

ICS-104

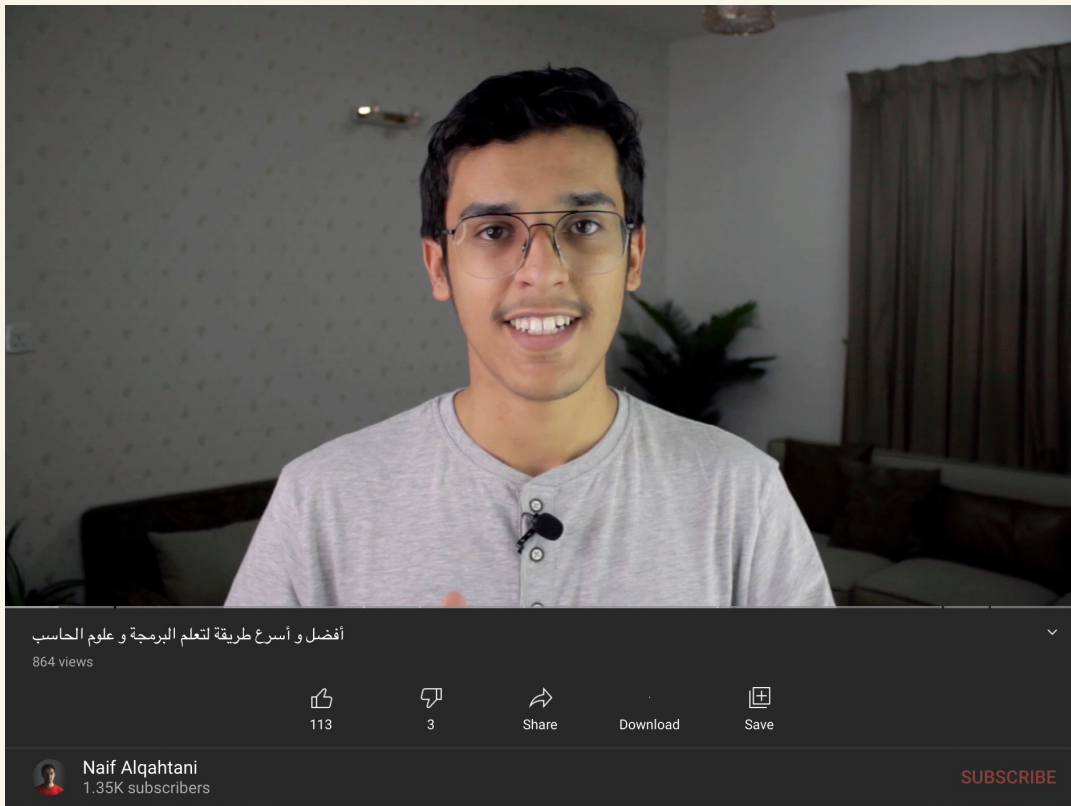
# Chapter 3

# Notes

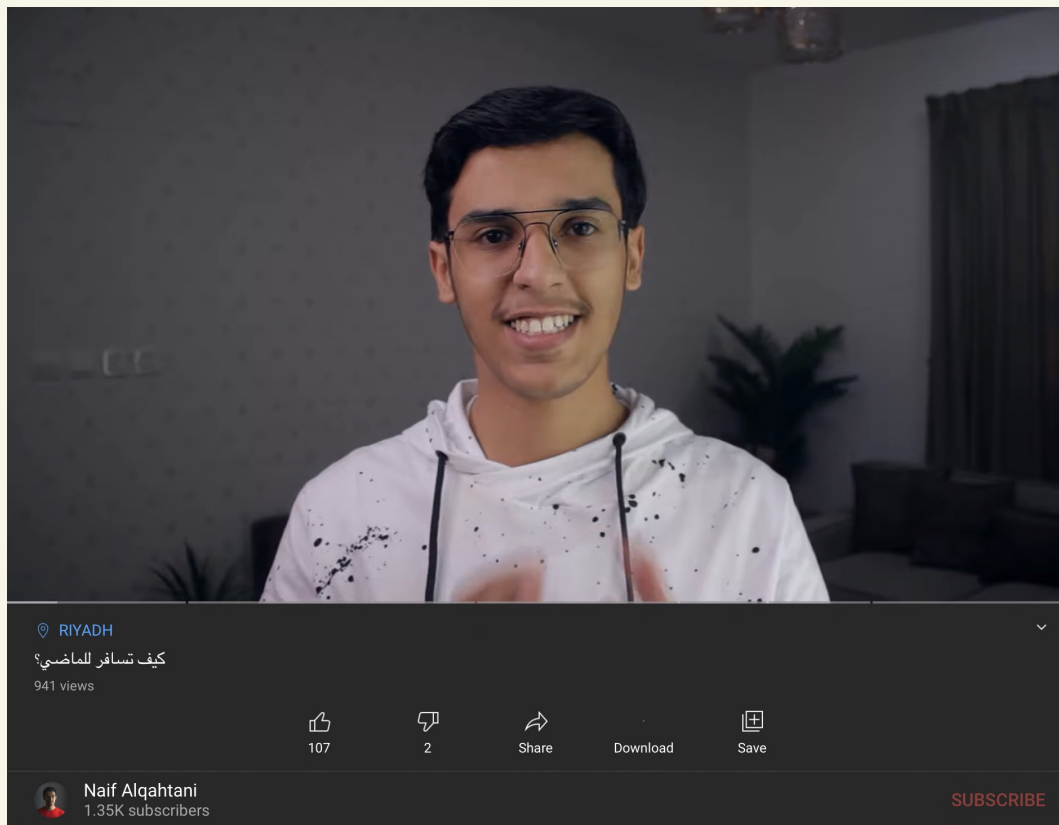
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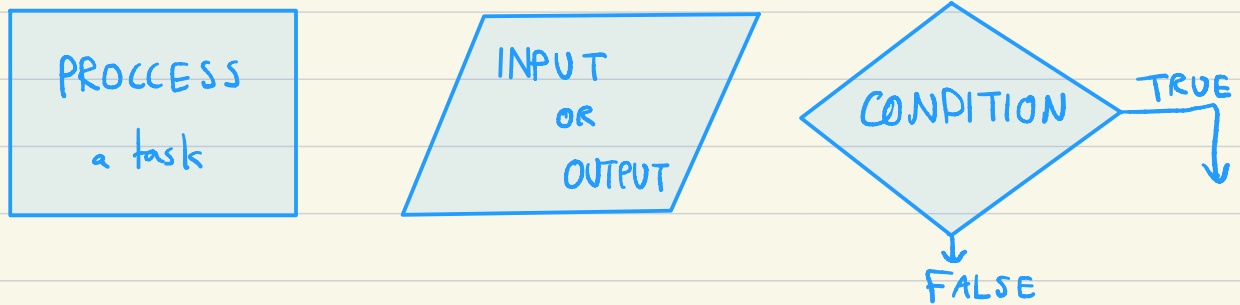
<https://youtu.be/6K-a1zQJ90U>



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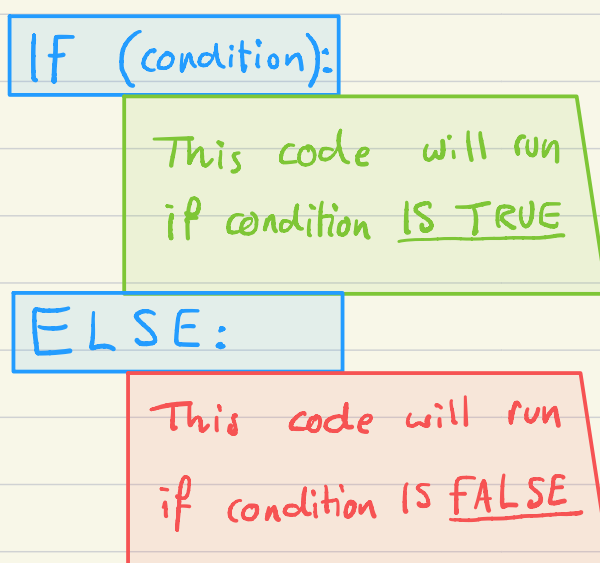
## • Flowcharts:

- Flowcharts is a tree of shapes that represent a code
- Flowchart help a programmer in implementing a code
- flowchart elements:

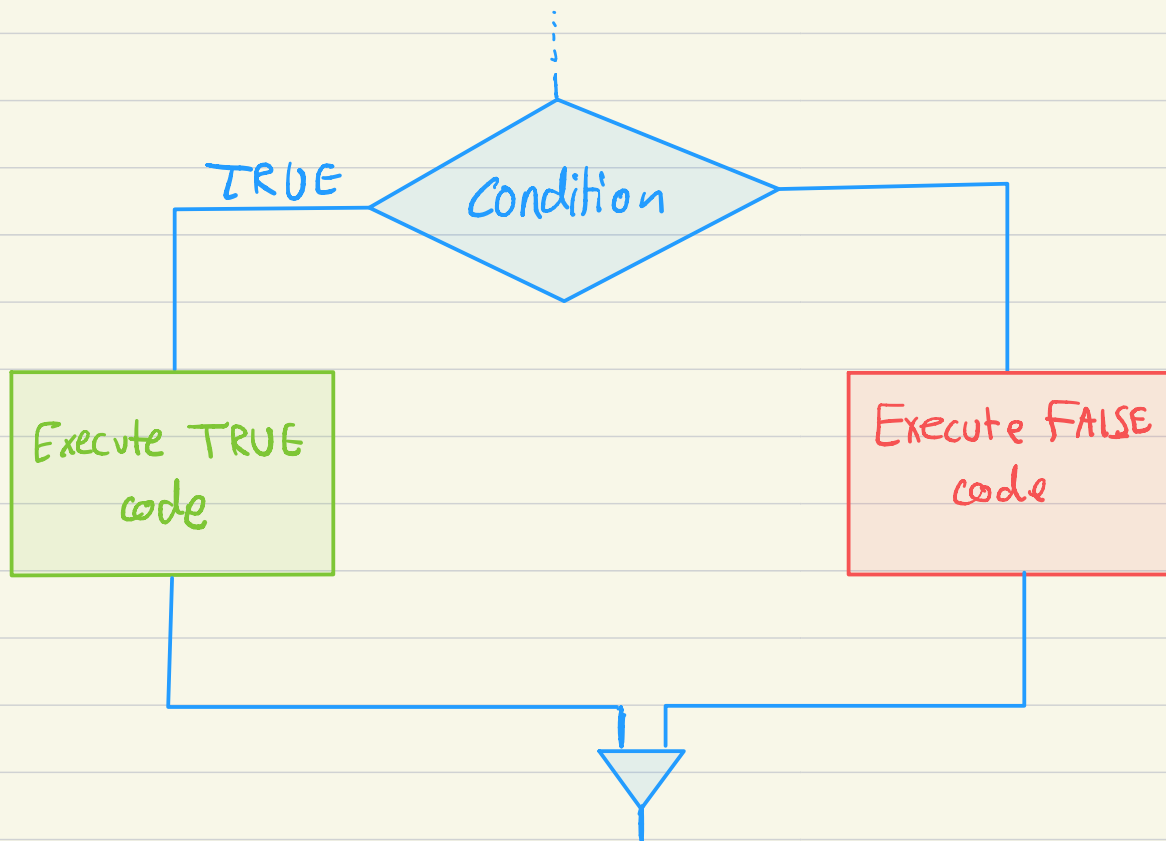


## • Conditional Statement: if... else...

- if statements are used to make decisions
- Pseudocode of if statement:



- flow chart of if statement:



## • Compound if statement

- if statement consist of two parts:

1- Header

- requires a colon (:) at the end

2- Statement Block

- must be have the same indentation

- Example:

```
header → (if valueOfDollar >= 100 :
    total = total + 100
    tax = 1.15
    afterTax = total * tax
else :
    total = 0
```

notice the colon

notice the indentation

Statement Block

colon

## • Relational operators

- `==`, Equality testing. Completely different from `=`.
- `!=`, Does not equal.
- `>`, Greater than.
- `<`, Less than
- `>=`, Greater than OR equals
- `<=`, Less than OR equals

## • Testing String equality

- We can use `==` to test if two string are identical
- We can use `!=` to test if two string are not identical
- For two strings to equal each other:
  - they must have the same length
  - they must contain exactly the same characters

## • Nested conditions

- `if` statement inside of another `if` statement
- Useful in multi-step decision making.
- Example:

notice  
indentation

```
if condition:
    if other condition:
        run some code
    if third condition:
        run other code
```

## • Alternatives: elif...

- the elif statement is short for else if
- We use elif when we want to check another condition if the first condition is False.
- We cannot use elif without a previous if
- an example of an if... elif... else... statement:

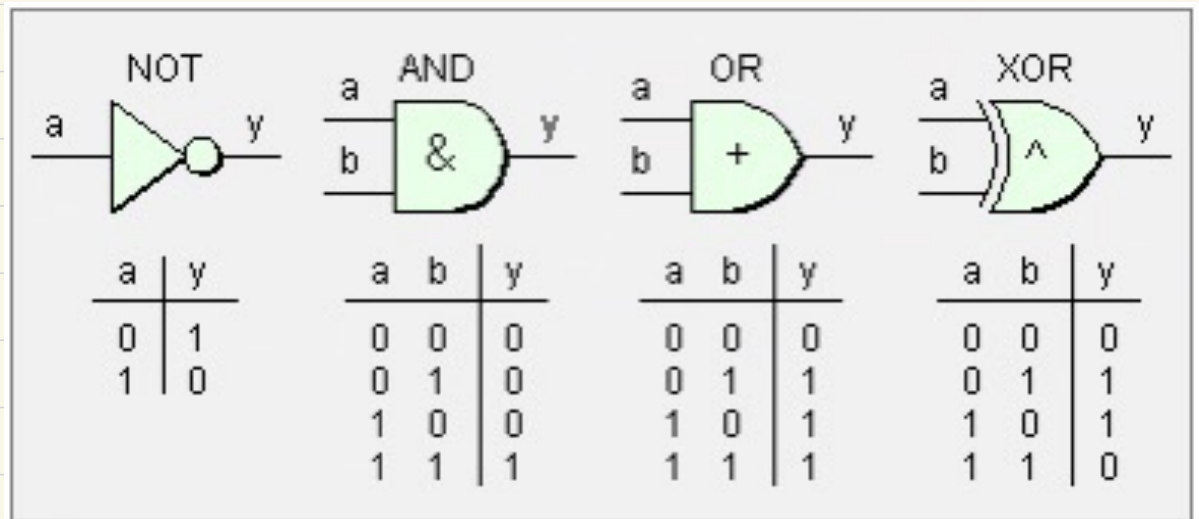
```
if num > 0:  
    print("Positive")  
elif num < 0:  
    print("Negative")  
else:  
    print("Zero")
```

- the program checks if the condition is True on every if and elif statement
- if all conditions are False, the else statement is executed.

## • Logical Operators: Truth tables

- Logical operators are like gates that only open when a certain condition is met.
- Eg: and, or, not, xor, etc.
- and: is opened (ie: True) if both input values are True.
- or: is opened (ie: True) if either input values are True.
- not: only one input. Its output is the opposite of the input.
- xor: is opened (ie: True) if either input values are True, but not when both values are True.

- 0 means False
- 1 means True



## • Substring Operations

• example string:

Welcome to KFUPM

- "come" in string: checks if "come" is in string  
returns True if found, False otherwise.
- string.startswith("We"): checks if "We" is the first chars in String  
returns True if correct, False otherwise.
- string.endswith("PM"): checks if "PM" is the last chars in String  
returns True if correct, False otherwise.
- string.count("me"): returns how many times "me" appeared.
- string.find("to"): returns the index number of the first appearance of "to" and -1 if not found.

# • String Testing

- `string.isalnum()`: returns **True** if and only if there is one char atleast and if it consists of **letters and numbers** only.
- `string.isalpha()`: returns **True** if and only if there is one char atleast and if it consists of **letters** only.
- `string.isdigit()`: returns **True** if and only if there is one char atleast and if it consists of **numbers** only.
- `string.islower()`: returns **True** if and only if there is one char atleast and **all are lower-case letters** only
- `string.isupper()`: returns **True** if and only if there is one char atleast and **all are upper-case letters** only