Question 1:

Given a two list.Create a third list by picking an odd-index element from the first list and even index elements from the second.

For Example:

- listOne = [3, 6, 9, 12, 15, 18, 21]
- listTwo = [4, 8, 12, 16, 20, 24, 28]

Expected Output:

1. Element at odd-index positions from list one [6, 12, 18]
2. Element at even-index positions from list two [4, 12, 20, 28]
3. Printing Final third list [6, 12, 18, 4, 12, 20, 28]

```
l_1 = [3, 6, 9, 12, 15, 18, 21]
l_2 = [4, 8, 12, 16, 20, 24, 28]
```

```
l_3=l_1[1:len(l_1):2] # picking an odd-index element from the first list
print(l_3)
```

```
     [6, 12, 18]
```

```
l_4=l_2[0:len(l_1):2] # picking an even-index element from the first list
print(l_4)
```

```
     [4, 12, 20, 28]
```

```
l_3.extend(l_4) # Printing Final third list [6, 12, 18, 4, 12, 20, 28]
print(l_3)
```

```
[6, 12, 18, 4, 12, 20, 28]
```

Question 2:

Given a number count the total number of digits in a number

```
n=int(input("Enter number: ")) #123  #12  #1
count=0
while n>0: #123>0 True  #12>0 True  #1>0 True
  count=count+1 #0+1=1 #1+1=2  #2+1=3
  n=n//10 #123//10=12 #12//10=1  #1//10=0
print("The number of digits in the number are :", count)
```

```
Enter number: 123
The number of digits in the number are : 3
```

```
n=input("Enter number: ")
count=len(n)#b=int(len(n))
print("The number of digits in the number are :",count)
```

```
Enter number: 123
The number of digits in the number are : 3
```

Question 3:

Write a Python program to print the numbers of a specified list after removing even numbers from it.

```
list=[]
list_1 = [1,2,3,4,5,6,7,8,9,10]
for i in list_1:
```

```
  if (i%2!=0):
    list.append(i)
print(list)
```

```
[1, 3, 5, 7, 9]
```

Question 4:

Write a Python program to generate and print a list of first and last 5 elements where the values are square of numbers between 1 and 30 (both included).

```
square_list = []
for i in range(1,31,1):
  i=i*i
  square_list.append(i)
print(square_list)

first_5 = square_list[0:5:1]
print("print a list of first 5 elements are",first_5)

last_5 = square_list[-5:len(square_list):1]
print("print a list of last 5 elements are ",last_5)
```

```
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441, 484, 529, 576, 625, 676, 729, 784
print a list of first 5 elements are [1, 4, 9, 16, 25]
print a list of last 5 elements are  [676, 729, 784, 841, 900]
```

Question 5:

Write a Python program to generate all permutations of a list in Python.

```
list1 = [1,2,3] # [1,2,4,3] # [4,3,2,1].............................
print("\nOriginal List:",list1)
list2=[]
for i in list1:
  for j in list1:
    for k in list1:
      if [i]!=[j] and [i]!=[k] and [j]!=[i] and [j]!=[k] and [k]!=[i] and [k]!=[j]:
        list2.append([i]+[j]+[k])
print("All possible permutations:",list2)
```

```
 Original List: [1, 2, 3]
 All possible permutations: [[1, 2, 3], [1, 3, 2], [2, 1, 3], [2, 3, 1], [3, 1, 2], [3, 2, 1]]
```

```
list1=[1,2,3,4]
def permutations(start, end=[]):
    if len(start) == 0:
        print(end)
    else:
        for i in range(len(start)):
            permutations(start[:i] + start[i+1:], end + start[i:i+1])
permutations(list1)
```

```
 [1, 2, 3, 4]
 [1, 2, 4, 3]
 [1, 3, 2, 4]
 [1, 3, 4, 2]
 [1, 4, 2, 3]
 [1, 4, 3, 2]
 [2, 1, 3, 4]
 [2, 1, 4, 3]
 [2, 3, 1, 4]
 [2, 3, 4, 1]
 [2, 4, 1, 3]
 [2, 4, 3, 1]
 [3, 1, 2, 4]
```

```
[3, 1, 4, 2]
[3, 2, 1, 4]
[3, 2, 4, 1]
[3, 4, 1, 2]
[3, 4, 2, 1]
[4, 1, 2, 3]
[4, 1, 3, 2]
[4, 2, 1, 3]
[4, 2, 3, 1]
[4, 3, 1, 2]
[4, 3, 2, 1]
```

Question 6:

Write a python program to check whether two lists are circularly identical.

```
a=[3,4,1,2]
b=[1,2,3,4]
c=0
d=0
while True:
  e=a[0]
  a.pop(0)
  a.append(e)
  d=len(b)
  c+=1
  if a==b:
    print ('identical')
    break
  if c==d:
    print ('not identical')
    break
```

```
identical
```

```
a=[3,4,1,2]
b=[1,1,3,4]
c=0
d=0
while True:
  e=a[0]
  a.pop(0)
  a.append(e)
  d=len(b)
  c+=1
  if a==b:
    print ('identical')
    break
  if c==d:
    print ('not identical')
    break
```

```
not identical
```

Question 7:

Write a Python program to change the position of every n-th value with the (n+1)th in a list.

Sample list: [0,1,2,3,4,5]

Expected Output: [1, 0, 3, 2, 5, 4]

```
a=[0,1,2,3,4,5]
for i in range(0,len(a),2):
  a[i],a[i+1]=a[i+1],a[i]
print(a)
```

```
[1, 0, 3, 2, 5, 4]
```

Question 8:

Write a Python program to iterate over two lists simultaneously.

```
a = [1,2,3,4,5]
b = [6,7,8,9,10]
c = []
j= 0
for i in a:
    c.append(i)
    c.append(b[j])
    j +=1
c
```

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

```
a = [1,2,3,4,5]
b = [6,7,8,9,10]
c = []
j= 0
for i in a:
    c.append(i)

    c.append(b[j])
    j +=1
c
```

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

Question 9:

Write a Python program to generate the combinations of n distinct objects taken from the elements of a given list.

Original list: [1, 2, 3, 4, 5, 6, 7, 8, 9]

Combinations of 2 distinct objects: [1, 2] [1, 3] [1, 4] [1, 5] .... [7, 8] [7, 9] [8, 9]

```
list1=[1, 2, 3, 4, 5, 6, 7, 8, 9]
n=len(list1)
for i in range(0,n):
  for j in list1:
    a = []
    if (list1[i]!=j): # i=0 ==j=0
      a.append(list1[i])
      a.append(j)
      print(a,end="")
      #print(sorted(a),end="")
```

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

```
print(len(a))
```

```
0
```

Question 10:

Write a Python program to remove duplicates from a list of lists.

- Sample list : [[10, 20], [40], [30, 56, 25], [10, 20], [33], [40]]
- New List : [[10, 20], [30, 56, 25], [33], [40]]

```
a=[[10,20],[40],[30,56,25],[10,20],[33],[40]]
```

```
s1 = set()
for i in a:
  if type(i) is list:
       for k in i:
         s1.add(k)
  s2 = list(s1)
  s2.sort()
  #print(s2)
print(list(s1))
```

```
[33, 40, 10, 20, 56, 25, 30]
```

✓ 0s completed at 23:37