

DATA SCIENCE COURSE TUTORIAL # 17

3.9 If, Else, Elif Statements (Control Flow)

Control flow allows your program to make decisions. Instead of running all lines one by one, Python can decide which lines to run based on conditions (True or False).

if Statement

The `if` statement is used to run a block of code only if a certain condition is true.

Example:

```
age = 18
if age >= 18:
    print("You are eligible to vote.")
```

Output:

```
You are eligible to vote.
```

if...else Statement

The `else` block runs when the `if` condition is not true.

Example:

```
age = 15
if age >= 18:
    print("Eligible to vote.")
else:
    print("Not eligible to vote.")
```

Output:

```
Not eligible to vote.
```

if...elif...else Statement

Use `elif` (else if) when you want to check multiple conditions.

Example:

```
marks = 75
if marks >= 90:
    print("Grade: A")
elif marks >= 80:
    print("Grade: B")
elif marks >= 70:
    print("Grade: C")
else:
    print("Grade: D")
```

Output:

```
Grade: C
```

Indentation in Python

Indentation is very important in Python. It shows which lines belong to the `if`, `elif`, or `else` block. Usually 4 spaces or 1 tab is used.

Example:

```
x = 10
if x > 5:
    print("x is greater than 5")    # inside if block
print("This line is outside if")   # not part of if
```

Output:

```
x is greater than 5
This line is outside if
```