TECHNO INDIA
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if test and Syntax Rule

Statements and Syntax

MCAN101

if statement

- The Python if statement selects actions to perform.
- It's the primary selection tool in Python and represents much of the logic a Python program possesses.
- It's also our first compound statement. Like all compound Python statements, the if statement may contain other statements, including other ifs.

General Format

```
if <test1>:                 #if test
   <statements1>            #Associated block
elif <test2>:               #Optional elifs
   <statements2>
else:                       #Optional else
   <statements3>
```

Basic Example

- All parts are optional, except the initial if test and its associated statements.

```
if 1:
    print('true')
```

- for continuation lines when typing interactively in the basic interface, it ll simply drop down to an indented line instead (hit Backspace to back up). A blank line (which you can get by pressing Enter twice) terminates and runs the entire statement.

```
if not 1:
    print('true')
else:
    print('flase')
```

Multiway Branching

- Multiline statement extends from the if line through the else block. When it's run, Python executes the statements nested under the first test that is true, or the else part if all tests are false.

```
x=1
if x==1:
    print('1st Sem')
elif x==3:
    print('3rd sem')
else:
    print('invalid sem')
```

Python Syntax Rule

- Statements execute one after another, until you say otherwise.
- Block and statement boundaries are detected automatically.
- Compound statements = header + “:” + indented statements.
- Blank lines, spaces, and comments are usually ignored.
- Docstrings are ignored but are saved and displayed by tools.
- Statements may span multiple lines if you’re continuing an open syntactic pair.
- Statements may span multiple lines if they end in a backslash.

Python Syntax Rule

```
x=1;y=2;z=3;t=1
if x==1 and y==2 \
   and z==3 and t==4:
    print('multiline statments using black slash')
elif (x==1 and y==2
      and z==3 and t==1):
    print('multiline statement enclosed in(){}[]')
else:
    print('Nothing')
```

Truth Test

- Any nonzero number or nonempty object is true.
- Zero numbers, empty objects, and the special object None are considered false.
- Comparisons and equality tests are applied recursively to data structures.
- Comparisons and equality tests return True or False (custom versions of 1 and 0).
- Boolean and and or operators return a true or false operand object.

Truth Test

- X *and* Y

Is true if both X and Y are true

- X *or* Y

Is true if either X or Y is true

- *not* X

Is true if X is false (the expression returns True or False)

The if/else Ternary Expression

```
x=0
y=2
z=x if x else y
print(z)
```

QUIZ

- How might you code a multiway branch in Python?
- How can you code an if/else statement as an expression in Python?
- How can you make a single statement span many lines?
- What do the words True and False mean?