

Computer Science & Engineering 150A

Problem Solving Using Computers – Laboratory

Lecture 12 - Functions

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(Adapted from Derrick Stolee, Lin Liu & Shuai Xie)

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- The 6th CodeLab assignment

"CodeLab Assignment-6"

Due: 23:59 Apr 13

Three steps to design your own function:

- Prototype — Declaration
- Definition — Implementation
- Call — Usage

```
#include <stdio.h>
```

```
void PrintAlarm(void);
```

```
int Cube(int x);
```

```
double EllipseArea(int x, int y);
```

```
int main(void)
```

```
{ ...
```

- Between preprocessor directive and main function
- Return type – void, int, double, char, etc
- Argument – void, single, multiple
- ";"

```
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 1

CSCE150A

Assignment

Function

```
#include <stdio.h>

void PrintAlarm(void);
void PrintReminder(void);

int main(void)
{
    PrintAlarm();
    PrintAlarm();
}

void PrintAlarm( void )
{
    printf("The message you input is wrong");
}

void PrintReminder( void )
{
    printf("The message you input is correct");
}
```

Function Definition: Example 2

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Assignment

Function

```
#include <stdio.h>
int Cube(int x);
double EllipseArea(int a, int b);
int main(void)
{
    int x = 4, y=3, c, z ;
    c = Cube(x) ;
    z = EllipseArea(x,y) ;
}

int Cube(int x)
{
    int y;
    y = x * x * x ;
    return y;
}
```

```
double EllipseArea(int a, int b)
{
    double c ;
    c = 3.14159 * a * b ;
    return c ;
}
```