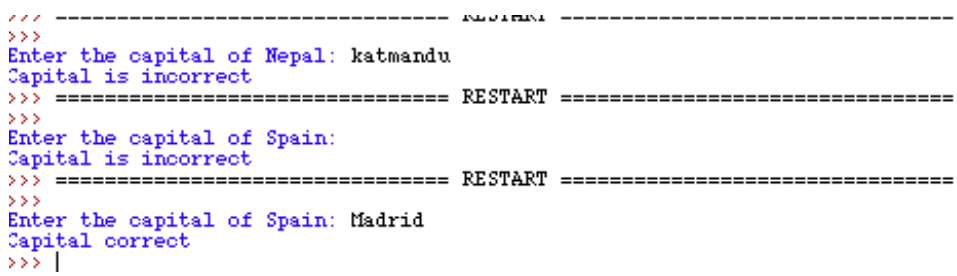
Lists development exercise:
Write a program that stores the names of ten countries in column1 and their capitals in column2. The program should then pick a random country and ask the user for the capital.

Display an appropriate message to the user to show whether they are right or wrong.



The python code for this particular problem

```
#Harry Robinson
#01-01-2015
#Testing the capital of countries

import random

countrylist = ['Germany','United
Kingdom','France','Spain','Austria','Italy','Nepal','Russia','Norwa
y','Denmark']
citylist =
['Berlin','London','Paris','Madrid','Vienna','Rome','Kathmandu','Mo
scow','Oslo','Copenhagen']
def randomCountry():
    guessedIndex = random.randint(0, 9)
    countryToGuess = countrylist[guessedIndex]
    answer = input("Enter the capital of {0}:
".format(countryToGuess))
    return answer, guessedIndex
def capitalVerification(answer, guessedIndex):
    correctCapital = citylist[guessedIndex]
    if correctCapital == answer:
        print("Capital correct")
    else:
        print("Capital is incorrect")
    return
#main program
answer, guessedIndex = randomCountry()
capitalVerification(answer, guessedIndex)
```

Test data:

Country	Capital entered	Outcome	True/ False
Germany	Berlin	Capital correct	True
UK	Oslo	Capital incorrect	True
France	Paris	Capital correct	True

Functions further development exercise

1. Using functions, develop a program that will encrypt or decrypt a message using the Caesar cypher with a key (shift value) specified by the user. The built-in functions ord( ) and chr( ) will be useful.

```
>>>
Enter a shift value between 0 and 25: 10
Enter you're message: hello
Number valid
h=r
e=o
l=v
l=v
o=y
hello
rovvy
>>> ================================ RESTART ================================
>>>
Enter a shift value between 0 and 25: 36
Enter you're message: hello
Number invalid
h=s
e=p
l=w
l=w
o=z
hello
spwwz
>>> ================================ RESTART ================================
>>>
Enter a shift value between 0 and 25: 0
Enter you're message: hello
Number valid
h=h
e=e
l=l
l=l
o=o
hello
hello
>>>
```

My solution of code to get this:

```
 #Harry Robinson
#03-01-2015
#Cryptography program

def operation_details():
    shiftValue = int(input("Enter a shift value between 0 and 25:
"))
    message = input("Enter you're message: ")
    return shiftValue, message
```

```
def message_length(shiftValue):
    if shiftValue >= 0 and shiftValue <= 25:
        print("Number valid")
    else:
        print("Number invalid")
    return
def shift_manipulation(shiftValue, message):
    zValue = ord('z')
    aValue = ord('a')
    cipher = ''
    for i, c in enumerate(message):
        newOrd = ord(c) + shiftValue
        if newOrd > zValue:
            newOrd = aValue + newOrd - zValue
        cipher = cipher + chr(newOrd)
        print(c + '=' + chr (newOrd))
    return cipher

#main program
shiftValue, message = operation_details()
message_length(shiftValue)
cipher = shift_manipulation(shiftValue, message)
print(message)
print(cipher)
```

Test data:

Original message	Shift value	Expected outcome	Actual
hello	10	rovvy	True
hello	36	spwwz	True
hello	0	hello	True
hello	25	hello	True

> Written with StackEdit.