CONDITIONAL STATEMENTS

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Assign Multiple Values

```
x, y, z = "Orange", "Banana", "Cherry"
print(x)
print(y)
print(z)
```

```
Orange
Banana
Cherry
```

2

2

Assign Multiple Values

```
x = y = z = “Banana"
print(x)
print(y)
print(z)
```

```
Banana
Banana
Banana
```

3

3

Conditions

Python supports the usual logical conditions from mathematics:

- Equals: `a == b`
- Not Equals: `a != b`
- Less than: `a < b`
- Less than or equal to: `a <= b`
- Greater than: `a > b`
- Greater than or equal to: `a >= b`

These conditions can be used in several ways, most commonly in "if statements" and loops.

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if <test condition>:
  <block if the test condition is true>
[**elif <test condition>**:
  <block if the test condition is true>]
[**else**:
  <block if the test conditions is false>]

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If … else statement (case 1)

```
a = 32
b = 100
if b > a:
  print("b is greater than a")
```

```
b is greater than a
```

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If … else statement (case 1)

```
a = 32
b = 100
if b > a:
print("b is greater than a") # you will get an error
```

tab

```
  File "<ipython-input-4-9000bb591814>", line 4
    print("b is greater than a")
        ^
IndentationError: expected an indented block
```

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If … else statement (case 2)

```
a = 5
b = 5
if b > a:
  print("b is greater than a")
elif a == b:
  print("a and b are equal")
```

```
a and b are equal
```

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If … else statement (case 3)

```
a = 70
b = 23
if b > a:
  print("b is greater than a")
elif a == b:
  print("a and b are equal")
else:
  print("a is greater than b")
```

```
a is greater than b
```

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If … else statement (case 4)

```
a = 80
b = 32
if b > a:
  print("b is greater than a")
else:
  print("b is not greater than a")
```

```
b is not greater than a
```

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Short hand if

```
a = 50
b = 33
if a > b: print("a is greater than b")
```

```
a is greater than b
```

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Short hand if … else

```
a = 2
b = 35
print("A") if a > b else print("B")
```

```
B
```

12

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Short hand if … else

```
a = 26
b = 26
print("A") if a > b else print("=") if a == b else print("B")
```

```
=
```

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Example 1:

```
#Kiểm tra số nguyên nhập có phải là số chẵn không.
x = int(input('Nhập số nguyên x: '))
if x % 2 == 0:
    print('x là số chẵn')
else:
    print('x là số lẻ')
```

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Example 2: Tính $f(x)=\begin{cases} 2x+1 & nếu\ x<5 \\ x^2+3x & nếu\ x>5 \\ x^3+2x^2 & nếu\ x=5 \end{cases}$

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Example 2: Tính $f(x)=\begin{cases} 2x+1 & nếu\ x<5 \\ x^2+3x & nếu\ x>5 \\ x^3+2x^2 & nếu\ x=5 \end{cases}$

```
x = float(input('Nhập số x: '))
if x < 5:
    y = 2*x+1
elif x > 5:
    y = x**2+3*x
else:
    y = x**3+2*x**2
print('f(x) = ',y)
```

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Example 2: Tính $f(x)=\begin{cases} 2x+1 & nếu\ x<5 \\ x^2+3x & nếu\ x>5 \\ x^3+2x^2 & nếu\ x=5 \end{cases}$

```
x = float(input('Nhập số x: '))
if x < 5:
    y = 2*x+1
    print('f(x) = 2*%.1f+1 = %.1f' %(x,y))
elif x > 5:
    y = x**2+3*x
    print('f(x) = %.1f^2+3*%.1f = %.1f' %(x,x,y))
else:
    y = x**3+2*x**2
    print('f(x) = %.1f^3+2(%.1f^2) = %.1f' %(x,x,y))
```

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Using and

```
a = 95
b = 18
c = 104
if a > b and c > a:
  print("Both conditions are True")
```

```
Both conditions are True
```

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Using or

```
a = 95
b = 18
c = 104
if a > b or a > c:
  print("At least one of the conditions is True")
```

```
At least one of the conditions is True
```

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Nested if

```
x = 8
if x > 5:
  print("Above five,")
  if x > 7:
    print("and also above seven!")
  else:
    print("but not above seven.")
```

```
Above five,
and also above seven!
```

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The while loop

```
while <test condition>:
  <block if test condition is TRUE>
```

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The while loop

```
i = 1
while i < 6:
  print(i)
  i += 1
```

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The break statement

```
i = 1
while i < 6:
  print(i)
  if i == 3:
    break
  i += 1
```

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The continue statement

```
i = 0
while i < 6:
  i += 1
  if i == 3:
    continue
  print(i)
```

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The else statement

```
i = 1
while i < 6:
  print(i)
  i += 1
else:
  print("i is no longer less than 6")
```

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Example 3:

```
# Tính n! = 1*2*3*....*n ( n là số nguyên dương được nhập)
n = int(input('Nhập số nguyên dương n: '))
F = 1
while i<=n:
    F = F*i
    i += 1
print('n! = ',F)
```

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The for loop

```
for <variable> in <range/list/tuple/string>:
  <block>
```

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The for loop

```
for x in range(6):
  print(x)
```

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The for loop

```
for x in range(2, 6):
  print(x)
```

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The for loop

```
for x in range(2, 20, 3):
  print(x)
```

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else in for loop

```
for x in range(6):
  print(x)
else:
  print("Finally finished!")
```

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else in for loop

```
for x in range(6):
  if x == 3:
    break
  print(x)
else:
  print("Finally finished!")
```

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Example 4:

```
# Tính S = 1+2+3+...+n ( n là số nguyên dương được nhập)
n = int(input('Nhập số nguyên dương n: '))
S = 0
for i in range(n+1):
    S = S+i
print('S = %d' %S)
```

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Example 5:

```
# In tam giác theo mẫu
h = int(input('Nhập độ cao tam giác h: '))
for i in range(1,h+1):
    for j in range(1,i):
        print('*',end='')
    print('*')
```

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Example 6:

```
#Tính tổng các ký số cấu thành số nguyên n được nhập
n = int(input('Nhập n: '))
S=0
while n != 0:
    S = S + n%10
    n = n // 10
print('Tổng tính được là:', S)
```

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