

# Computer Science & Engineering 150A

## Problem Solving Using Computers – Laboratory

### Lecture 06 - Conditions

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# Announcement: CodeLab assignment

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Function

if else

- The 2nd CodeLab assignment

"CodeLab Assignment-2"

Due: 23:59 Feb 24

```
ReturnType FuncName(type Arg 1,...)
{
    local variable declarations;
    executable statements;
    return statement;
}
```

- After the main function
- $\approx$  prototype, without ";"
- "{", "}" – scope
- Local variables disappear outside scope
- Output
  - Return statement
  - Match returntype

# Function Definition: Example

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Function

if else

```
#include <stdio.h>

double EllipseArea(int x, int y);

int main(void)
{
    int x = 4, y = 5, z;
    z = EllipseArea(x, y);
}

double EllipseArea(int x, int y)
{
    return 3.14159 * x * y ;
}
```

# Operators: Relation and Equality Operators

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Function

if else

- relation and equality operators

- "<" ">" "<=" ">="
- "==" "!="

- Example:  $x = 3, y = 7$

- $x < y$  value: 1(true)
- $x \leq y$  value: 1(true)
- $x == y$  value: 0(false)
- $x != 4$  value: 1(true)

## Logical operators

- "&&" –AND
- "||" –OR
- "!" –NOT

Example:  $x = 3, y = 7$

- $(x \leq y) \&\& (x > 4)$  Value: 0(false)
- $(x > 4) || (x \neq y)$  Value: 1(true)
- $!(x == y)$  Value: 1(true)

# Condition: If else statement

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Basic idea: Decision Making

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Function

if else

If logical expression is true (nonzero), single or block of executable statements are executed, otherwise, skipped.

# Condition: Example 1

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Function

if else

```
if ( logical expression )  
    executable statement;
```

Example:

```
int month ;  
scanf("%d", &month ) ;  
  
if (( month > 12 )||( month < 0))  
    printf("You input an invalid month" ) ;
```



## Condition: Example 2

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Function

if else

```
if ( logical expression )  
{  
    executable statement;  
    ...  
}
```

Example:

```
int month, isHoliday ;  
scanf("%d", &month ) ;  
  
if (( month >= 5 )&&(month <= 8))  
{  
    isHoliday = 1;  
    printf("Now is Summer Vacation!" ) ;  
}
```

# Condition: if else

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Function

if else

```
if ( logical expression )  
{  
    executable statement 1;  
    ...  
}  
else  
{  
    executable statement 2;  
    ...  
}
```

## Condition: Example 3

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Function

if else

```
if (( month >= 5 )&&(month <= 8))  
{  
    isHoliday = 1;  
    printf("Now is Summer Vocation!" ) ;  
}  
else  
{  
    isHoliday = 0;  
    printf("It's time for studying!" ) ;  
}
```