

Nested IF Statements

Programming and Algorithms

Lecture by
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```
n = 3
for i in range(1,n+1):
    print("Hello World!")
```

Hello World!
Hello World!
Hello World!

What will we Cover?

- Nested IF statements
- Writing programs to perform conditional execution

Nested IF Statements

- Body of an IF, ELIF or ELSE statement contains another IF statement
- Nested IF statement can contain another IF statement and so on

Examples

- If it is cold outside, Bob will wear a jacket; if it is raining he will take an umbrella.
- If you turn left you will arrive at town A, if you pass through it, you will arrive at town B

Nested IF Statements in Python

Body is executed if
the condition
evaluates to `True`

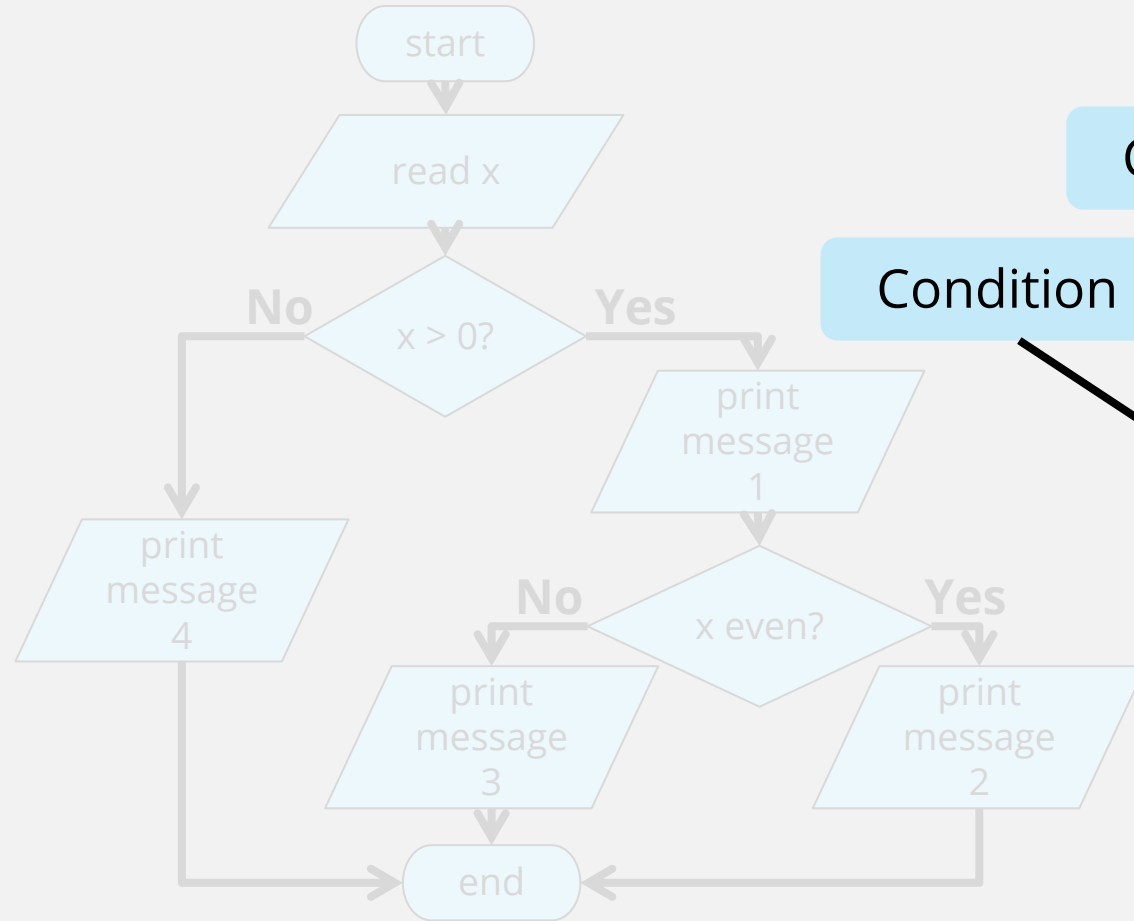
```
if <condition>:  
    body(if <condition>:  
        body)
```

Extra indentation for
the body of the
nested IF statement

One or multiple
statements in each body.

Note: nested IF statement can contain
ELSE and ELIF statements as well

Nested IF Statements Flow Chart

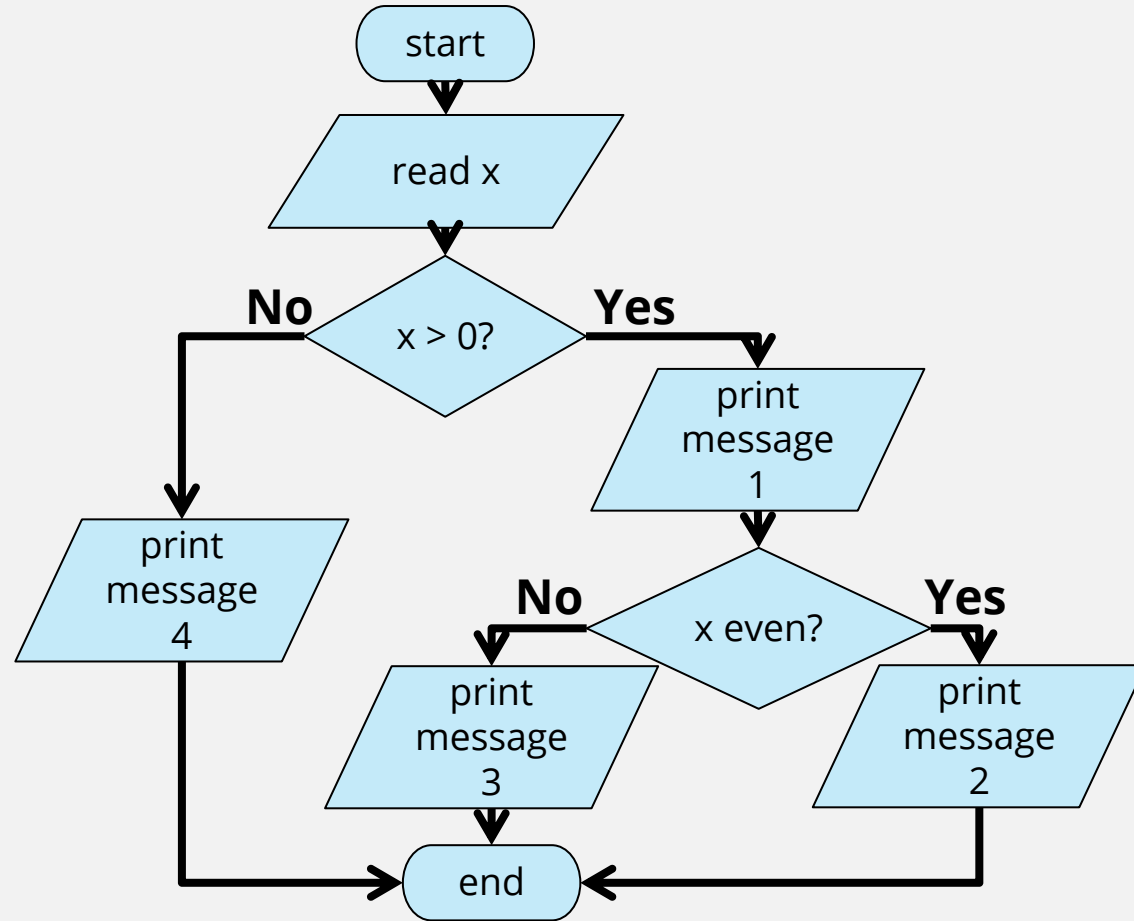


Condition 1

Condition 2

```
x = int(input())
if(x > 0):
    print(x, "is positive")
    if(x % 2 == 0):
        print("and even")
    else:
        print("and odd")
else:
    print(x, "is not positive")
```

Nested IF Statements Flow Chart



```
x = int(input())
if(x > 0):
    print(x, "is positive")
    if(x % 2 == 0):
        print("and even")
    else:
        print("and odd")
else:
    print(x, "is not positive")
```

Examples

IF statement

Nested IF
statement 1

Nested IF
statement 2

```
cold = input("Is it cold outside? ")
raining = input("Is it raining outside? ")

if(cold == "yes"):
    if(raining == "yes"):
        print("Take a jacket and an umbrella")
    else:
        print("Take a jacket but not an umbrella")
else:
    if(raining == "yes"):
        print("Take an umbrella but not a jacket")
    else:
        print("Take neither an umbrella nor a jacket")
```

Body 1

Body 2

```
Is it cold outside? no
Is it raining outside? yes
Take an umbrella but not a jacket
```


Examples

IF statement

Nested IF
statement 1

Nested IF
statement 2

```
x = int(input("enter x: "))
y = int(input("enter y: "))
z = int(input("enter z: "))
```

```
if(x > y):
    if(x > z):
        print("largest number is", x)
    else:
        print("largest number is", z)
else:
    if(y > z):
        print("largest number is", y)
    else:
        print("largest number is", z)
```

```
enter x: 2
enter y: 6
enter z: 3
largest number is 6
```

Body 1

Body 2

Note: this program takes 3 inputs and prints the largest

Try It Yourself

Opening times for a bank branch are:

Weekdays: 09:00-17:00

Weekend: Closed

Write a program in Python environment that takes 2 inputs, day of the week and current time, and outputs whether the bank branch is open or closed

Note: time can just be an integer from 0 to 24 hours