

# Programming with C I

Fangtian Zhong  
CSCI 112

Gianforte School of Computing  
Norm Asbjornson College of Engineering  
E-mail: [fangtian.zhong@montana.edu](mailto:fangtian.zhong@montana.edu)

# Library Functions



## code reuse

- reusing program fragments that have already been written and tested



## C standard libraries

- many predefined functions can be found here

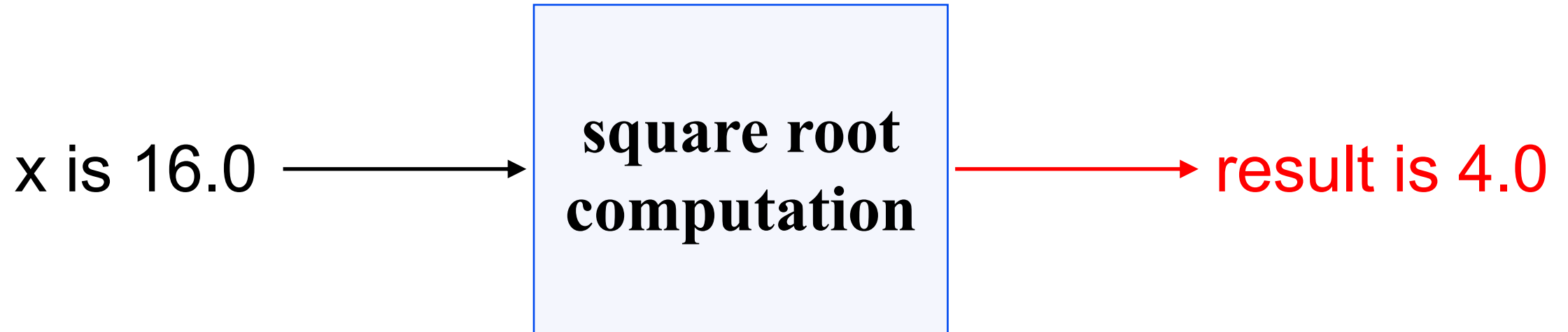
**stdio.h**

**math.h**

**Note:** must use `-lm` flag to compile when using math library  
For example, `gcc -o exe -Wall my_c_program.c -lm`

# Figure Function sqrt as a “Black Box”

## function sqrt



# C Math Library Functions



## Examples






- `abs(x)`
- `ceil(x)`
- `log(x)`
- `sin(x)`
- `sqrt(x)`

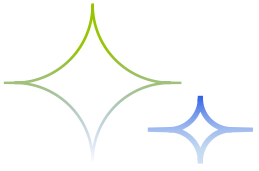
# Figure Function scale

```
/*
 * Multiplies its first argument by the power of 10 specified
 * by its second argument.
 * Pre : x and n are defined and math.h is included.
 */
double
scale(double x, int n)
{
    double scale_factor;    /* local variable */
    scale_factor = pow(10, n);

    return (x * scale_factor);
}
```

# Wrap Up

-  Code reuse is good.
-  When possible, develop your solution from existing information.
-  Use C's library functions to simplify mathematical computations.
-  You can write functions with none, one, or multiple input arguments.
-  Functions can only return one value.



# THE END

Fangtian Zhong  
CSCI 112

Gianforte School of Computing  
Norm Asbjornson College of Engineering  
E-mail: [fangtian.zhong@montana.edu](mailto:fangtian.zhong@montana.edu)