1.You are given a string str, you need to return True if the words "cat" and "hat" appear same number of times in str, otherwise return False.Note: str contains only lowercase English alphabets

Ans:-

```
str = input("enter the string contain cat and hat  ")

count_cat = str.count("cat")
count_hat = str.count("hat")

if count_cat==count_hat==0:
    print("No cat and hat")
elif count_cat == count_hat:
    print(True)
else:
    print(False)
```

2. Write a Python program that takes a natural number n as input and prints a pattern where each line shows the sum of squares of the first i natural numbers, from 1 to n. (where n ≥ 1).

Ans:-

```
n = int(input("Enter a natural number n: "))

for i in range(1, n+1):
    sq = 0
    for j in range(1, i+1):
        sq += j * j
    print(sq)
```

3. Calculate the sum of N numbers using while loop and user input.

Ans:-

```
n=int(input("enter the natural number:"))
s=0
while n>0:
    s=s+n
    n=n-1
print("The sum of n natural number is :",s)
```

4. Remove duplicate values across Dictionary Values using nested loops.

Ans:-

5. Write a Python program to count the frequency of each character in a string using a dictionary.

Ans:-

```
s = input("Enter string")
freq = {}
for ch in s:
    if ch in freq:
        freq[ch] += 1
    else:
        freq[ch] = 1
print(freq)
```

6. Given a list, and dictionary and a Key K, print the value of K from the dictionary if the key is present in both, the list and the dictionary.

Ans:-

```
my_list = [1, 2, 3, 4, 5]
my_dict = {3: "apple", 5: "banana", 7: "cherry"}
K = int(input("Enter the key K: "))


if K in my_list and K in my_dict:
    print("Value from dictionary:", my_dict[K])
else:
    print("K is not present in both list and dictionary.")
```

7. Write a program to check if a number is power of 2.
8. You're given a list of tuples, where each tuple contains coordinates (x, y). Write a program to print all coordinates where both x and y are even numbers.
EXAMPLE: coordinates: [(2, 4), (1, 3), (6, 8), (7, 2), (0, 0)]; OUTPUT: [(2, 4), (6, 8), (0, 0)]

Ans:-

```
coordinates = [(2, 4), (1, 3), (6, 8), (7, 2), (0, 0)]
result = []
for x, y in coordinates:
    if x % 2 == 0 and y % 2 == 0:
        result.append((x, y))

print("Output:", result)
```

9. Write a Python function that checks whether all elements in a given list are unique using a set.

Ans:-

```
my_list = input("Enter your list")

# Convert list to set
if len(set(my_list)) == len(my_list):
    print("All elements are unique.")
else:
    print("No unique elements.")
```

10. Given two arrays which are duplicates of each other except one element, that is, one element from one of the array is missing, we need to find that missing element using set.

Ans:-

```
arr1 = list(map(int, input("Enter array 1: ").split()))
print(arr1)
arr2 = list(map(int, input("Enter array 2 similar to 1: ").split()))
print(arr2)
missing = set(arr1) - set(arr2)
print("Missing element is:",list( missing))
```

11. write a program to swap elements inside each tuple.

Ans:-

```
tuples = [(1, 2), (3, 4), (5, 6)]
swap = []

for a, b in tuples:
    swap.append((b, a))

print("Swapped tuples:", swap)
```

12. Write a Python program to calculate the average value of the numbers in a given tuple of tuples.
HINT: Each inner tuple contains numerical values, and you are to find the average column-wise.
Original Tuple:((10, 10, 10, 12), (30, 45, 56, 45), (81, 80, 39, 32), (1, 2, 3, 4))Average value of the numbers of the said tuple of tuples:[30.5, 34.25, 27.0, 23.25]

Ans:-