

# EECS 10: Computational Methods in Electrical and Computer Engineering

## Lecture 2

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## Lecture 2: Overview

- Introduction to Computers
  - What is a computer?
  - What is programming?
- Getting started
  - Obtain your UCInetID
  - Obtain an account on the EECS servers
  - Log into the server
- Unix system environment
  - System commands
  - Text editing

## Introduction to Computers

- What is a computer?
  - Digital device capable of executing programs
    - performing computations
    - making logical decisions
- What is a program?
  - Set of instructions which process data
    - input data (e.g. from keyboard, mouse, disk)
    - output data (e.g. to monitor, printer, disk)
- What is programming?
  - Creation of computer programs by use of a programming language

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## Introduction to Programming

- Categories of programming languages
  - Machine languages (stream of 1's and 0's)
  - Assembly languages (low-level CPU instructions)
  - High-level languages (high-level instructions)
- Translation of high-level languages
  - Interpreter (translation for each instruction)
  - Compiler (translation once for all code)
  - Hybrid (combination of the above)
- Types of programming languages
  - Functional (e.g. Lisp)
  - Structured (e.g. Pascal, C, Ada)
  - Object-oriented (e.g. C++, Java, Python)

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## Getting Started

- Obtain your UCI netID
  - Your unique ID at UCI
  - Activation online at NACS web pages:  
  
`http://activate.uci.edu/activate/menu.html`
- Obtain an account on the EECS servers
  - Your working account in EECS
  - Activation online at EECS web pages:  
  
`https://newport.eecs.uci.edu/account.py`

## Getting Started

- Log into the server
  - Use a terminal with SSH protocol (secure shell)
  - Connect to an EECS server
    - `malibu.eecs.uci.edu`
    - `vivian.eecs.uci.edu`
    - `newport.eecs.uci.edu`
  - Authorize yourself with user name and password
- Work in the Unix system environment
  - Unix shell prints command prompt awaiting input
  - Type in system commands  
`echo, date, ls, cat, man, more,`  
`pwd, mkdir, cd, cp, mv, rm, rmdir`
  - Refer to manual pages for help on commands

## Unix System Environment

- Unix system commands
  - **echo** print a message
  - **date** print the current date and time
  - **ls** list the contents of the current directory
  - **cat** list the contents of files
  - **more** list the contents of files page by page
  - **pwd** print the path to the current working directory
  - **mkdir** create a new directory
  - **cd** change the current directory
  - **cp** copy a file
  - **mv** rename and/or move a file
  - **rm** remove (delete) a file
  - **rmdir** remove (delete) a directory
  - **man** view manual pages for system commands

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## Unix System Environment

- Text editing
  - **vi** standard Unix editor
  - **vim** vi-improved (supports syntax highlighting)
  - **pico** easy-to-use text editor
  - **emacs** very powerful editor
  - many others...
- Pick one editor and make yourself comfortable with it!

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## Unix System Environment

- Example session (1/4):

```

login as: doemer
doemer@east.ece.uci.edu's password:
Last login: Fri Sep 23 10:19:25 2005 from alpha.eecs.uci.edu
-----
NOTICE:
East is a multi-user machine. That means you share its resources.
[...]
-----
east% date
Fri Sep 23 10:44:33 PDT 2005
east% uptime
 10:44am up 69 day(s), 19:37, 8 users, load average: 0.19, 0.12, 0.09
east% echo "Welcome to EECS 10!"
Welcome to EECS 10!
east% ls
Mail/  tmp/
east% pwd
/users/faculty/doemer
east% mkdir eeecs10
east% ls
Mail/   eeecs10/  tmp/
...

```

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## Unix System Environment

- Example session (2/4):

```

...
east% cd eeecs10
east% pwd
/users/faculty/doemer/eeecs10
east% ls
east% mkdir hw1
east% cd hw1
east% ls
east% vi program.c
[...program file is being edited here...]
east% ls
program.c
east% ls -l
total 2
-rw-r--r--  1 doemer  faculty      50 Sep 23 11:08 program.c
east% more program.c
/* program.c */

/* ...program code goes here... */
...

```

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## Unix System Environment

- Example session (3/4):

```

...
east% cp program.c my_backup.c
east% ls
my_backup.c  program.c
east% ls -l
total 4
-rw-r--r--  1 doemer  faculty    50 Sep 23 11:08 my_backup.c
-rw-r--r--  1 doemer  faculty    50 Sep 23 11:10 program.c
east% cd ..
east% pwd
/users/faculty/doemer/eecs10
east% ls
hw1/
east% /ecelib/bin/turnin
=====
EECS 10 Fall 2005:
Assignment "hw1" submission for doemer
Due date: Mon Oct  3 12:00:00 2005
=====
...

```

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## Unix System Environment

- Example session (4/4):

```

...
=====
Submit program.c [yes, no]? y
File program.c has been submitted
Submit backup.c [yes, no]? n
=====
Summary:
=====
You just submitted file(s):
program.c
You have not submitted file(s):
backup.c
east% ~eecs10/bin/listfiles.py
=====
EECS 10 FALL 2005: "hw1" listing for doemer
=====
Files submitted for assignment "hw1":
program.c
east% logout

```

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