

# ECE 220 Computer Systems & Programming

## Functions in C



# Repeated Code in C

- C functions are like subroutines in LC-3:
  - Handle repeated code
- **Provides abstraction:**
  - hide low-level details
  - give high-level structure to program, easier to understand overall program flow
  - enable separable, independent development
  - reuse code
- **Structure of a function:**
  - zero or multiple arguments passed in
  - single result returned (optional)
  - return value is always the same type

# Making a Function Call in C

```
#include <stdio.h>
/* our Factorial function prototype (declaration) goes here */
int Fact(int n);

/* main function */
int main() {
    int number;
    int answer;

    printf("Enter a number: ");
    scanf("%d", &number);

    answer = Fact(number); /* function call */
    /* number - argument (parameter) transferred to Factorial
       answer - return value from Factorial to main */

    printf("factorial of %d is %d\n", number, answer);

    return 0;
}
```

# Factorial Function: $\text{Fact}(n) = n! = 1 \times 2 \times 3 \times \dots \times n$

```
/* implementation (definition) of Factorial function */  
int Fact(int n) {
```

```
}
```