

IF Statements

Programming and Algorithms

Lecture by
Dr Daniil Osudin

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

Hello World!
Hello World!
Hello World!

What will we Cover?

- IF statements
- Using the Boolean data type

Flow Control Statements

Programs looked at so far execute sequentially from beginning to the end in a linear way

Flow control statements allow us:

- To alter sequential execution
 - Skip a part of the code if needed
 - Select between alternative options
- To program decision making

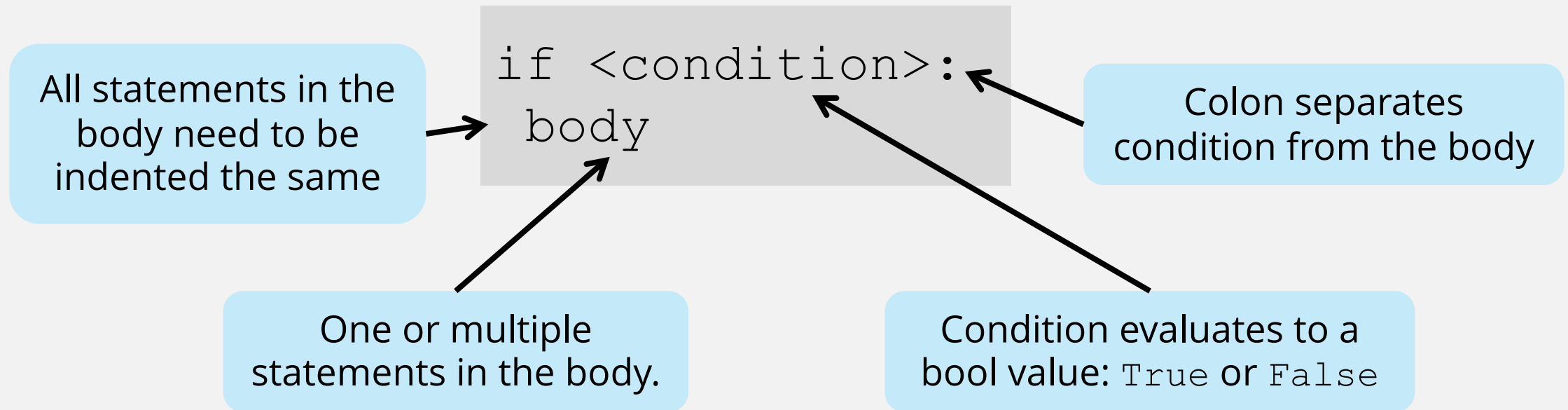
Examples I

If a condition is satisfied, take some action:

- If you turned left you will arrive a town A
- If Jack is tired, he drinks coffee
- If the homework is finished, a child is allowed to play games

IF Statements in Python I

IF statement syntax and formatting:



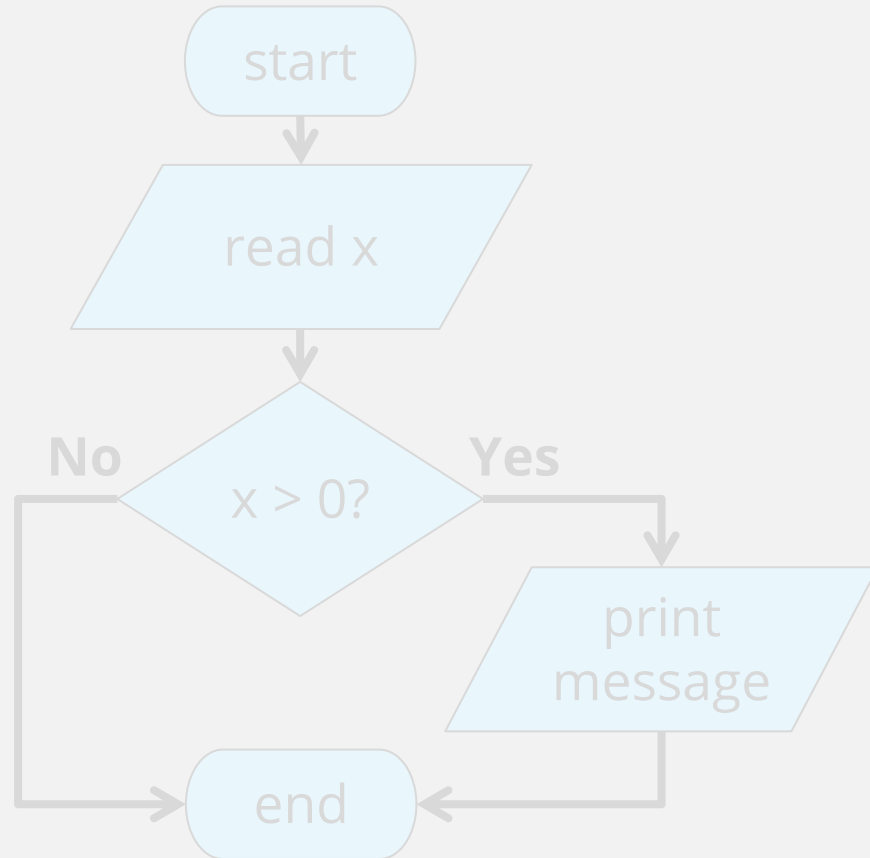
IF Statements in Python II

- The code before the if statement is executed
- body is executed only if the condition is `True` and is skipped if the condition is `False`
- Code after the if statement is executed

```
x = 1
if (x > 0) :
    x += 1
print(x)
```

```
y = -1
if (y > 0) :
    y += 1
print(y)
```

IF Statement Flow Chart



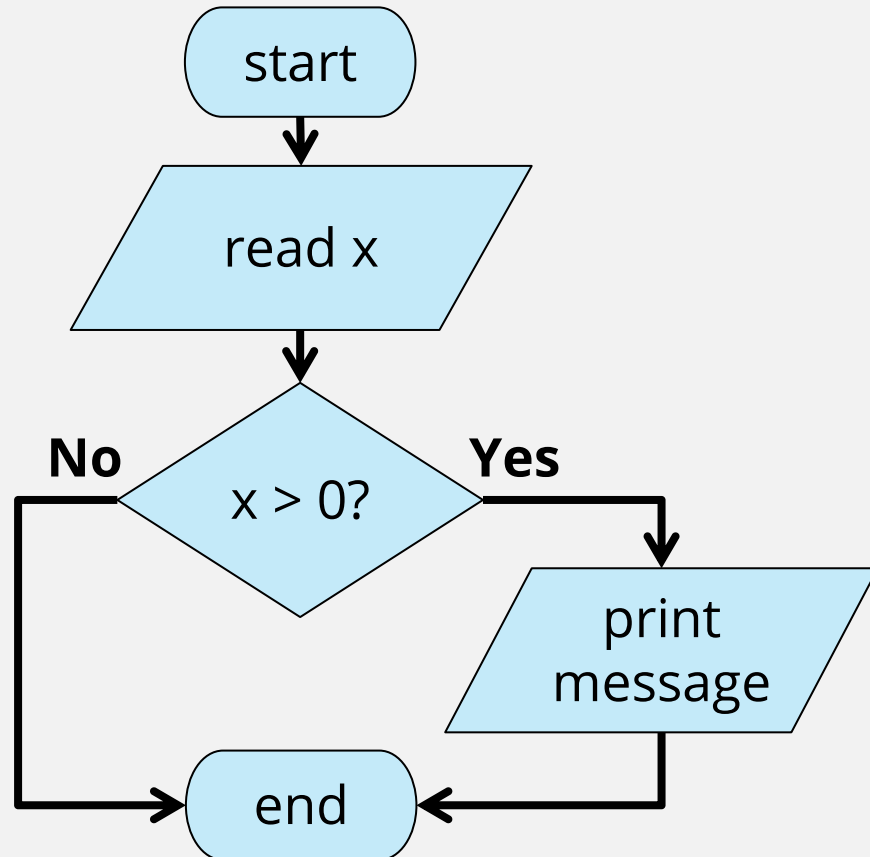
Condition

```
x = int(input())  
if (x > 0):  
    print(x, "is positive")
```

Body
indentation

Body is only executed
when condition is True

IF Statement Flow Chart



Condition

```
x = int(input())  
if (x > 0):  
    print(x, "is positive")
```

Body
indentation

Body is only executed
when condition is `True`

Examples I

```
x = int(input())  
if(x > 5):  
    print("Your number is greater than 5")
```

Condition

Body

4

Input is not
greater than 5

```
x = int(input())  
if(x > 5):  
    print("Your number is greater than 5")
```

Condition

Body

6

Your number is greater than 5

Input is greater
than 5

Examples I

```
x = int(input())
```

```
if(x > 5):  
    print("Your number is greater than 5")
```

Condition

Body

4

Input is not
greater than 5

```
x = int(input())
```

```
if(x > 5):  
    print("Your number is greater than 5")
```

Condition

Body

6

Your number is greater than 5

Input is greater
than 5

Examples II

```
x = int(input("Enter a whole number "))  
if(x % 2 == 0):  
    print("Your number is even")
```

Condition

Body

Enter a whole number

$x \% 2$ will return
the remainder of
the integer
division of x by 2

```
x = int(input("Enter a whole number "))  
if(x % 2 == 0):  
    print("Your number is even")
```

Enter a whole number 12
Your number is even

Examples II

```
x = int(input("Enter a whole number "))  
if(x % 2 == 0):  
    print("Your number is even")
```

Condition

Body

Enter a whole number

12

$x \% 2$ will return
the remainder of
the integer
division of x by 2

```
x = int(input("Enter a whole number "))  
if(x % 2 == 0):  
    print("Your number is even")
```

Enter a whole number 12
Your number is even

Try It Yourself

Enter and run the following
statements in the python
environment

```
x = 5
if(x > 3):
    x -= 3
print(x)
```

```
code = input()
if(code == "123"):
    print("unlocked")
```

```
name = input("name: ")
if(name != ""):
    print("Your name is:", name)
```