1. What is the output of the following code?
nums = set([1,1,2,3,3,3,4,4])
print(len(nums))

Ans- sets has unique value only so length will be 4

2. What will be the output? d = {"john":40, "peter":45} print(list(d.keys()))

Ans - ['john', 'peter']

3. A website requires a user to input username and password to register. Write a program to check the validity of password given by user. Following are the criteria for checking password:
a)   At least 1 letter between [a-z]
b)   At least 1 number between [0-9]
c)   At least 1 letter between [A-Z]
d)   At least 1 character from [$#@]
e)   Minimum length of transaction password: 6
f)   Maximum length of transaction password: 12

```
def is_valid_password(password):
   if not (6 <= len(password) <= 12):
      return False
    if not re.search(r'[a-z]', password):
      return False

   if not re.search(r'[0-9]', password):
      return False

   if not re.search(r'[A-Z]', password):
      return False

   if not re.search(r'[$#@]', password):
      return False

   return True
```

4. Write a for loop that prints all elements of a list and their position in the list.
 a = [4,7,3,2,5,9]

```
a = [4, 7, 3, 2, 5, 9]

for index, value in enumerate(a):
   print(f"Position: {index}, Value: {value}")
```

5. Please write a program which accepts a string from console and print the characters that have even indexes.
Example: If the following string is given as input to the program: H1e2l3l4o5w6o7r8l9d
Then, the output of the program should be: Helloworld

```
input_string = input("Enter a string: ")
even_index_chars = input_string[::2]
print(even_index_chars)
```

6. Please write a program which accepts a string from console and print it in reverse order.

 Example: If the following string is given as input to the program: **rise to vote sir**
Then, the output of the program should be: **ris etov ot esir**

```
input_string = input("Enter a string: ")
reversed_string = input_string[::-1]
print(reversed_string)
```

7. Please write a program which count and print the numbers of each character in a string input by console.
Example: If the following string is given as input to the program: **abcdefgabc**
Then, the output of the program should be:
a,2
c,2
b,2
e,1
d,1
g,1
f,1

```
from collections import Counter

input_string = input("Enter a string: ")
char_count = Counter(input_string)
for char in sorted(char_count):
    print(f"{char},{char_count[char]}")
```

8. With two given lists [1,3,6,78,35,55] and [12,24,35,24,88,120,155], write a program to make a list whose elements are intersection of the above given lists.

```
list1 = [1, 3, 6, 78, 35, 55]
list2 = [12, 24, 35, 24, 88, 120, 155]
set1 = set(list1)
set2 = set(list2)
intersection = list(set1 & set2)
print(intersection)
```

9. With a given list [12,24,35,24,88,120,155,88,120,155], write a program to print this list after removing all duplicate values with original order reserved.

```
input_list = [12, 24, 35, 24, 88, 120, 155, 88, 120, 155]
seen = set()
result = []
for item in input_list:
    if item not in seen:
        result.append(item)
        seen.add(item)
print(result)
```

10. By using list comprehension, please write a program to print the list after removing the value 24 in [12,24,35,24,88,120,155].

```
input_list = [12, 24, 35, 24, 88, 120, 155]
```

```
filtered_list = [x for x in input_list if x != 24]
print(filtered_list)
```

---

11. By using list comprehension, please write a program to print the list after removing the 0th,4th,5th numbers in [12,24,35,70,88,120,155].

```
input_list = [12, 24, 35, 70, 88, 120, 155]
filtered_list = [x for i, x in enumerate(input_list) if i not in (0, 4, 5)]
print(filtered_list)
```

---

12. . By using list comprehension, please write a program to print the list after removing delete numbers which are divisible by 5 and 7 in [12,24,35,70,88,120,155].

```
input_list = [12, 24, 35, 70, 88, 120, 155]
filtered_list = [x for x in input_list if x % 35 != 0]
print(filtered_list)
```

---

13. Please write a program to randomly generate a list with 5 numbers, which are divisible by 5 and 7 , between 1 and 1000 inclusive.

```
import random
def generate_divisible_numbers(start, end, divisor):
    return [num for num in range(start, end + 1) if num % divisor == 0]
div
```

14. Write a program to compute 1/2+2/3+3/4+...+n/n+1 with a given n input by console (n>0).

Example: If the following n is given as input to the program: 5
Then, the output of the program should be: 3.55

```
n = int(input("Enter a positive integer n: "))
if n <= 0:
   print("n should be greater than 0.")
else:
   series_sum = sum(i / (i + 1) for i in range(1, n + 1))
     print(f"{series_sum:.2f}")
```