

GSET - Programming with Mr. Hill

Tristan Hill

Tennessee Technological University

Summer 2021

Module 6 - Logic and Branching

Module 6 - Logic and Branching

- Types of Sentences
- Logical Statements
- Relational Operators
- Branching and Program Flow
- Logical Operators and Compound Statements

Types of Sentences

What are the four types of sentences?

- 1
- 2
- 3
- 4

We are going to discuss one of these in detail.

Logical Statements

A **logical statement** is a statement that can be evaluated as **true** or **false**.

Why are we discussing this? How are logical statements used in programming?

Logical Statements

A Classic Riddle: Knights and Knaves

John and Bill are standing at a fork in the road. John is standing in front of the left road, and Bill is standing in front of the right road. One of them is a knight and the other a knave, but you don't know which. You also know that one road leads to Death, and the other leads to Freedom. By asking one yes/no question, can you determine the road to Freedom?

Relational Operators

If you studied mathematics, then you are familiar with these operators.

Name	Symbol	Example
greater than	>	
less than	<	
greater than or equal to	>=	
less than or equal to	<=	
is equals to	==	
not equal to	!=	

Branching and Program Flow

Previously the programs we have written look like a single line.

...

...

Branching and Program Flow

Commonly Used Flowchart Symbols

- Flowline
- Terminal
- Process
- Decision
- Input/Output
- and many more ...

Flowcharting is a tool for brainstorming and it can be used for communication and education. A flowchart is not a program.

Logical Operators and Compound Statements

If you studied programming, then you are probably familiar with these operators.

Name	Symbol	Example
conjunction	\wedge	
disjunction	\vee	
negation	\sim	

Logical Operators and Compound Statements

Compound Statements and Truth Tables.

—	—	Cmpd. Stmt. C	Cmpd. Stmt. D	Cmpd. Stmt. E
Stmt. A	Stmt. B			

Hint: Use a truth table to solve the Knights and Knaves riddle.