

Python programming challenges: if and condition statements

The “If” “else” tests a condition and runs different commands depending upon whether the condition is “True” or “False”.

Challenge C1

The correct password to enter a computer system is “friend”. Write a program that asks the user to input a password.

If the “password == “friend” ” is true the program displays “Access granted”.

If it is false the program displays “Access denied”.

```
password = input("Enter password: ")
if password == "friend":
    print("Access granted")
else:
    print("Access denied")
```

Enter the program code and test the program works with both valid and invalid passwords.

Change the program to accept a different password.

Challenge C2

The lights at a pedestrian crossing can be red or green.

Write a program that asks the user to enter the colour of the light at a pedestrian crossing.

If light == “red” is true the program displays “Do not cross”.

Else the program displays “You may cross”.

Hint: use a variable called “light” to store the colour of the light.

Check the program works by “red” or “green”.

Challenge C3

When you enter a new password you are asked to re-enter the password to check you have not made a mistake.

Write a program that asks the user to input a password and then asks them to re-enter the password.

Hint: Use two variables firstPassword and secondPassword.

If firstPassword == secondPassword is true then program displays “Passwords are identical”.

Else the program displays “Passwords are not the same. Please try again”.

Challenge C4

The pass mark for an exam is 55. Write a program that asks the user to enter their mark.

If the mark is greater or equal to 55 the program displays “Congratulations – you have passed”.

Else the program displays “Sorry – you have failed”.

Hint: Remember when inputting numbers that you have to convert from being a string to an integer using the int command eg number = int(input(“Enter number”))

Test the program works by entering different marks.

THINGS TO CHECK if your program does not work

- Have you used two equal signs if the condition is testing equivalence? **if light == “red”:**
- Have you used one equal signs to assign a value to a variable? **number = 78**
- Is there a colon at the end of “if” and the “else”?
- Are the commands indented by 5 spaces under “if” and “else” (options/configure - Indentation set to 5)
- Is spelling of the variable names the same throughout the program?
- Use comments to explain your program

Challenge C5

People more than 18 years old can vote. Write a program that asks the user to enter their age. If the age is greater or equal to 18 the program displays "You can vote". Else the program displays "You are too young to vote".

Hint: use variable called "age" to store the age of the user.

Challenge C6

A mobile phone displays a message telling you how many unread text messages you have. Use a variable called "numberOfTexts" to store the number of text messages.

If there are zero (numberOfTexts = 0) the program displays "No messages".

Else the programs displays "You have <number> of text messages (where <number> is the number of messages).

Extension Challenge C7: Using elif

- This program asks the user to enter a mark and then gives a grade for that mark.
- Enter and run the program code.
- Run the program a few times entering different marks between 0 and 100.

```
mark = int(input("Enter your mark"))
if mark >= 80:
    result = "A"
elif mark >= 60:
    result = "B"
elif mark >= 40:
    result = "C"
else :
    result = "D"
print("your result is", result) |
```

What range of marks gets each grade?

- A
- B
- C
- D

Extension Challenge C8: Using elif

Use the elif command to write a program to display the different states that water can be in depending upon its temperature. Write a program that asks the user to enter a number which represents the temperature of water.

If the number is less than or equal to zero the program displays "ice"

Else if the number is number is less than or equal to 100 the program displays "water"

Else the program displays "water vapour"

Further Extension:

Explore if and elif further...

[http://en.wikibooks.org/wiki/Non-Programmer's_Tutorial_for_Python_3/Print_version#6. Decisions](http://en.wikibooks.org/wiki/Non-Programmer's_Tutorial_for_Python_3/Print_version#6._Decisions)

Condition	Operator	Example
Equal to	==	Number == 55 Light = "Red"
Not equal to	!=	number != 71
Greater than	>	Number > 70
Less than	<	Number < 100
Greater than or equal to	>=	Number >= 34
Less than or equal to	<=	Number <= 21