

## EECS Discussion Week3

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## Midterm

- Read the lecture slides
- If any questions in the slides, refer to the textbook or discuss with the TAs.
- The exam consists of
  - Multiple choices
  - How to use the OS, command
    - rename a file.
    - how to change the directory
  - Some questions about C code segments.
- Review the quizzes.

## 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

October 10, 2010

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## Standard input/output functions

- Standard output function

```
#include <stdio.h>
int printf( const char *format, ... );
e.g. int number1;
    printf("The first number is %d. \n", number1);
```
- Standard input function

```
#include <stdio.h>
int scanf( const char *format, ... );
e.g. int number 1;
    scanf("%d", &number1);
```

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## Operation (Lec.6)

- Logic Operation
  - Left-shift, right-shift
  - $3 \ll 2 = 3 * 2 ^2 = 12;$
  - $3 \gg 2 = 3 / (2 ^2) = 0;$
- Evaluation order
  - $3 \ll 2 * 4 = 768$
  - $(3 \ll 2) * 4 = 48$
- Unary operation
  - +, -
  - **$x = (10 - (3 - (-10 - -20)))$ ;**

October 10, 2010

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## Relational and Logical Operators

- Relational: >, <, <=, >=, ==, !=
- Logical: !, &&, ||
- Return values:
  - 0 – false
  - 1 – true
- Examples
  - what does  $(a > 4) || (b < 10)$  return
  - if  $a = 0, b = 0$ ;

Oct. 7, 2008

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## if statement

- if (*condition*)
- *do something*

*condition* – relational or logical operation

*Example*

```
if(a == 0 && b == 0)
    printf("Both a and b are zero!\n");
```

Oct. 7, 2008

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## Assignment 3

- Part 1
  - Computer the approximate value of  $\tan(x)$
  - Taylor expansion and division of  $\sin(x)$  and  $\cos(x)$
  - Example of  $\cos(x)$  in the lecture notes and  $\sin(x)$  on course webpage.
  - Use long double variables for calculation.
  - Bonus part: input value check for  $\tan(x)$ 
    - Computers represent floating point values approximately.

October 10, 2010

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## Assignment 3

- Part 2
  - Use Cramers Rule to solve linear equations.
  - Computers represent floating point values approximately.
  - What shall we do when the determinant of the coefficients is zero?
  - How to check whether the determinant is zero or not in computers?

October 10, 2010

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