



Simple Programming

Lesson 2: IF and Nested Statements

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Lesson Overview

Objectives

Understand the use of If and Nested IF statements in Python Programming.

Understand the use of the different operators in Python.

Understand the following terms, **IF**, **ELSE** & **ELIF**

Outcomes

Task 1	Job Type	Task 8	Using And in Logical Tests
Task 2	Stock Level	Task 9	Using And in Logical Tests Ext
Task 3	Year Group	Task 10	Using Or in Logical Tests
Task 4	Sales Target	Task 11	Using != and len in Logical Tests
Task 5	Weekly Pay	Task 12	Grades Extension
Task 6	Taxi Service		
Task 7	Goal Bonus		

Starter - IF/Nested Overview (Discuss)

1. Simple script to work whether employees are **part time** or **fulltime**.
2. **Logical Test:** Worked Hours less than 15
3. True: **"You are a part time employee"**
4. False: **"You are a full time employee"**

if

```
name=(input("Enter your name: "))
print (name)

hours=int(input("How many hours do you work: "))
print (hours)

if hours < 15:
    print ("You are Part Time")
else:
    print ("You are Full Time")
```

Logical Test

IF Statement: True

IF Statement: False

else:

```
if hours < 15:
    print ("You are Part Time")
elif hours < 40:
    print ("You are Full Time")
else:
    print ("You have worked overtime")
```

Logical Test

1. IF Statement: True

2. IF Statement: True

IF Statement: False

elif

else:

Python Operators

Operator	Description	Example
=	Assign a value to a variable	A = 2
==	Checks to see if two values are equal	1 == 1 (True) 1 == 2 (False)
!=	Checks to see if two values are not equal	1 != 2 (True) Apple != Pear (True)
>	Checks to see left value is greater than the right value.	2 > 1 (True) 3 > 4 (False)
<	Checks to see left value is less than the right value.	2 < 4 (True) 4 < 3 (False)
>=	Checks to see left value is greater than or equal to the right value.	3 >= 2 (True) 2 >= 2 (True)
<=	Checks to see left value is less than or equal to the right value.	1 <= 2 (True) 2 <= 2 (True)

Task 1: Job Type

1. Create a simple script to work whether employees are **part time** or **fulltime**.
2. Logical Test: Worked Hours less than 15
3. True: **"You are a part time employee"**
4. False: **"You are a full time employee"**

```
name=(input("Enter your name: "))
print (name)

hours=int(input("How many hours do you work in a week: "))
print (hours)

if hours <15:
    print ("You work "+str(hours)+" hours and you a Part Time Employee.")
else:
    print ("You work "+str(hours)+" hours and you a Full Time Employee.")
```

Task 2: Stock Level (Nested)

1. Create a simple script to work the reorder amount for the Maze Runner Book.
2. Logical Test: Stock Level <1, True: "reorder 20"
3. Logical Test: Stock Level <5, True: "reorder 15"
4. Logical Test: Stock Level <10, True: "reorder 10"
5. False: "Fully Stocked"

```
stocklevel=int(input("Enter stock level for the Maze Runner Book: "))

if stocklevel <1:
    print ("Reorder 20 Books")
elif stocklevel <5:
    print ("Reorder 15 Books")
elif stocklevel <10:
    print ("Reorder 10 Books")
else:
    print ("Fully Stocked")
```

Task 3: Year Group

1. Create a simple script to work the Year Group and Head of Year.
2. If the Logical Test are True then print the following:

You are in Year _____

Your Head of Year is _____ - refer to the print screen for the head of year.

3. If you have typed in an **invalid Year group** then print the following:

You did not enter a valid year group

```
year=int(input("Enter your year group (7,8,9): "))

if year == 7:
    print ("You are in Year "+str(year))
    print ("Your Head of Year is Mr Brown.")
elif year == 8:
    print ("You are in Year "+str(year))
    print ("Your Head of Year is Ms Jones.")
elif year == 9:
    print ("You are in Year "+str(year))
    print ("Your Head of Year is Mr Abdulla.")
else:
    print ("You did not enter a valid year group.")
```

Task 4: Sales Target

1. Create a simple script to work the sales target.
2. Logical Test: brand == Apple , True: Sales = 10
3. Logical Test: brand == Samsung, True: Sales = 15
4. Logical Test: brand == Nokia , True: Sales = 20
5. False: Sales = 25

Include the print statement shown in the print screen.

```
name=(input("Enter your name: "))
brand=(input("Enter the mobile phone brand: "))

if brand == "Apple" or brand == "apple":
    sales=10
elif brand == "Samsung" or brand == "samsung":
    sales=15
elif brand == "Nokia" or brand == "nokia":
    sales=20
else:
    sales=25

print ("Your name is "+name+" and you have entered the "+brand+" phone brand.")
print ("You are expected to sell "+str(sales)+" phones.")
```

== checking to see if values are equal

= Assigning Variable

Task 5: Weekly Pay

1. Create a simple script to work employees weekly salary.
2. **Job Type:** Less than 15 hours (Part Time), 15 Hours or More (Full Time)
3. **Rate of Pay:** Part Time (£5), Full Time (£10)
4. **Weekly Pay:** Hours * Rate of Pay (FT or PT)

```
ptpay=5
ftpay=10
name=(input("Enter your name: "))
hours=int(input("How many hours do you work per week: "))

if hours <15:
    jobtype = "Part Time"
else:
    jobtype = "Full Time"

if jobtype == "Part Time":
    weeklypay = hours*ptpay
else:
    weeklypay = hours*ftpay

print ("Your name is "+name+" and you are a "+jobtype+" employee.")
print ("Your weekly pay is £"+str(weeklypay))
```

= Assigning Variable

== checking to see if values are equal

= Assigning Variable

Task 6: Taxi Service

Create a simple script to work out the Taxi Service & Taxi Fare. You also need to *Add a Basic Fare* to (*Taxi Charge per Mile * Miles*):

- If miles inputted is **less than 7** use Fast Cars Taxi service
- Equal to or more than 7 and **less than 16** miles use Street Cars service
- More than or equal to 16 miles use Karwa taxi service

Include the print statement shown below.

```
print("Welcome to the taxi booking service")
print("Your taxi service is dependent on the number of miles you are travelling.")

name=(input("Enter your name: "))
miles=int(input("Enter how many miles you are travelling: "))
basicfare=5

if miles <7:
    taxiservice = "Fast Cars"
elif miles <16:
    taxiservice = "Street Cars"
else:
    taxiservice = "Karwa"

if taxiservice == "Fast Cars":
    cost=basicfare + (miles*2)
elif taxiservice == "Street Cars":
    cost=basicfare + (miles*10)
else:
    cost=basicfare + (miles*5)

print ("Your name is "+name+" and your taxi service is "+taxiservice+".")
print ("You are travelling "+str(miles)+" miles and your fare is £"+str(cost)+".")
```

= Assigning Variable

== checking to see if values are equal

= Assigning Variable for cost

	Charge per mile
Fast Cars	£ 2.00
Karwa	£ 5.00
Street Cars	£ 10.00
Basic Fare:	£ 5.00

Task 7: Goal Bonus (Extension)

Create a simple script to work out the **Bonus Type (A,B,C)** & the **Final Bonus Amount**
Add **Basic Bonus** to (**Goals* Bonus per Goal**):

- If goals scored is **less than 16** than goal bonus is type **A**.
- More than or equal to **16** and **less than 30** than goal bonus is type **B**.
- More than or equal to **30** than goal bonus is type **C**.

User Input: Name, Goals Scored (INT)

Print Statements:

Your name is ____ and you have scored ____ number of goals.

Your Bonus Type is _____.

Your Final Bonus amount is _____.

Bonus Type	Bonus per Goal
Bonus A	£ 1,000.00
Bonus B	£ 1,500.00
Bonus C	£ 5,000.00
Basic Bonus:	£ 15,000.00

Task 8: Using **And** in Logical Tests

Create a simple script to include **AND** too check for a number of logical Tests.

User Input: Test scores for Maths, English and Science

If all of the test scores are above 50 then **print you have passed the year.**

If one of the test scores is not above 50 then **print you have to repeat this year.**

```
maths=int(input("Enter your Maths marks: "))
english=int(input("Enter your English marks: "))
sciene=int(input("Enter your Science marks: "))
```

Each logical test has to be true when using **AND**.

```
if maths >=50 and english >=50 and science >=50:
    print ("You have passed this year.")
else:
    print ("You have to repeat the year.")
```

Task 9: Using **And** in Logical Tests Extension

Create a simple script to include **AND** too check for a number of logical Tests.

User Input: Their mobile phone sales number for the week.

If the mobile phones sales number is:

- Greater than **20**
- Equal to and less than **35**

Then print **sales target has been achieved.**

If one of the logical tests is not true then print:

You have not achieved your sales Target.

Task 10: Using Or in Logical Tests

Create a simple script to include **OR** too check for a number of logical Tests.

If students **have scored less than 35** in **any of the exams** they will be entered for the **foundation exam**.

If students have **achieved more than 35 in all their exams** they will then be entered for the **higher paper**.

```
ict1=int(input("Enter your ICT paper 1 marks: "))
ict2=int(input("Enter your ICT paper 2 marks: "))
ict3=int(input("Enter your ICT paper 3 marks: "))
```

Only one logical test has to be true when using OR.

```
if ict1 <35 or ict2 <45 or ict3 <55:
    print ("You will sit the foundation paper.")
else:
    print ("You will sit the higher paper.")
```

Task 11: Using != and len in Logical Tests

Create the following scripts using != and len

!= - Checks to see if two values are not equal

len – checks the number of characters

```
password="apple"
```

apple is assigned as the password

```
login=(input("Enter the password to login: "))
```

```
if login != password:
```

!= checks to see if the login is not the same as the password.

```
    print ("You have entered the incorrect password.")
```

```
else:
```

```
    print ("You have entered the correct password.")
```

```
setpassword=(input("Enter a password which contains 6 characters: "))
```

```
if (len(setpassword))==6:
```

len checks to see if the password length is equal to 6.

```
    print ("password is suitable.")
```

```
else:
```

```
    print ("password must include 6 characters.")
```

Task 12: Grades Extension

1. Create a program to work out the pupils grade for **English, Maths and Science**.
2. The marks then have to be totalled and then a grade needs to be given for the average.
3. If the average is above 60 then they have passed the year.
4. Include relevant print statements to share the following information.

User Input: Name, subject marks (max 100)

Extra Variables: Total Marks, Average



Checking Grades

1st True Statement

>90, A* Grade

2nd True Statement

>80, A Grade

3rd True Statement

>70, B Grade

4th True Statement

>60, C Grade

5th True Statement

>50, D Grade

False: anything less than

50 - Fail

Print Statements:

Your name is ____ and your total mark is _____.

Your average mark is ____ and you have _____ the year.

Your Grade for English is: ____

Your Grade for Maths is: ____

Your Grade for Science is: ____

Homework Extension

**Can you make your own
program containing
variables and If/Nested
Statements?**

Plenary – Refer to the Lesson Objectives

Objectives

Understand the use of If and Nested IF statements in Python Programming.

Understand the use of the different operators in Python.

Understand the following terms, **IF**, **ELSE** & **ELIF**

Plenary Task (Q&A)

Peer assess each other scripts.

Discuss the levels pupils have achieved for this task.

Question: What is the purpose of If and Nested Statements?