

# Aditya Kumar

## Python List Comprehension Task

**1. Create a list comprehension to extract all odd numbers from the list [1, 2, 3, 4, 5, 6, 7, 8, 9, 10].**

```
In [47]: mylist=[1,2,3,4,5,6,7,8,9,10]
print("Odd Number =", [odd for odd in mylist if odd%2!=0])

Odd Number = [1, 3, 5, 7, 9]
```

**2. Create a list comprehension to extract all even numbers from the list [1, 2, 3, 4, 5, 6, 7, 8, 9, 10].**

```
In [48]: mylist=[1,2,3,4,5,6,7,8,9,10]
print("Even Number =", [odd for odd in mylist if odd%2==0])

Even Number = [2, 4, 6, 8, 10]
```

**3. Create a list comprehension to extract all words from the string "The quick brown fox jumps over the lazy dog" that start with the letter "t".**

```
In [49]: string="The quick brown fox jumps over the lazy dog"
print("words that start with the letter \"t\" =", [x for x in string.split() if x.startswith("t")])

words that start with the letter "t" = ['the']
```

**4. Create a list comprehension to extract all words from the string "The quick brown fox jumps over the lazy dog" that are longer than 4 characters.**

```
In [46]: string="The quick brown fox jumps over the lazy dog"
print("Words that are longer than 4 characters =", [x for x in string.split() if len(x)>4])

Words that are longer than 4 characters = ['quick', 'brown', 'jumps']
```

**5. Create a list comprehension to extract all vowels from the string "The quick brown fox jumps over the lazy dog".**

```
In [50]: string="The quick brown fox jumps over the lazy dog"
vowel=['a','e','i','o','u']
print("all vowels from the string =", [x for x in string if x in vowel])

all vowels from the string = ['e', 'u', 'i', 'o', 'o', 'u', 'o', 'e', 'e', 'a', 'o']
```

## 6.Create a list comprehension to find the sum of all the numbers in the list of lists [[1, 2, 3], [4, 5, 6], [7, 8, 9]].

```
In [51]: mylist=[[1, 2, 3], [4, 5, 6], [7, 8, 9]]
print("Sum of all the numbers in the list of lists =",sum([sum(x) for x in mylist]))
```

Sum of all the numbers in the list of lists = 45

## 7.Create a list comprehension to flatten the list of lists [[1, 2, 3], [4, 5, 6], [7, 8, 9]].

```
In [53]: mylist=[[1, 2, 3], [4, 5, 6], [7, 8, 9]]
print('Flatten of the list of mylist =',[x for sublist in mylist for x in sublist])
```

Flatten of the list of mylist = [1, 2, 3, 4, 5, 6, 7, 8, 9]

## 8.Create a list comprehension to find the common elements between the lists [1, 2, 3, 4, 5] and [4, 5, 6, 7, 8].

```
In [54]: mylist1=[1, 2, 3, 4, 5]
mylist2=[4, 5, 6, 7, 8]
print('The elements in the mylist1 that are common in the mylist2 are =',[x for x in mylist1 if x in mylist2])
```

The elements in the mylist1 that are common in the mylist2 are = [4, 5]

## 9.Create a list comprehension to find the elements in the list [1, 2, 3, 4, 5] that are not in the list [4, 5, 6, 7, 8].

```
In [55]: mylist1=[1, 2, 3, 4, 5]
mylist2=[4, 5, 6, 7, 8]
print('The elements in the mylist1 that are not in the mylist2 are =',[x for x in mylist1 if x not in mylist2])
```

The elements in the mylist1 that are not in the mylist2 are = [1, 2, 3]

## 10. Create a list comprehension to find the indices of the number 3 in the list [1, 2, 3, 4, 5, 6, 7, 8, 9].

```
In [118]: mylist=[1, 2, 3, 4, 5, 6, 7, 8, 9]
print("The indices of the number 3 in the list =",[mylist.index(x) for x in mylist if x==3])
```

The indices of the number 3 in the list = [2]

## 11.Create a list comprehension to extract all prime numbers from the list [2, 3, 5, 7, 9, 11, 13, 17, 19, 23, 29].

```
In [151]: mylist=[2, 3, 5, 7, 9, 11, 13, 17, 19, 23, 29]
print("All prime numbers from the list =",[x for x in mylist if all(x>1 and x%i!=0 for i in range(2,(x//2)+1))])
```

All prime numbers from the list = [2, 3, 5, 7, 11, 13, 17, 19, 23, 29]

## 12.Create a list comprehension to extract all palindromes from the list ['racecar', 'level', 'deified', 'mom'].

```
In [56]: mylist=['racecar', 'level', 'deified', 'mom']
print('All palindromes from the list =',[x for x in mylist if x==x[::-1]])
```

All palindromes from the list = ['racecar', 'level', 'deified', 'mom']

### 13.Create a list comprehension to find the maximum element in each sublist of the list of lists [[1, 2, 3], [4, 5, 6], [7, 8, 9]].

```
In [57]: mylist=[[1, 2, 3], [4, 5, 6], [7, 8, 9]]
print("Maximum element in each sublist =",[max(x) for x in mylist])
```

Maximum element in each sublist = [3, 6, 9]

```
In [20]: # # maximum number in list
# mylist=[[1, 2, 3], [4, 5, 6], [7, 8, 9]]
# print("Maximum element in given list:",max([max(x) for x in mylist]))
```

### 14.Create a list comprehension to remove all duplicates from the list [1, 2, 3, 4, 3, 5, 6, 1, 2, 7].

```
In [58]: mylist=[1, 2, 3, 4, 3, 5, 6, 1, 2, 7]
print("List after removing all duplicate =",list(set(mylist)))
```

List after removing all duplicate = [[1, 2, 3, 4, 5, 6, 7]]

### 15.Create a list comprehension to sort the list of strings ['apple', 'banana', 'kiwi', 'orange', 'pear'] by their length.

```
In [152]: mylist=['apple', 'banana', 'kiwi', 'orange', 'pear']
print("Sorted list of string :",sorted(mylist,key=lambda x:len(x)))
```

Sorted list of string : ['kiwi', 'pear', 'apple', 'banana', 'orange']

### 16.Create a list comprehension to remove all whitespace from the string "The quick brown fox jumps over the lazy dog".

```
In [99]: mystring="The quick brown fox jumps over the lazy dog"
print("Removed all whitespace from the string =\n",[x for x in mystring if x.isalpha()])
```

Removed all whitespace from the string =

['T', 'h', 'e', 'q', 'u', 'i', 'c', 'k', 'b', 'r', 'o', 'w', 'n', 'f', 'o', 'x', 'j', 'u', 'm', 'p', 's', 'o', 'v', 'e', 'r', 't', 'h', 'e', 'l', 'a', 'z', 'y', 'd', 'o', 'g']

**Another Method printing the string using join**

```
In [130]: mystring="The quick brown fox jumps over the lazy dog"
print("Removed all the whitespace i have joined all the character = ","".join([x for x in mystring.split()]))
```

After removing all the whitespace i have joined all the character = Thequickbrownfoxjumpsoverthelazydog

### 17. Create a list comprehension to extract all non-negative numbers from the list [1, -2, 3, -4, 5, -6].

```
In [59]: mylist=[1, -2, 3, -4, 5, -6]
print("Non Negative Number =",[x for x in mylist if x>=0])
```

Non Negative Number = [1, 3, 5]

## 18. Create a list comprehension to extract all unique characters from the string "The quick brown fox jumps over the lazy dog".

```
In [62]: mystring="The quick brown fox jumps over the lazy dog"
a=[]
print("All unique characters from the mystring are following as under =\n\n",list(set([x for x in mystring if x.is
```

All unique characters from the mystring are following as under =

```
['g', 'j', 'i', 'o', 'm', 'p', 'q', 'h', 'c', 'k', 'x', 'v', 'l', 'e', 'r', 't', 'T', 'b', 'n', 'f', 'y', 'w',
'd', 's', 'u', 'z', 'a']
```

## 19. Create a list comprehension to extract all words from the string "The quick brown fox jumps over the lazy dog" that contain the substring "o".

```
In [63]: mystring="The quick brown fox jumps over the lazy dog"
print("All words from the string that contain the substring \"o\" =", [x for x in mystring.split() if "o" in x])
```

All words from the string that contain the substring "o" = ['brown', 'fox', 'over', 'dog']

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