

If Statement

Lecturer: Hussien Omer AL _ Baiti

python conditions and if statements

- Python supports the usual logical conditions from mathematics:
 - Equals: `a == b`
 - Not Equals: `a != b`
 - Less than: `a < b`
 - Less than or equal to: `a <= b`
 - Greater than: `a > b`
 - Greater than or equal to: `a >= b`
- These conditions can be used in several ways, most commonly in "if statements" and loops.
- An "if statement" is written by using the `if` keyword.

If statements structure

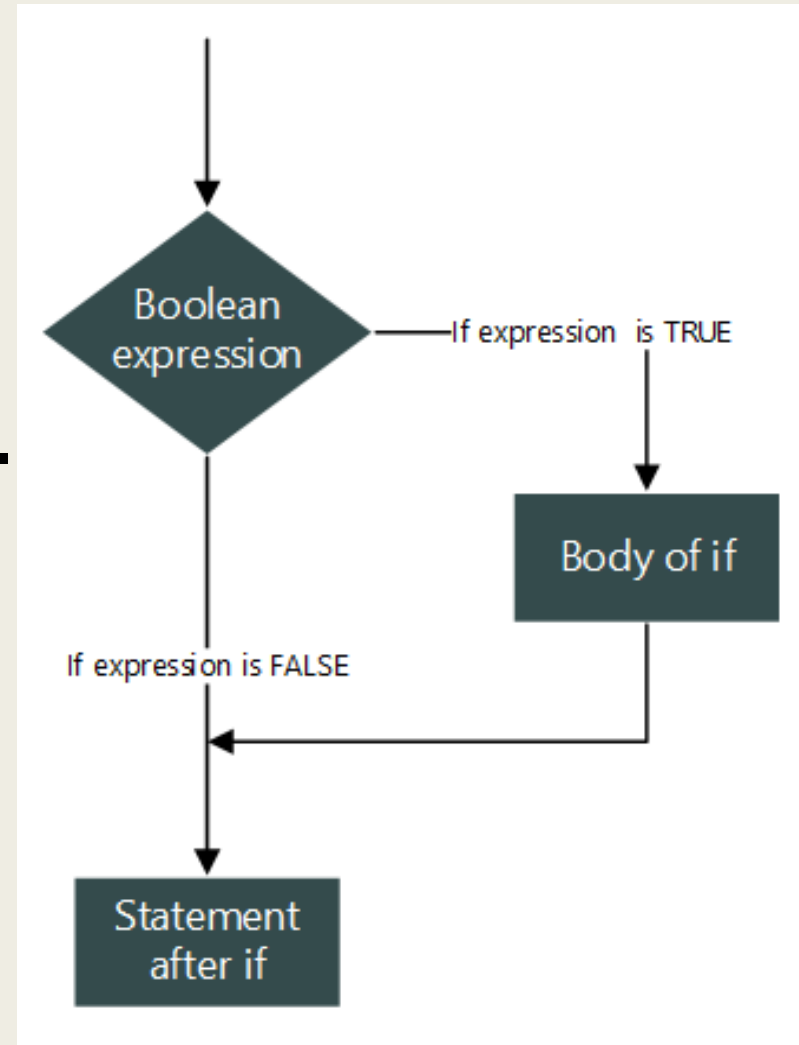
- The syntax of if statement in Python is:

If condition :

body of if statements

Flow If statements diagram

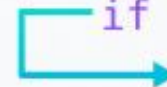
- The if statement evaluates condition.
- If condition is evaluated to True,
the code inside the body of if is executed.
- If condition is evaluated to False,
the code inside the body of if is skipped.



Cont..


Condition is True

```
number = 10  
if number > 0:  
    # code  
  
# code after if
```



Condition is False

```
number = -5  
if number > 0:  
    # code  
  
# code after if
```



Working of if Statement

Example 1

- What the output of following program.

```
a = 22
b = 200
if a > b :
    print("a is greater than b")
print("this program is easy")
```

```
C:\Users\SuperLap\PycharmProje
this program is easy
```

Example 2

- What the output of following program.

```
a = 22
b = 200
if a < b :
    print("a is less than b")
print("this program is easy")
```

```
C:\Users\SuperLap\PycharmF
a is less than b
this program is easy
```

Python if...Else statement structure

- An if statement can have an optional else clause.
- The syntax of if...else statement is:

If condition :

body of **if statements**

else :

body of **else statements**

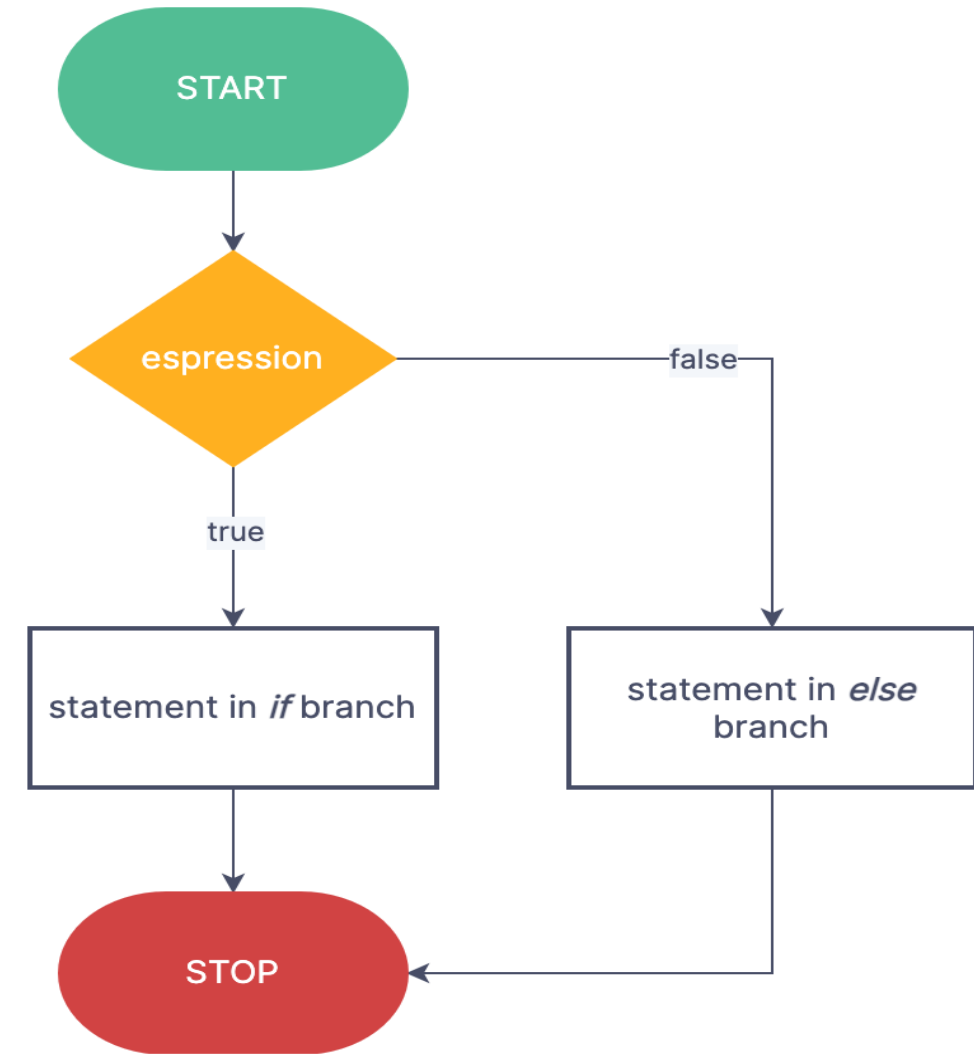
flow if...else diagram

If the condition evaluates to **True**,

- the code inside if is executed
- the code inside else is skipped

If the condition evaluates to **False**,

- the code inside else is executed
- the code inside if is skipped



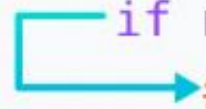
Cont..

Condition is True

```
number = 10
if number > 0:
    # code

else:
    # code

# code after if
```




Condition is False

```
number = -5
if number > 0:
    # code

else:
    # code

# code after if
```



Working of if...else Statement

Example 3

- What the output of following program.

```
a = 22
b = 200
if a < b:
    print("is true")
else:
    print("is false")
print("this program is easy")
```

```
C:\Users\SuperLap\PycharmProj
is true
this program is easy
```

Example 4

- What the output of following program.

```
a = 22
b = 200
if a > b :
    print("is true")
else:
    print("is false")
print("this program is easy")
```

```
is false
this program is easy
```

Python if...elif...else Statement

- An if statement can have an optional else and elif clause.
- The syntax of (if...elif...else) statement is:

If condition :

body of **if statements**

elif :

body of **elif statements**

else :

body of **else statements**

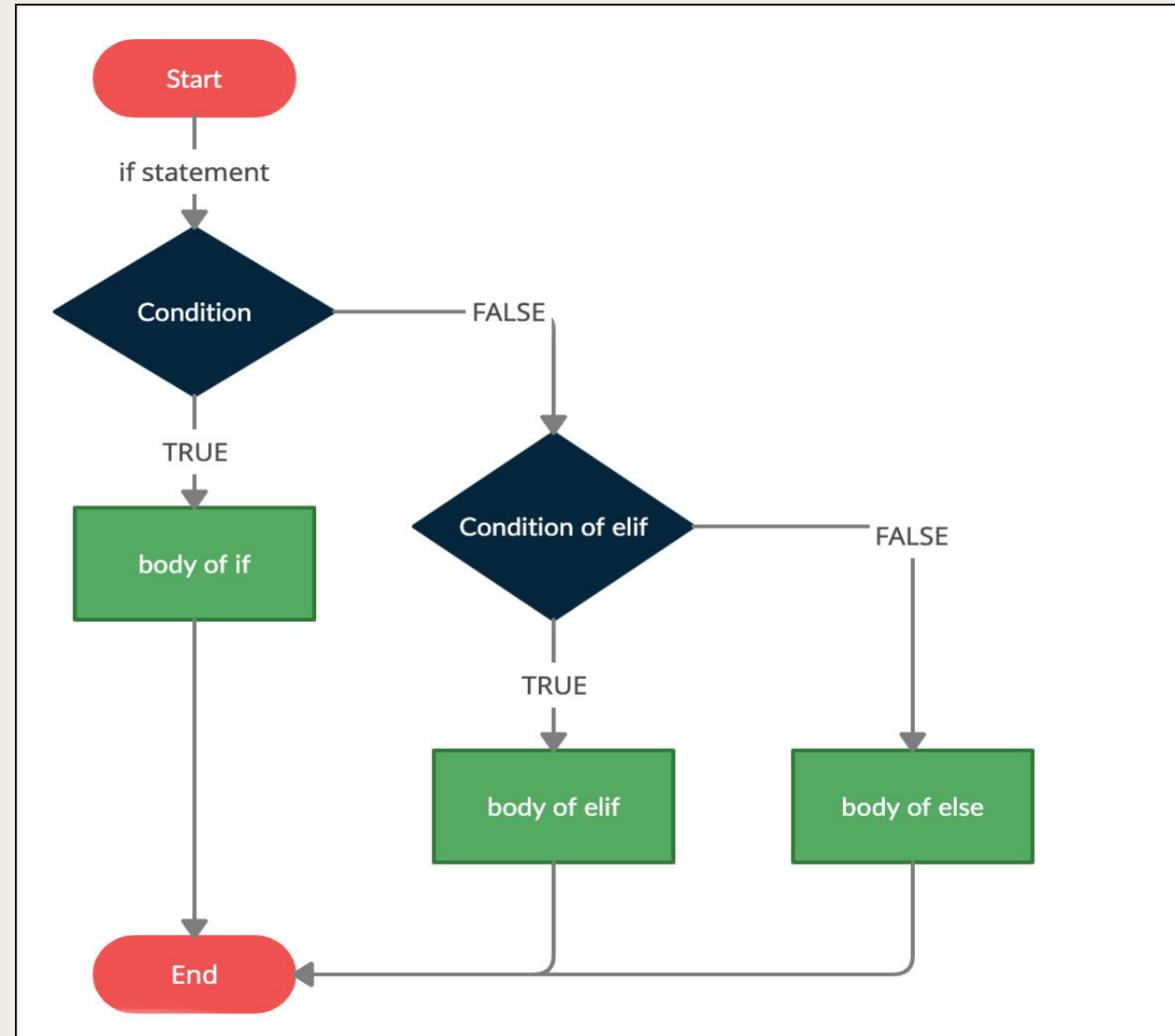
flow if...elif...else diagram

**If condition1 evaluates to true,
code block 1 is executed.**

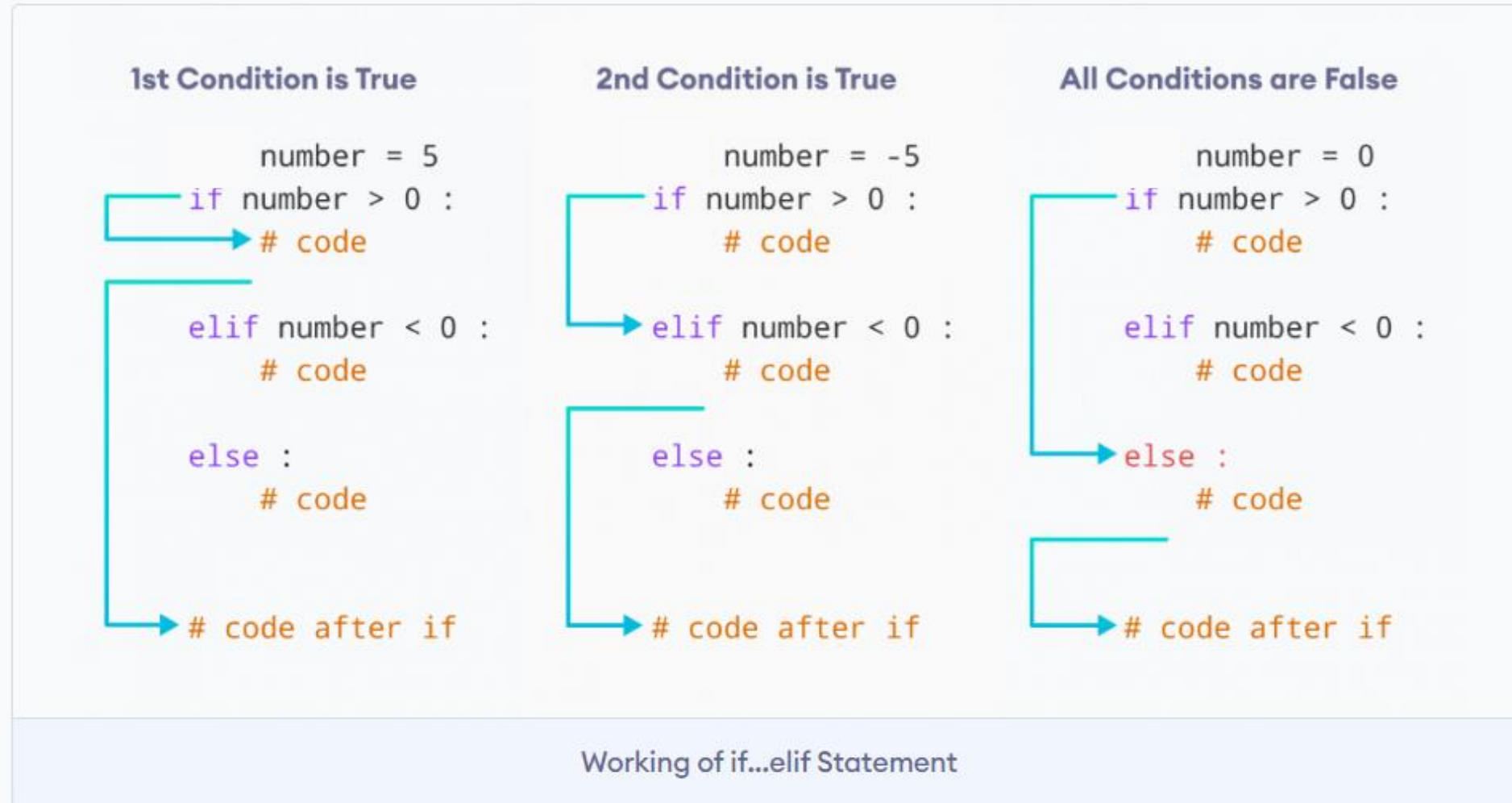
**If condition1 evaluates to false,
then condition2 is evaluated.**

**If condition2 is true,
code block 2 is executed.**

**If condition2 is false,
code block 3 is executed.**



Cont..



Example 5

- What the output of following program, assume (a , b values) .

```
a = int(input("enter first number"))
b = int(input("enter second number"))
if a > b:
    print("a is great than b ")
elif a < b:
    print("a is less than b ")
else:
    print("a is equal b ")
print("this program is easy")
```


Exercise 1

- Write a python program to accept two integers and check whether they are equal or not.

```
x = int(input("enter first number"))
y = int(input("enter second number"))
if x == y:
    print("first values is equal")
else:
    print("first values is not equal")
```

Exercise 2

- Write a python program to check whether a given number is even or odd.

```
num = int(input("enter number"))

if num %2 == 0:
    print("number is even")
else:
    print("number is odd")
```

Exercise 3

- Write a python program to check whether a given number positive or negative.

```
num = int(input("enter first number"))
if num > 0:
    print("the number is positive")
elif num < 0:
    print("the number is negative")
else:
    print("the number equal zero")
print(" you are perfect student **")
```

Exercise 4

- Write a python program to check whether a given year is leap.

```
import calendar
if calendar.isleap(2020):
    print("is leap")
else:
    print("is not leap")
```

Exercise 5

- Write a python program to check whether a current year is leap.

```
import calendar
import datetime
if calendar.isleap(datetime.datetime.now().year):
    print("is leap")
else:
    print("is not leap")
```

- Next page another way to answer this question

Cont..

```
import calendar
import datetime
date = datetime.datetime.now()
if calendar.isleap(date.year):
    print("is leap")
else:
    print("is not leap")
```

Python nested if statements structure

- The syntax of nested if statement in Python is:

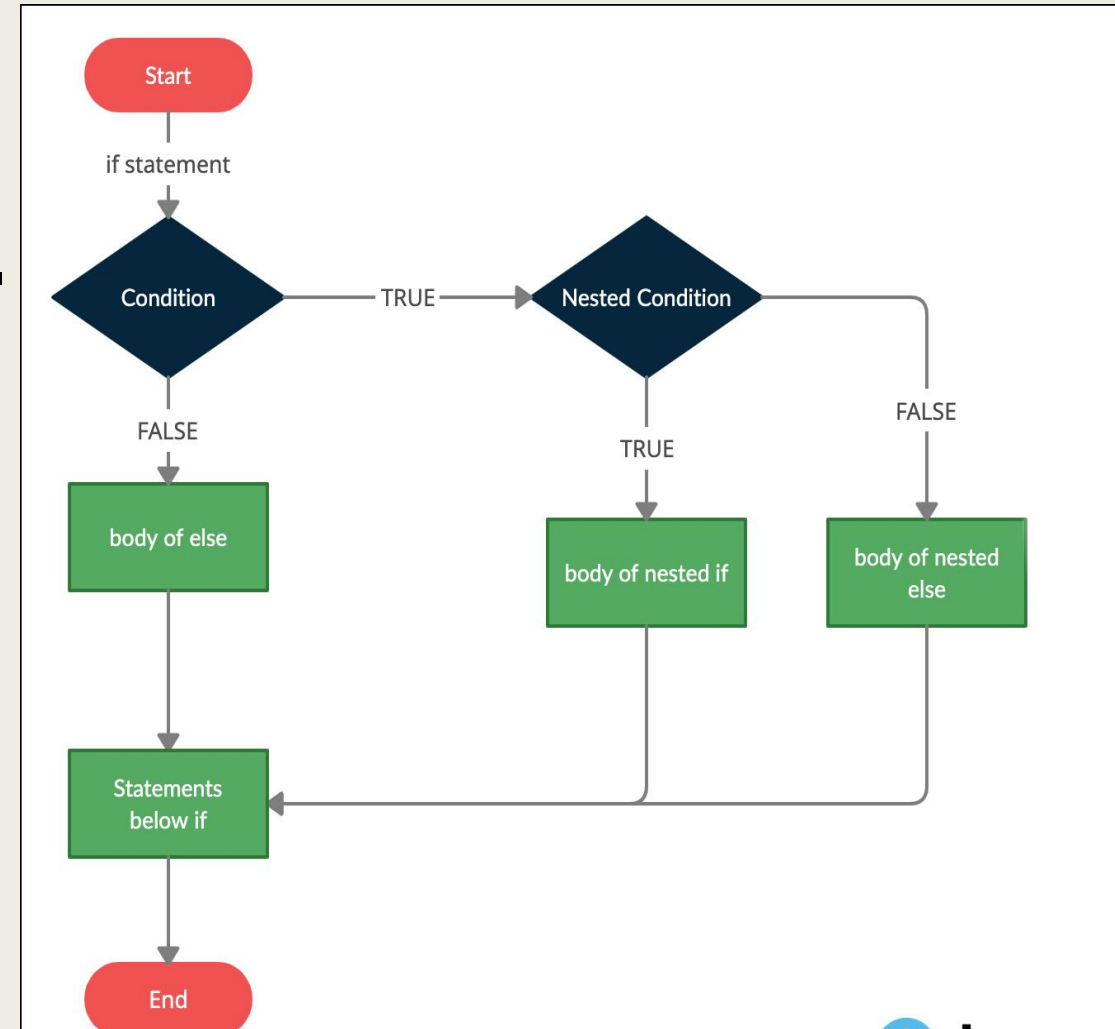
If condition :

If condition

body of nested if statements

flow nested if diagram

**If condition1 evaluates to true,
code block 1 is executed(inside if).
If inside if evaluates to true,
then condition2 is evaluated.**



Cont...

We can add else and **elif** statements to the inner **if** statement as required.

We can also insert inner **if** statement inside the outer else or **elif** statements (if they exist).

We can nest multiple layers of if statements.

Example 6

- What the output of following program.

```
number = 5
if (number >= 0):
    if number == 0:
        print('Number is 0')
    else:
        print('Number is positive')
else:
    print('Number is negative')
```

GOOD

LUCK

