Programming with C I

Fangtian Zhong
CSCI 112

Gianforte School of Computing
Norm Asbjornson College of Engineering
E-mail: fangtian.zhong@montana.edu

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Objectives

- To learn how to use the relational, equality, and logical operators to write expressions that are true or false.

- To learn how to write selection statements that choose between two alternatives in a program using the if statement.

Control Structures

selection control structure

- a control structure that chooses among alternative program statements
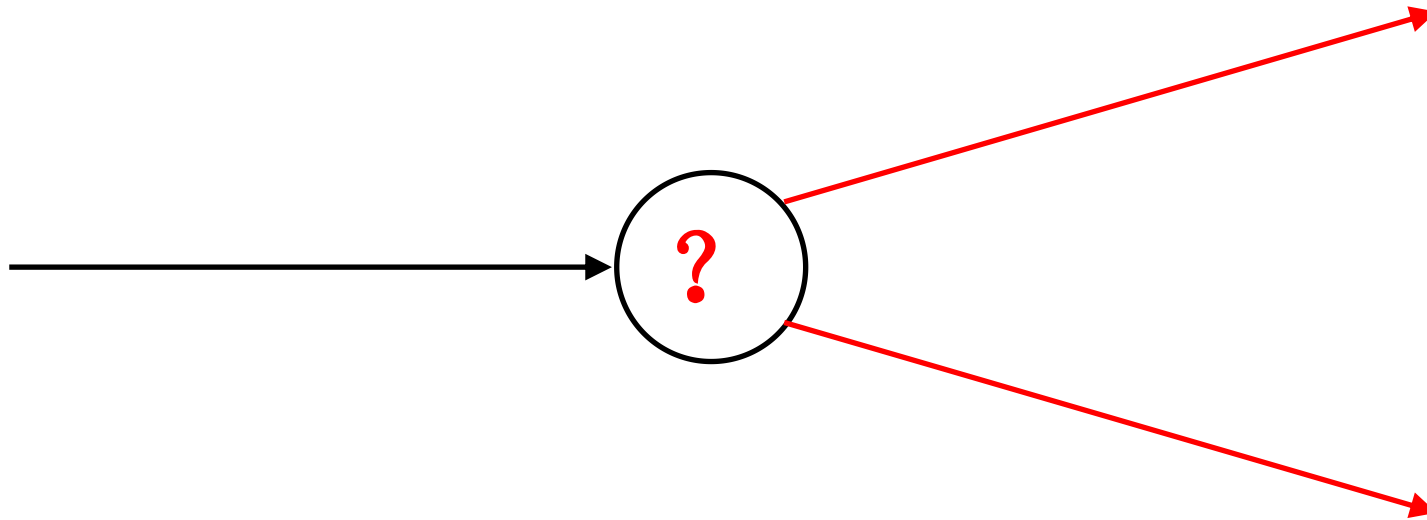
Conditions

an expression that is either false

- represented by 0

or true

- usually represented by 1

$$rest\_heart\_rate > 75$$

Relational and Equality Operators

Operator	Meaning	Type
<	less than	relational
>	greater than	relational
<=	less than or equal to	relational
>=	greater than or equal to	relational
==	equal to	equality
!=	not equal to	equality

Logical Operators

logical expressions

- an expression that uses one or more of the logical operators

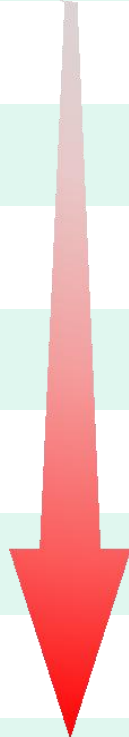 - ➢ && (and)
  - ➢ || (or)
  - ➢ ! (not)

Logical Operators

logical complement (negation)

- the complement of a condition had the value 1 (true) when the condition's value is 0 (false)

- the complement of a condition has the value 0 (false) when the condition's value is nonzero (true)

$$! (0 <= n \ \&\& \ n <= 100)$$

Operator Precedence

Operator	Precedence
function calls	highest (evaluated first)
! + - & (unary operator)	
* / %	
+ -	
< <= >= >	
== !=	
&&	
||	
=	lowest (evaluated last)

Figure

🏅 **Range of True Values for min <= x && x <= max**

🏅 **Range of True Values for z > x || x > y**
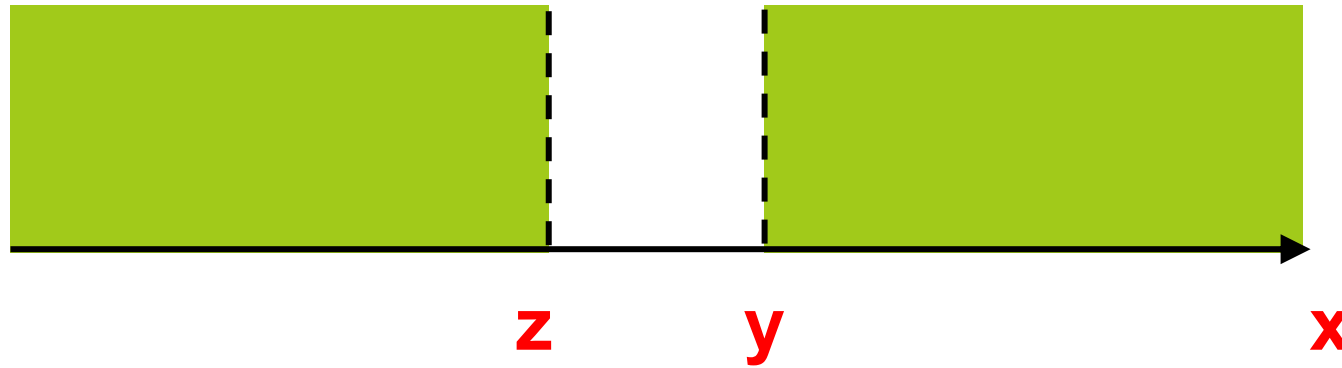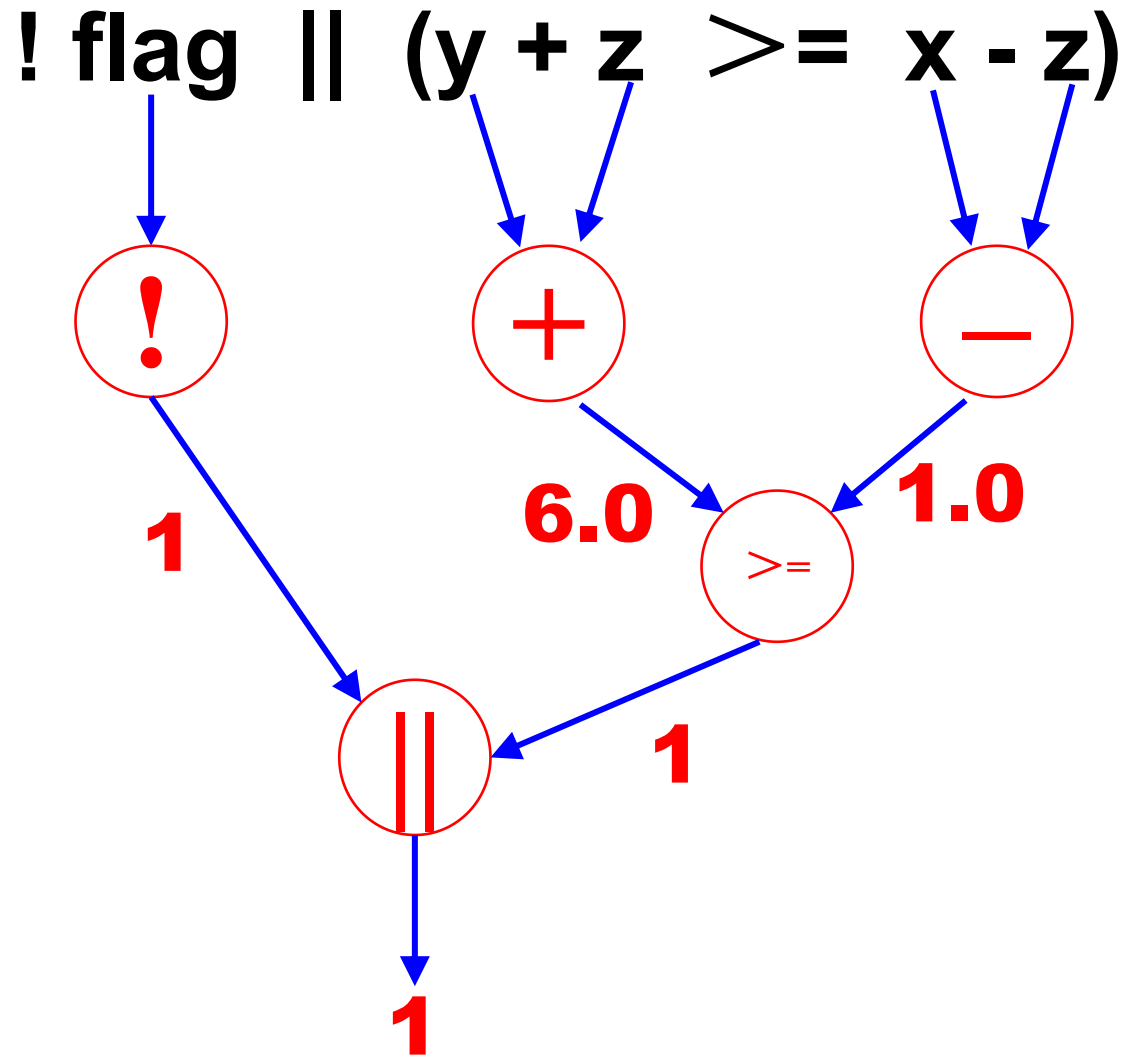
! flag || (y + z >= x - z)

flag	y	z	x
0	4.0	2.0	3.0

! flag || (y + z >= x - z)

Short-Circuit Evaluation

🏅 **stopping evaluation of a logical expression as soon as its value can be determined**

$$(div \text{ != } 0 \text{ \&\& } (num \text{ \% } div == 0))$$
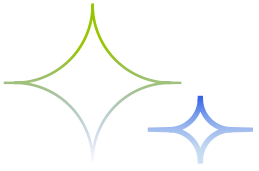
THE END

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