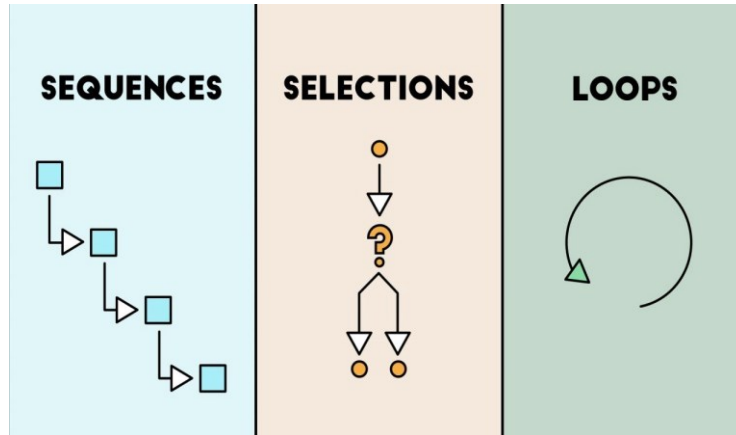


Selection



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What is selection?

- The building blocks of programs are
 - Sequence of statements
 - Selection (making a decision)
 - Looping (repetition)

What is selection?

- Selection: Using a Boolean expression to decide which path to follow in the program

- Example:

```
If (it is raining) then
    wear boots to keep feet dry
Else
    wear flip-flops
```

What is a Boolean expression?

A Boolean value is either TRUE or FALSE

Boolean expressions may use

- Relational operators

- Logical operators

Relational Operators

$>$ Greater than

$<$ Less than

\leq Less than or equal

\geq Greater than or equal

$=$ Equal

Logical Operators

AND, OR, NOT

a	b	a AND b
False	False	False
False	True	False
True	False	False
True	True	True

a	b	a OR b
False	False	False
False	True	True
True	False	True
True	True	True

a	NOT a
False	True
True	False

Examples of Boolean Expressions

- Relational operators (comparison)
 - $42 < 17$ -> False
 - $5 = 5$ -> True
 - "Hello" = "Hello" -> True
 - "ABC" > "XYZ" -> False

Examples of Boolean Expressions

- Logical operators (boolean)
 - $42 < 17 \text{ AND } 10 > 1 \rightarrow \text{False}$
 - $5 = 5 \text{ AND } 1 = 1 \rightarrow \text{True}$
 - $17 > 5 \text{ OR } 10 < 1 \rightarrow \text{True}$
 - $1 = 10 \text{ OR } 5 > 2 \rightarrow \text{False}$

Types of Selection

