Control Flow

Booleans : True False

Evaluate to booleans

Comparison Operators:

		Ex.	Evaluates To
==	equal to	6 == 7	False
!=	not equal to	6 != 7	True
>	greater than	6 > 7	False
<	less than	6 < 7	True
>=	greater than or equal to	6 >= 7	False
<=	less than or equal to	6 <= 7	True

Fill in

6 >= 7

6 > 7 or 6 == 7
False or False
False

6 <= 7

6 < 7 or
6 == 7

True or False

```
x = input("Enter a number: ")
if x < 10 :
    print("less than 10")
elif x == 10
    print("equal to 10")
else :
    print("greater than 10")
```

branches

runs if cond 1 is True

runs if cond 1 False
cond 2 True

runs if cond 1 F
cond 2 F

The computer first looks at if and in the end only the commands of one of the branches is executed.

What would Python print if :

x = 5 ? less than 10

x = 20 ? greater than 10

x = 10 ? equal to 10

Logical Operators: and, or, not — negation

both either

True and True : True

False and False : False

True and False: False

True or False: True

True or True: True

False or False: False

not True: False

Write an if statement that prints "Let's go to the beach" if it's hot and it's summer.

```
hot = input("Is it hot? Yes or No: ")
summer = input("Is it summer? Yes or No: ")
```

Hint: You can compare strings to see if they're equal using ==

Short circuiting:

ex. False and True

(not True) and False

False and False

Useful for avoiding errors

ex. 5/x > 1 vs x != 0 and 5/x > 1

Loops:

for Loop:

```
for i in range(num):
    line to execute
```

while loop:

```
while (x < 10):
    line to execute
```

Ex. Using a for loop, print the numbers 1 to 5

```
→ for i in range (5):    start 0
                         end : n-1
→     print (i + 1 )     n
```

$i = \cancel{0}\ \cancel{1}\ 2$

1
2
3
4
5

i = 0
i = n-1

Ex. Using a while loop, print the numbers 1 to 5

```
    x = 1
→ while (x < 6)
      print (x)
      x += 1
```

x ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ 6

1
2
3
4
5

Generally use while loop when you don't know how many times you want your code to run.

Use a for loop to print all even numbers from 0 to x where x is a user inputted number.

$[1, 2, \underrightarrow{5}, 7, 9]$

```
i = 0
while (x[i] != 5)
    print(x[i])
    i += 1
```