

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

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)

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`

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Getting Started

- Log into the server
 - Use a terminal with SSH protocol (secure shell)
 - Connect to the server
 - `east.eecs.uci.edu`
 - `newport.eecs.uci.edu`
 - `malibu.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

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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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