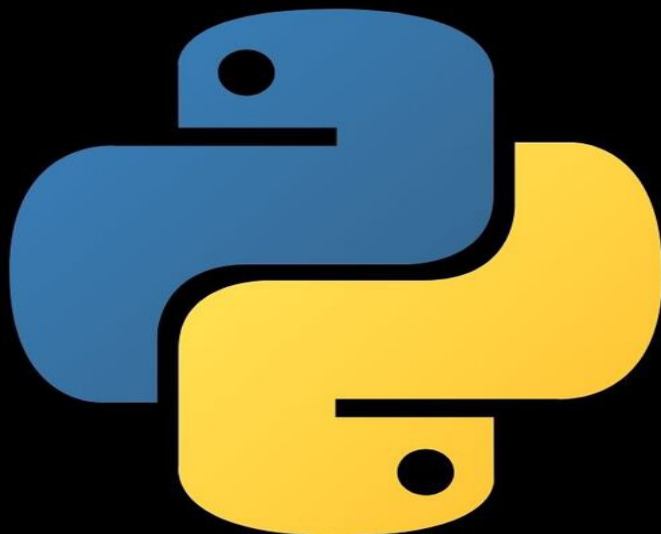


Python Workbook

**Exercises
For
Beginners**

With Solutions



Python Workbook: Exercises For Beginners With Solutions

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Python Data Types exercises

List Data Type:

1. Write a Python program to find the largest number from a list.

```
1  def max_num_in_list( list ):
2      max = list[ 0 ]
3      for a in list:
4          if a > max:
5              max = a
6      return max
7  print(max_num_in_list([1, 2, -8, 0]))
```

Output:

2

2. [Write a Python program to find the smallest number in a list.](#)

```
1  def smallest_num_in_list( list ):
2      min = list[ 0 ]
3      for a in list:
4          if a < min:
5              min = a
6      return min
7  print(smallest_num_in_list([1, 2, -8, 0]))
8
```

Output:

-8

3. [Write a Python program to multiply all the items in a list.](#)

```

1  def multiply_list(items):
2      tot = 1
3      for x in items:
4          tot *= x
5      return tot
6  print(multiply_list([1,2,-8]))
7

```

Output:

-16

4. [Write a Python program to remove duplicates from a list.](#)

```

1  a = [10,20,30,20,10,50,60,40,80,50,40]
2
3  dup_items = set()
4  uniq_items = []
5  for x in a:
6      if x not in dup_items:
7          uniq_items.append(x)
8          dup_items.add(x)
9
10 print(dup_items)
11

```

Output:

{ 40, 10, 80, 50, 20, 60, 30 }

5. [Write a Python program to check if a list is empty or not.](#)

```

1  l = []
2  if not l:
3      print("List is empty")
4

```

Output:

List is empty

Dictionary Data Type:

6. [Write a Python program to add a key to a dictionary.](#)

```
1  d = {0:10, 1:20}
2  print(d)
3  d.update({2:30})
4  print(d)
5
```

Output:

{ 0: 10, 1: 20 }

{ 0: 10, 1: 20, 2: 30 }

7. [Write a Python program to remove a key from a dictionary.](#)

```
1  myDict = {'a':1,'b':2,'c':3,'d':4}
2  print(myDict)
3  if 'a' in myDict:
4      del myDict['a']
5  print(myDict)
6
```

Output:

{ 'a' : 1, 'b' : 2, 'c' : 3, 'd' : 4 }

{ 'b' : 2, 'c' : 3, 'd' : 4 }

8. [Write a Python program to multiply all the items in a dictionary.](#)

```
1 my_dict = {'data1':100,'data2':-54,'data3':247}
2 result=1
3 for key in my_dict:
4     result=result * my_dict[key]
5
6 print(result)
7
```

Output:

-1333800

9. [Write a Python program to sum all the items in a dictionary.](#)

```
1 my_dict = {'data1':100,'data2':-54,'data3':247}
2 print(sum(my_dict.values()))
3
```

Output:

293

10. [Write a Python program to iterate over dictionaries using for loop.](#)

```
1 d = {'Red': 1, 'Green': 2, 'Blue': 3}
2 for color_key, value in d.items():
3     print(color_key, 'corresponds to ', d[color_key])
4
```

Output:

Red corresponds to 1

Green corresponds to 2

Blue corresponds to 3

11. [Write a Python program to merge two python dictionaries.](#)


```
1 d1 = {'a': 100, 'b': 200}
2 d2 = {'x': 300, 'y': 200}
3 d = d1.copy()
4 d.update(d2)
5 print(d)
```

Output:

{ 'x' : 300, 'y' : 200, 'a' : 100, 'b' : 200 }

Python Basics:

1. [Write a Python program to compute the area of triangle.](#)

```
1 b = int(input("Input the base : "))
2 h = int(input("Input the height : "))
3
4 area = b*h/2
5
6 print("area = ", area)
7
```

Output:

Input the base: 10

Input the height: 20

Area: 100

2. [Write a Python program to display current date and time.](#)

```
1 import datetime
2 now = datetime.datetime.now()
3 print ("Current date and time : ")
4 print (now.strftime("%Y-%m-%d %H:%M:%S"))
5
6
```

Output:

Current date and time :
2021-05-23 20:29:15

3. [Write a Python program to find the volume of a sphere.](#)

```
1 pi = 3.1415926535897931
2 r= 6.0
3 V= 4.0/3.0*pi* r**3
4 print('The volume of the sphere is: ',V)
5
```

Output:

The volume of the sphere is: 904.7786842338603

4. [Write a Python program to compute the GCD.](#)

```
1 def gcd(x, y):
2     gcd = 1
3
4     if x % y == 0:
5         return y
6
7     for k in range(int(y / 2), 0, -1):
8         if x % k == 0 and y % k == 0:
9             gcd = k
10            break
11    return gcd
12
13 print(gcd(12, 17))
14 print(gcd(4, 6))
15
```

Output:

1

2

5. [Write a Python program to compute the LCM.](#)

```
1  def lcm(x, y):
2      if x > y:
3          z = x
4      else:
5          z = y
6
7      while(True):
8          if((z % x == 0) and (z % y == 0)):
9              lcm = z
10             break
11             z += 1
12
13     return lcm
14 print(lcm(4, 6))
15 print(lcm(15, 17))
```

Output:

12
255

6. [Write a Python program to convert feet and inches to centimeters.](#)

```
1  print("Input your height: ")
2  h_ft = int(input("Feet: "))
3  h_inch = int(input("Inches: "))
4
5  h_inch += h_ft * 12
6  h_cm = round(h_inch * 2.54, 1)
7
8  print("Your height is : %d cm." % h_cm)
9
```

Output:

Input your height:

Feet: 5

Inches: 3

Your height is : 160 cm

7. [Write a Python program to convert all units of time to seconds.](#)

```
1  days = int(input("Input days: ")) * 3600 * 24
2  hours = int(input("Input hours: ")) * 3600
3  minutes = int(input("Input minutes: ")) * 60
4  seconds = int(input("Input seconds: "))
5
6  time = days + hours + minutes + seconds
7
8  print("The amounts of seconds", time)
9
```

Output:

Input days: 4

Input hours: 5

Input minutes: 20

Input seconds: 10

The amounts of seconds 364810

8. [Write a Python program to convert the distance in feet to inches, yards and miles.](#)

```

1  d_ft = int(input("Input distance in feet: "))
2  d_inches = d_ft * 12
3  d_yards = d_ft / 3.0
4  d_miles = d_ft / 5280.0
5
6  print("The distance in inches is %i inches." % d_inches)
7  print("The distance in yards is %.2f yards." % d_yards)
8  print("The distance in miles is %.2f miles." % d_miles)
9

```

Output:

Input the distance in feet: 100
The distance in inches is 1200 inches.
The distance in yards is 33.33 yards.
The distance in miles is 0.02 miles.

9. [Write a Python program to get an absolute file path.](#)

```

1  def absolute_file_path(path_fname):
2      import os
3      return os.path.abspath('path_fname')
4  print("Absolute file path: ",absolute_file_path("test.txt"))
5

```

Output:

Absolute file path: /home/students/path_fname

10. [Write a Python program to check whether a file exists.](#)

```

1  import os.path
2  open('abc.txt', 'w')
3  print(os.path.isfile('abc.txt'))
4

```

Output:

True

11. [Write a Python program to compute the distance between two points.](#)

```
1  import math
2  p1 = [4, 0]
3  p2 = [6, 6]
4  distance = math.sqrt( ((p1[0]-p2[0])**2)+((p1[1]-p2[1])**2) )
5
6  print(distance)
7
8
```

Output:

6.324555320336759

12. [Write a Python program to sum all the items in a list.](#)

```
1  def sum_list(items):
2      sum_numbers = 0
3      for x in items:
4          sum_numbers += x
5      return sum_numbers
6  print(sum_list([1,2,-8]))
7
```

Output:

-5

13. [Write a Python program to multiply all items in a list.](#)


```

1  def multiply_list(items):
2      tot = 1
3      for x in items:
4          tot *= x
5      return tot
6  print(multiply_list([1,2,-8]))
7
8
9

```

Output:

-16

14. [Write a Python program to get the largest number from a list.](#)

```

1  def max_num_in_list( list ):
2      max = list[ 0 ]
3      for a in list:
4          if a > max:
5              max = a
6      return max
7  print(max_num_in_list([1, 2, -8, 0]))
8
9

```

Output:

2

15. [Write a Python program to get the smallest number from a list.](#)

```

1  def smallest_num_in_list( list ):
2      min = list[ 0 ]
3      for a in list:
4          if a < min:
5              min = a
6      return min
7  print(smallest_num_in_list([1, 2, -8, 0]))
8
9

```

Output:

-8

16. [Write a Python program to clone or copy a list.](#)

```

1  original_list = [10, 22, 44, 23, 4]
2  new_list = list(original_list)
3  print(original_list)
4  print(new_list)
5

```

Output:

[10, 22, 44, 23, 4]

[10, 22, 44, 23, 4]

17. [Write a Python program to compute the difference between two lists.](#)

```

1  from collections import Counter
2  color1 = ["red", "orange", "green", "blue", "white"]
3  color2 = ["black", "yellow", "green", "blue"]
4  counter1 = Counter(color1)
5  counter2 = Counter(color2)
6  print("Color1-Color2: ",list(counter1 - counter2))
7  print("Color2-Color1: ",list(counter2 - counter1))
8
9

```


Output:

Color1-Color2: ['red', 'white', 'orange']

Color2-Color1: ['black', 'yellow',]

18. [Write a Python program to create a list with infinite elements.](#)

```
1  import itertools
2  c = itertools.count()
3  print(next(c))
4  print(next(c))
5  print(next(c))
6  print(next(c))
7  print(next(c))
8
```

Output:

0

1

2

3

4

19. [Write a Python program to remove duplicates from a list.](#)

```

1  a = [10,20,30,20,10,50,60,40,80,50,40]
2
3  dup_items = set()
4  uniq_items = []
5  for x in a:
6      if x not in dup_items:
7          uniq_items.append(x)
8          dup_items.add(x)
9
10 print(dup_items)
11

```

Output:

{ 40, 10, 80, 50, 20, 60, 30 }

20. [Write a Python program to generate all permutations of a list.](#)

```

1  import itertools
2  print(list(itertools.permutations([1,2,3])))
3
4

```

Output:

[(1, 2, 3), (1, 3, 2), (2, 1, 3), (2, 3, 1), (3,1,2), (3, 2, 1)]

21. [Write a Python program to access the index of a list.](#)

```

1  nums = [5, 15, 35, 8, 98]
2  for num_index, num_val in enumerate(nums):
3      print(num_index, num_val)
4

```

Output:

0 5
1 15
2 35
3 8
4 98

22. [Write a Python program to convert a list of characters into a string.](#)

```
1 s = ['a', 'b', 'c', 'd']  
2 str1 = ''.join(s)  
3 print(str1)  
4
```

Output:

abcd

23. [Write a Python program to find the index of an item in a specified list.](#)

```
1 num = [10, 30, 4, -6]  
2 print(num.index(30))  
3  
4
```

Output:

1

24. [Write a Python program to get unique values from a list.](#)

```

1 my_list = [10, 20, 30, 40, 20, 50, 60, 40]
2 print("Original List : ",my_list)
3 my_set = set(my_list)
4 my_new_list = list(my_set)
5 print("List of unique numbers : ",my_new_list)
6
7

```

Output:

Original list: [10, 20, 30, 40, 20, 50, 60, 40]

List of unique numbers : [40, 10, 50, 20, 60, 30]

25. [Write a Python program to get the frequency of elements in a list.](#)

```

1 import collections
2 my_list = [10,10,10,10,20,20,20,20,40,40,50,50,30]
3 print("Original List : ",my_list)
4 ctr = collections.Counter(my_list)
5 print("Frequency of the elements in the List : ",ctr)
6

```

Output:

Original list: [10, 10, 10, 10, 20, 20, 20, 20, 40, 40, 50, 50, 30]

Frequency of the elements in the list: counter({ 10: 4, 20: 4, 40: 2, 50: 2, 30:1})

26. [Write a Python program to count the number of elements in a list within a specified range.](#)

```

1  def count_range_in_list(li, min, max):
2      ctr = 0
3      for x in li:
4          if min <= x <= max:
5              ctr += 1
6      return ctr
7
8  list1 = [10,20,30,40,40,40,70,80,99]
9  print(count_range_in_list(list1, 40, 100))
10
11 list2 = ['a','b','c','d','e','f']
12 print(count_range_in_list(list2, 'a', 'e'))
13

```

Output:

6

5

27. [Write a Python program to check whether a list contains a sublist.](#)

```

1  def is_Sublist(l, s):
2      sub_set = False
3      if s == []:
4          sub_set = True
5      elif s == l:
6          sub_set = True
7      elif len(s) > len(l):
8          sub_set = False
9
10     else:
11         for i in range(len(l)):
12             if l[i] == s[0]:
13                 n = 1
14                 while (n < len(s)) and (l[i+n] == s[n]):
15                     n += 1
16
17                 if n == len(s):
18                     sub_set = True
19
20     return sub_set
21
22     a = [2,4,3,5,7]
23     b = [4,3]
24     c = [3,7]
25     print(is_Sublist(a, b))
26     print(is_Sublist(a, c))
27

```

Output:

True
False

28. [Write a Python program to find factorial of a non-negative integer.](#)

```

1  def factorial(n):
2      if n <= 1:
3          return 1
4      else:
5          return n * (factorial(n - 1))
6
7  print(factorial(5))
8
9

```

Output:

120

29. [Write a Python program of recursion list sum.](#)

```

1  def recursive_list_sum(data_list):
2      total = 0
3      for element in data_list:
4          if type(element) == type([]):
5              total = total + recursive_list_sum(element)
6          else:
7              total = total + element
8
9      return total
10 print( recursive_list_sum([1, 2, [3,4],[5,6]]))
11

```

Output:

21

30. [Write a Python program append a list to the second list.](#)

```
1 list1 = [1, 2, 3, 0]
2 list2 = ['Red', 'Green', 'Black']
3 final_list = list1 + list2
4 print(final_list)
5
```

Output:

[1, 2, 3, 0, 'Red', 'Green', 'Black']

31. [Write a Python program to select an item randomly from a list.](#)

```
1 import random
2 color_list = ['Red', 'Blue', 'Green', 'White', 'Black']
3 print(random.choice(color_list))
4
5
```

Output:

Black