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Introduction:

Learn how to use lists, to store lots of data in 1 variable.



Activity Checklist

Follow these **INSTRUCTIONS** one by one



Test your Project

Click on the green flag to **TEST** your code



Save your Project

Make sure to **SAVE** your work now

Step 1: It's nice to be nice

In this project, you'll make a program to give the user a randomly generated compliment!

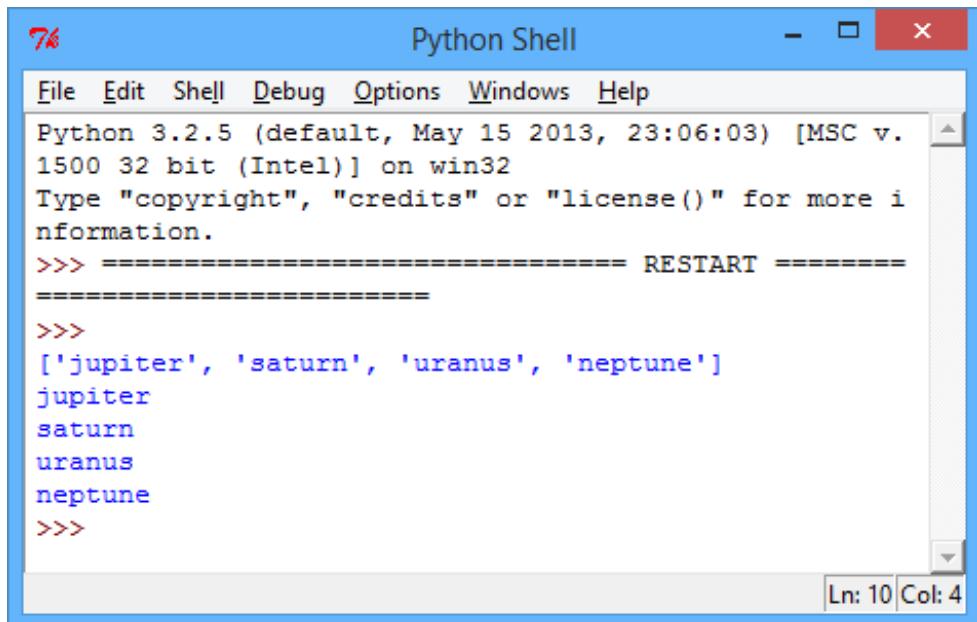
Activity Checklist

1. In your projects so far, you've used a variable to store a single piece of data, such as a name or a score. But what if you want to store lots of data? In Python, you can use a *list* to store lots of data in 1 variable:

```
bigPlanets = [ "jupiter" , "saturn" , "uranus" , "neptune"]
```

This list of text is also known as an *array* of text. To access items in the list, you just need to know the position of the item. Run this program to give yourself a better idea of how lists work:

```
bigPlanets = [ "jupiter" , "saturn" , "uranus" , "neptune"]
print( bigPlanets )
print( bigPlanets[0] )
print( bigPlanets[1] )
print( bigPlanets[2] )
print( bigPlanets[3] )
```



A screenshot of a Python Shell window. The title bar says "Python Shell". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Windows", and "Help". The main window displays the following text:

```
Python 3.2.5 (default, May 15 2013, 23:06:03) [MSC v. 1500 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
>>>
['jupiter', 'saturn', 'uranus', 'neptune']
jupiter
saturn
uranus
neptune
>>>
```

The status bar at the bottom right shows "Ln: 10 Col: 4".

As you can see, positions start at 0 and not 1, so `bigPlanets[1]` is "saturn" (the second item) and not "jupiter".

2. You can use a list called `compliments` to store all of the possible compliments for your compliment generator program, and then use `choice(compliments)` to choose a random compliment for the user:

```
from random import *

print("Compliment Generator")
print("-----")

compliments = [ "Great job on that thing you did. Really super." ,
                 "You have really really nice programming skills." ,
                 "You make an excellent human."
                ]

#print a random item in the 'compliments' list
print(choice(compliments))
print("You're welcome!")
```

A screenshot of a Windows-style application window titled "Python Shell". The title bar has a red "76" icon. The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Windows", and "Help". The main text area shows Python code and its output:

```
Python 3.2.5 (default, May 15 2013, 23:06:03) [MSC v.150
0 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more info
rmation.
>>> ===== RESTART =====
=====
>>>
Compliment Generator
-----
Great job on that thing you did. Really super.
You're welcome!
>>> |
```

The status bar at the bottom right shows "Ln: 9 Col: 4".

3. You could make your compliments a little more interesting, by combining random items from 2 different lists:

```
from random import *

print("Compliment Generator")
print("-----")

adjectives = [ "amazing" , "above-average" , "excellent" ]
hobbies = [ "riding a bike" , "programming" , "making a cup of
tea" ]

name = input("What is your name?: ")
print( "Here is your compliment" , name , ":" )

#get a random item from both lists, and add them to the
compliment
print( name , "you are" , choice(adjectives) , "at" ,
choice(hobbies) )
print( "You're welcome!" )
```

The screenshot shows a Python Shell window with the title 'Python Shell'. The window has a menu bar with File, Edit, Shell, Debug, Options, Windows, and Help. The main area displays the following text:

```
76 Python Shell
File Edit Shell Debug Options Windows Help
Python 3.2.5 (default, May 15 2013, 23:06:03) [MSC v.150
0 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more info
rmation.
>>> ===== RESTART =====
=====
>>>
Compliment Generator
=====
What is your name?: Dylan
Here is your compliment Dylan :
Dylan you are amazing at riding a bike
You're welcome!
>>> |
```

In the bottom right corner of the shell window, there is a status bar with 'Ln: 11 Col: 4'.



Save Your Project

Challenge: Adding more compliments

Try to think of some more compliments, and add them to your program! Remember that you need to add a comma (,) between the items in your lists.



Save Your Project

Step 2: Endless compliments



Activity Checklist

- Using what you know about `while` loops and `if` statements, you could modify your program to keep giving out compliments until the user decides to quit:

```
from random import *
```

```

#the program loops as long as this variable is 'True'
running = True

adjectives = [ "amazing" , "above-average" , "excellent" ]
hobbies = [ "riding a bike" , "programming" , "making a cup of
tea" ]

print("Compliment Generator")
print("-----")

name = input("What is your name?: ")

print('''
Menu
    c = get compliment
    q = quit
''')

while running == True:

    menuChoice = input("\n>_").lower()

    #'c' for a compliment
    if menuChoice == 'c':

        print( "Here is your compliment" , name , ":" )

        #get a random item from both lists, and add them to the
        #compliment
        print( name , "you are" , choice(adjectives) , "at" ,
choice(hobbies) )
        print( "You're welcome!" )

    #'q' to quit
    elif menuChoice == 'q':

        running = False

    else:

        print("Please choose a valid option!")

```

76 Python Shell

```
File Edit Shell Debug Options Windows Help
Python 3.2.5 (default, May 15 2013, 23:06:03) [MSC v.1500
32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
=====
>>>
Compliment Generator
-----
What is your name?: Dylan

Menu
c = get compliment
q = quit

>_c
Here is your compliment Dylan :
Dylan you are excellent at making a cup of tea
You're welcome!

>_c
Here is your compliment Dylan :
Dylan you are amazing at riding a bike
You're welcome!

>_q
>>>
```

Ln: 25 Col: 4

Remember that the the `while` loop continues to run as long as the variable `running` is set to `True`. If the user inputs `q` to quit, `running` is set to `False`.



Save Your Project

Step 3: Personalising compliments



Activity Checklist

1. Your compliment generator is starting to take shape, but it has a problem: what if your user can't ride a bike or make a cup of tea? In that case, your compliments won't be true, and won't cheer them up!

Let's modify your program, so that the user can choose to add or remove items from the `hobbies` list, to allow them to personalise the compliments they receive:

```
from random import *

running = True
adjectives = [ "amazing" , "above-average" , "excellent" ]
hobbies = [ "riding a bike" , "programming" , "making a cup of tea" ]

print("Compliment Generator")
print("-----")

name = input("What is your name?: ")

print('''
Menu
c = get compliment
a = add hobby to list
d = delete hobby from list
p = print hobbies
q = quit
''')

while running == True:

    menuChoice = input("\n>_").lower()

    #'c' for a compliment
    if menuChoice == 'c':

        print( "Here is your compliment" , name , ":" )

        #get a random item from both lists, and add them to the compliment
        print( name , "you are" , choice(adjectives) , "at" ,
choice(hobbies) )
        print( "You're welcome!" )

    #'a' to add a hobby
    elif menuChoice == 'a':
```

```

itemToAdd = input("Please enter the hobby to add: ")
hobbies.append(itemToAdd)

#'d' to delete a hobby
elif menuChoice == 'd':

    itemToDelete = input("Please enter the hobby to remove:")
)
hobbies.remove(itemToDelete)

#'p' to print the hobbies list
elif menuChoice == 'p':
    print(hobbies)

#'q' to quit
elif menuChoice == 'q':

    running = False

else:

    print("Please choose a valid option!")

```

As you can see, you can use `append()` to add to a list, and `remove()` to remove an item. Run this program, and personalise the hobbies in the list to suit you. Ask the program for compliments until you're in a good mood!

2. When testing the program above, did you run into any problems? At the moment, your compliment generator crashes if you try and remove a compliment that isn't in the list:

```

>_p
['riding a bike', 'programming', 'making a cup of tea']

>_d
Please enter the hobby to remove: speaking spanish
Traceback (most recent call last):
  File "C:/Desktop/comp.py", line 44, in <module>
    hobbies.remove(itemToDelete)
ValueError: list.remove(x): x not in list
>>> |

```

You can fix this problem, by first checking that the item to remove exists in the list. Replace your code to remove a hobby with this

code:

```
#'d' to delete a hobby
elif menuChoice == 'd':

    itemToDelete = input("Please enter the hobby to remove:
")
    #only remove an item if it's in the list
    if itemToDelete in hobbies:
        hobbies.remove(itemToDelete)
    else:
        print("Hobby not in list!")
```

Now run the program and try to delete a hobby that isn't in the list:

```
>_p
['riding a bike', 'programming', 'making a cup of tea']

>_d
Please enter the hobby to remove: speaking spanish
Hobby not in list!

>_
```

Ln: 24 Col: 2



Save Your Project

Challenge: Duplicate hobbies

Another problem with the program is that it is possible to add the same hobby more than once:

```
>_a  
Please enter the hobby to add: programming  
  
>_p  
['riding a bike', 'programming', 'making a cup of tea', 'programming']  
>_
```

Ln: 23 Col: 2

Can you fix this problem, so that a hobby can only be added if it isn't already in the list:

```
if itemToAdd not in hobbies:  
    #add code here...
```



Save Your Project

Challenge: Pet naming service

Write a program to help a new pet owner to name their pet:



The screenshot shows a Windows-style application window titled "Python Shell". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Windows", and "Help". The main window displays the following text:
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32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
=====
>>>
Pet naming service

You should name your new pet Martin
>>> |

Your program could:

- allow the user to add and remove names from the list;
- give different names for male and female pets, or different types of animal;
- ask the user how many names they need, in case they have more than 1 pet to name.



Save Your Project