

Conditional 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?

- Conditional IF statements
- Using non-Boolean values in the IF condition

Non-Boolean IF Condition

- Condition of the IF statement can be a non-Boolean expression
- For numeric data types, 0 or 0.0 is treated as `False`, while any other non-zero value is treated as `True`
- For the String data type, an empty String "" is treated as `False`, while any non-empty string is treated as `True`

Non-Boolean IF Condition Examples

Boolean

```
if(True):  
    print(1)
```

1

```
if(False):  
    print(1)
```

String

```
if("False"):  
    print(1)
```

1

```
if(""):  
    print(1)
```

Numeric data types

```
if(124):  
    print(1)
```

1

```
if(0):  
    print(1)
```

```
if(0.1):  
    print(1)
```

1

```
if(0.0):  
    print(1)
```

Non-Boolean IF Condition Examples

Boolean

```
if(True):  
    print(1)
```

1

```
if(False):  
    print(1)
```

String

```
if("False"):  
    print(1)
```

1

```
if(""):  
    print(1)
```

Numeric data types

```
if(124):  
    print(1)
```

1

```
if(0):  
    print(1)
```

```
if(0.1):  
    print(1)
```

1

```
if(0.0):  
    print(1)
```

Conditional IF Statements

- Using an if statement as a conditional operator as part of another statement

Example

IF statement

- If it is the start of a sentence, capitalise the next letter

Conditional IF statement

- Write uppercase letter if it is the start of the sentence, otherwise write lowercase letter

Conditional Operator in Python

Expressions are single statements, unlike regular if statement bodies.

```
expression 1 if (condition) else expression 2
```

Expression 1 is executed if the condition evaluates to `True`

Expression 2 is executed if the condition evaluates to `False`

Conditional IF Statement in Python

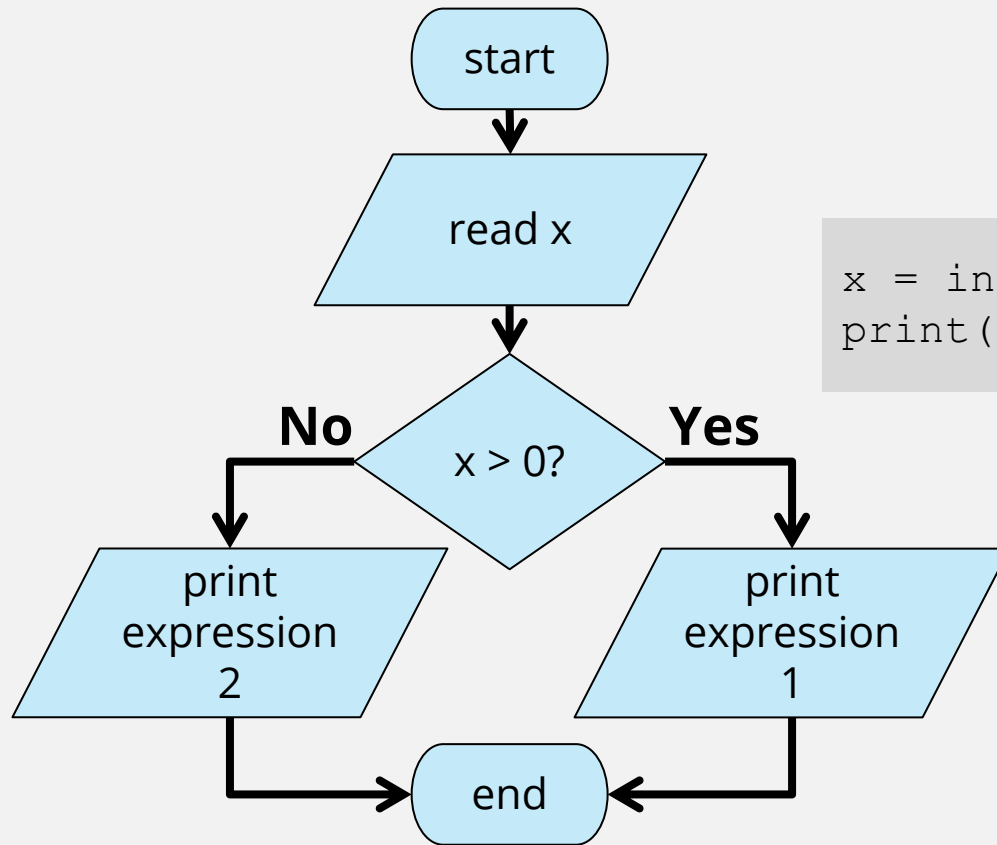
IF ELSE statement example

```
x = int(input())  
if(x > 0):  
    print(x, "is positive")  
else:  
    print(x, "is not positive")
```

Equivalent conditional IF statement example

```
x = int(input())  
print(x, "is positive" if(x > 0) else "is not positive")
```

Conditional IF Statement Flow Chart



Condition

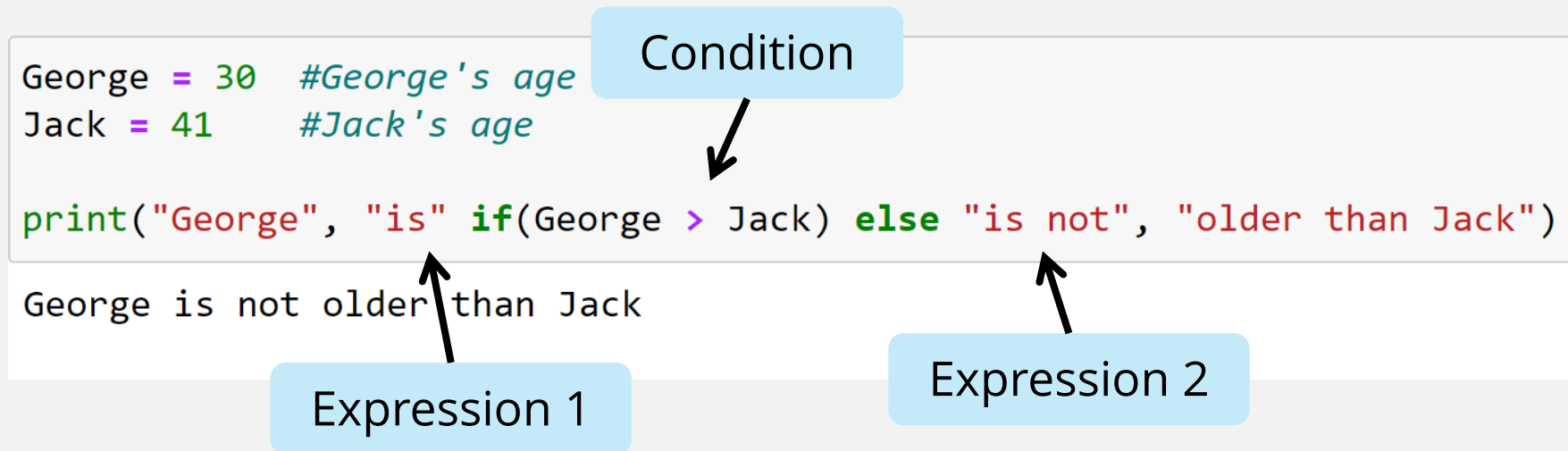
```
x = int(input())  
print(x, "is positive" if(x > 0) else "is not positive")
```

Executed when
condition is True

Executed when
condition is True

Note: the flow chart is the same as
for the ELSE IF statement

Examples



Examples

```
answer = input("What programming language are we using? ")  
print("Correct!" if(answer == "Python") else "Incorrect")
```

What programming language are we using? Java
Incorrect

Expression 1

Condition

Expression 2

```
answer = input("What programming language are we using? ")  
print("Correct!" if(answer == "Python") else "Incorrect")
```

What programming language are we using? Python
Correct!

Try It Yourself

Rewrite the following statement as a conditional IF statement in the python environment:

```
x = int(input("enter a whole number: "))
y = 6
if(x < y):
    print("your number is smaller than", y)
else:
    print("your number is", y, "or greater")
```