In [ ]:

```
v1=66
v2=61
v3=72
v4=77
v5=80
v6=88
```

In [ ]:

```
lst1=[66,61,72,77,80,88]
lst1
```

Out[11]:

```
[66, 61, 72, 77, 80, 88]
```

In [ ]:

```
l2=[7.8,4.7,8.4,5.7]
l2
```

Out[12]:

```
[7.8, 4.7, 8.4, 5.7]
```

In [ ]:

```
continents=["Asia","Africa",'Europe','North America','South America','Australia']
continents
```

Out[10]:

```
['Asia', 'Africa', 'Europe', 'North America', 'South America', 'Australia']
```

In [ ]:

```
lst=[True,True,False,True]
lst
```

Out[14]:

```
[True, True, False, True]
```

In [ ]:

```
lst=[30,175.5,"INDIA"]
lst
```

Out[3]:

```
[30, 175.5, 'INDIA']
```

In [ ]:

```
#creating list from existing variables
age=30
height=174.5
name="nilay"
designation="DS consultant"
person=[age,height,name,designation]
person
```

Out[15]:

```
[30, 174.5, 'nilay', 'DS consultant']
```

In [ ]:

```
#create two separate lists of first five odd and even numbers
odd=[1,3,5,7,9]
print(odd)
even=[2,4,6,8,10]
print(even)
```

```
[1, 3, 5, 7, 9]
[2, 4, 6, 8, 10]
```

In [ ]:

```
#nested list
numbers=[
         [1, 3, 5, 7, 9],
         [2, 4, 6, 8, 10]
        ]

numbers
```

Out[5]:

```
[[1, 3, 5, 7, 9], [2, 4, 6, 8, 10]]
```

In [ ]:

```
# south_africa- population in millions, area in km square millions, capital city
south_africa=[60,1.2,"Johansburg"]
south_africa
```

Out[6]:

```
[60, 1.2, 'Johansburg']
```

In [ ]:

```
#Task 1 - create nested list of countries with population in millions, area in km square mi
countries=[[],[],[]]
```

In [ ]:

```
lst=list()
lst
```

Out[20]:

```
[]
```

In [ ]:

```
lst=list([2,5,1,9,6])
lst
```

Out[21]:

```
[2, 5, 1, 9, 6]
```

In [ ]:

```
#creating list from a tuple
lst=list((2,5,1,9,6))
lst
```

Out[22]:

```
[2, 5, 1, 9, 6]
```

Indexing

In [ ]:

```
l2=[7.8, 9.77, 88.4, 98.7]
```

In [ ]:

```
l2[0]
```

Out[8]:

```
7.8
```

In [ ]:

```
l2[3]
```

Out[25]:

```
98.7
```

In [ ]:

```
l2
```

Out[26]:

```
[7.8, 9.77, 88.4, 98.7]
```

In [ ]:

```
l2[3]
```

Out[27]:

```
98.7
```

In [ ]:

```
l2[-1]
```

Out[28]:

```
98.7
```

In [ ]:

```
l2[-2]
```

Out[29]:

```
88.4
```

Functions in list

In [ ]:

```
continents
```

Out[11]:

```
['Asia', 'Africa', 'Europe', 'North America', 'South America', 'Australia']
```

In [ ]:

```
continents.append("Zealandia")
```

In [ ]:

```
continents
```

Out[16]:

```
['Asia',
 'Africa',
 'Europe',
 'North America',
 'South America',
 'Australia',
 'Zealandia']
```

In [ ]:

```
# odd list - append next odd number in odd number list
print(odd)
odd.append(11)
print(odd)
```

In [ ]:

```
continents.insert(2,"X1")
```

In [ ]:

```
continents
```

Out[18]:

```
['Asia',
 'Africa',
 'X1',
 'Europe',
 'North America',
 'South America',
 'Australia',
 'Zealandia']
```

In [ ]:

```
continents.remove('X1')
continents
```

Out[35]:

```
['Asia',
 'Africa',
 'Europe',
 'North America',
 'South America',
 'Australia',
 'Zealandia']
```

In [ ]:

```
len(continents)
```

Out[36]:

```
7
```

In [ ]:

```
#combining two lists
l1=[3,5,7,9]
l2=[2,4,6,8]
```

In [ ]:

```
l1.extend(l2)
l1
```

Out[38]:

```
[3, 5, 7, 9, 2, 4, 6, 8]
```

In [ ]:

```
odd[2]
```

Out[20]:

```
5
```

In [ ]:

```
#2 dimensional list / nested list
#indexing in 2D list
lst=[
     [3,5,7,9],
     [2,4,6,8]
    ]
```

In [ ]:

```
lst[0]
```

Out[24]:

```
[3, 5, 7, 9]
```

In [ ]:

```
lst[0][0]
```

Out[25]:

```
3
```

In [ ]:

```

```

In [ ]:

```

```

In [ ]:

```
# Task -  repeat all abv operations on  list of float numbers
```

In [ ]:

```
#sorting
```

In [ ]:

```
l6=[2,88,4,333,12,54,89]
```

In [ ]:

```
l6.sort()
```

In [ ]:

```
l6
```

Out[43]:

```
[2, 4, 12, 54, 88, 89, 333]
```

In [ ]:

```
l6.sort(reverse=True)
l6
```

Out[44]:

```
[333, 89, 88, 54, 12, 4, 2]
```

In [ ]:

```
#odd list - 6 values , sort odd list in decending order
```

In [ ]:

```
#Task
#print continent list
#sort continent list
#print continent list
```

In [ ]:

```
l7=[22,188,74,33,102,554,89]
print(l7)
l7.reverse()
print(l7)
#reverse odd number list
```

```
[22, 188, 74, 33, 102, 554, 89]
[89, 554, 102, 33, 74, 188, 22]
```

In [ ]:

```
x=l7.sort()
print(x)
type(x)
```

```
None
```

Out[31]:

```
NoneType
```

In [ ]:

```
type(l7.sort())
```

Out[30]:

```
NoneType
```

In [ ]:

```
print(l7.sort())
```

```
None
```

In [ ]:

```
#index slicing
#list-var[start_index:end_index:step_size]
```

In [ ]:

```
numbers=[3,7,1,9,3,6,88,22,12,79,28]
numbers[2:5]
```

Out[32]:

```
[1, 9, 3]
```

In [ ]:

```
numbers[0:6]
```

Out[50]:

```
[3, 7, 1, 9, 3, 6]
```

In [ ]:

```
numbers[:6]
```

Out[33]:

```
[3, 7, 1, 9, 3, 6]
```

In [ ]:

```
len(numbers)
```

Out[54]:

```
11
```

In [ ]:

```
numbers[4:11]
```

Out[55]:

```
[3, 6, 88, 22, 12, 79, 28]
```

In [ ]:

```
numbers[4:]
```

Out[34]:

```
[3, 6, 88, 22, 12, 79, 28]
```

In [ ]:

```
#how to modify values in list
```

In [ ]:

```
numbers=[3, 5, 7, 9, 2, 4, 6, 8]
numbers
```

Out[35]:

```
[3, 5, 7, 9, 2, 4, 6, 8]
```

In [ ]:

```
numbers[0]=111
numbers
```

Out[36]:

```
[111, 5, 7, 9, 2, 4, 6, 8]
```

In [ ]:

```
numbers[0] =numbers[0] +1
numbers
```

Out[37]:

```
[112, 5, 7, 9, 2, 4, 6, 8]
```

In [ ]:

```
numbers[1] =numbers[1] **2
numbers
```

Out[30]:

```
[4, 25, 7, 9, 2, 4, 6, 8]
```

In [ ]:

```
numbers[3] =numbers[0] +numbers[2]
numbers
```

Out[31]:

```
[4, 25, 7, 11, 2, 4, 6, 8]
```

In [ ]:

```
continents
```

Out[40]:

```
['Asia',
 'Africa',
 'X1',
 'Europe',
 'North America',
 'South America',
 'Australia',
 'Zealandia']
```

In [ ]:

```
type(continents)
```

Out[41]:

```
list
```

In [ ]:

```
continents[0]
```

Out[42]:

```
'Asia'
```

In [ ]:

```
type(continents[0])
```

Out[43]:

```
str
```

In [ ]:

```
continents[0].upper()
```

Out[44]:

```
'ASIA'
```

In [ ]:

```
continents[0]=continents[0].upper()
```

In [ ]:

```
continents
```

Out[47]:

```
['ASIA',
 'Africa',
 'X1',
 'Europe',
 'North America',
 'South America',
 'Australia',
 'Zealandia']
```

In [ ]:

```

```

Out[62]:

```
['AFRICA',
 'Asia',
 'Australia',
 'Europe',
 'North America',
 'South America',
 'Zealandia']
```

In [ ]:

```
#Task : convert other continents to upper case
```

In [ ]:

```
!pip install forex_python
```

In [ ]:

```
from forex_python.converter import CurrencyRates

c = CurrencyRates()

rand_usd=c.get_rate('ZAR', 'USD')
print("rand to usd",rand_usd)

rand_inr=c.get_rate('ZAR', 'INR')
print("rand to inr",rand_inr)
```

```
rand to usd 0.058161841646320184
rand to inr 4.654993605394721
```

In [ ]:

```
lst=[0.05,4.6,....]
```