Lecture 2 Introduction to Computer Science

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Subjects Seen
String object type, branching and conditionals, indentation and iteration/loops

1 Strings

Letters; Special characters; Spaces; Digits
Strings variables need to be enclosed in quotation marks, or single quotes.
greetings = ”hello there”
To concatenate strings we use ”+”. For example,
name = ”Ana”
phrase = greetings + ” ” + name
This will give us
phrase = hello there Ana

1.1 Input and Output

To output information to the console we use the **’print’** built-in function.
Example.
x = ”this is a written message”
print(x)
Output: this is a written message
To receive information instead of outputting we use the **input** built-in function.
Example.
text = input(”Type anything: ”) user: anything
print(text)
Output: anything

2 Comparison Operators

Consider i and j are variables names of int or string type.
Float could be used too but is not advised, as they are volatile when trying to compare it.
See below some comparison examples.
$i > j$ or $i < j$
$i >= j$ or $i <= j$
$i == j$
$i != j$
They are evaluated and returns **True** or **False.**

3 Logic Operators

Let a and b are variable names (with Boolean values)

- and: a and b, means a and b need to be True to be True.
- or: a or b, means at least one of them needs to be True to the expression to be True.
- not: not a, not b, means whatever a or b is it will be reversed.

4 Branching

To control flow we need Branching, and for this we use the **if-else** expression.

if-else structure:

if $<$ *condition* $>$:
  $<$ *expression* $>$
else:
  $<$ *expression* $>$

If the condition is not matched, it'll execute the expression inside the else.

We may also have the **elif** statement, this will be basically an **else** statement but with a condition to be met, so we can have multiple branching.

if $<$ *condition* $>$:
  $<$ *expression* $>$
elif $<$ *condition* $>$:
  $<$ *expression* $>$
else:
  $<$ *expression* $>$

5 Indentation

Indentation is the base of Python.

Differently from other languages, Python doesn't use curly brackets to indent statements, it use tabs indentation.

6 While-loops

The while structure works like an if-else except it keeps repeating the expresisons inside the while statement until the condition is not met (False).

While Structure

while $<$ *condition* $>$:
    $<$ *expression* $>$
    ...

7 For-loops

The for-loop structure works as a form of iteration with a known number of times you want the loop to last.

For Structure

for $<$ *iterable* $-$ *variable* $>$ in $<$ *range* $>$:
  $<$ *expression* $>$

This structure can be highly changed, you can have more than one variable iterating, if having the accordingly range; You can have the range to be with the built-in function range, where you may specify the start, stop and increment. But you can also have another methods of range, this will depend on your needs.

Break Statement

The break statement is a built-in function that'll exit the current loop you might be in.

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