder than the original exams since the students who take the make-up exams have the opportunity of learning about the questions.

Make-Ups

- Moreover, it is the student's responsibility to contact the instructor timely (specifically within a week from the exam) to prove that s/he has a valid excuse, and to arrange the time and place of the make-up exam

Missing Assignments

Don't

KEEPING IN CONTACT

LMS

PIAZZA - A FORUM FOR DISCUSSION