

1. Write a Python function that takes a list of numbers and returns a new list with only the even numbers from the original list.

```
def even(n):  
    even=[]  
    odd=[]  
    for i in n:  
        if i%2==0:  
            even.append(i)  
        else:  
            odd.append(i)  
    print(odd)  
    print( even)
```

```
x=[1,2,3,4,5,67,8,9]  
even(x)
```

```
[1, 3, 5, 67, 9] ●●●
```

2. Write a Python program that checks whether a given number is prime using a for loop and if-else statements.

```
def is_prime(number):  
    if number <= 1:  
        return False  
    for i in range(2, int(number ** 0.5) + 1):  
        if number % i == 0:  
            return False  
    return True  
  
number = int(input("Enter a number: "))  
if is_prime(number):  
    print(f"{number} is a prime number.")  
else:  
    print(f"{number} is not a prime number.")
```

```
Enter a number: 4  
4 is not a prime number.
```

3. Create a Python function that takes a dictionary as an argument and returns a new dictionary with keys and values swapped.

```
def swap_keys_and_values(input_dict):  
    swapped_dict={value:key for key,value in input_dict.items()}  
    return swapped_dict
```

```
original_dict={'a':1,'b':4,'c':8}  
swapped_dict=swap_keys_and_values(original_dict)  
print("Original dictionary:",original_dict)  
print("Swapped dictionary:",swapped_dict)
```

```
Original dictionary: {'a': 1, 'b': 4, 'c': 8}  
Swapped dictionary: {1: 'a', 4: 'b', 8: 'c'}
```

```
def swap(input):  
    swapped_dict={}  
    for key,value in input.items():  
        swapped_dict[value]=key  
    return swapped_dict  
  
dict={'name':"vasu",'age':21,'height':5.11}  
swap(dict)  
  
{'vasu': 'name', 21: 'age', 5.11: 'height'}
```

4. Write a Python program using a while loop to calculate the factorial of a given number.

```
n=int(input("enter a number"))
fact=1
count=n
while count>0:
    fact=fact*count
    count-=1

print(f"factorail of {n} is {fact}.")
```

```
enter a number 5
factorail of 5 is 120.
```

```
n=int(input("enter a number"))  
fact=1  
for i in range(fact,n):  
    fact*=n  
    n-=1  
  
print(fact)
```

enter a number 4
24

5. Write a Python function that takes a list of integers and returns a dictionary with the elements as keys and their frequency counts as values.

```
def count_frequency(n):  
    frequency_dict={}  
    for i in n:  
        if i in frequency_dict:  
            frequency_dict[i]+=1  
        else:  
            frequency_dict[i]=1  
    return frequency_dict
```

```
list=[1,2,3,4,5,7,8,8]  
count_frequency(list)
```

```
{1: 1, 2: 1, 3: 1, 4: 1, 5: 1, 7: 1, 8: 2}
```

6. Create a Python program that iterates over a set of numbers and prints the numbers that are divisible by both 3 and 5. Use a for loop and if-else statements.

```
def set_numbers(list):  
    result=[]  
    for i in list:  
        if i%3==0 and i%5==0:  
            result.append(i)  
    return result  
  
x=[3,6,9,10,12,3,55,30,35,33,45]  
set_numbers(x)
```

[30, 45]

7.

Write a Python function that accepts a list of strings and returns a new list containing only the strings that start with the letter 'a'.

```
def strings(str):  
    new_str=[]  
    for i in str:  
        if i[0]=='a':  
            new_str.append(i)  
    return new_str  
  
list=["vasu","apple","ajay","sai"]  
strings(list)
```

```
['apple', 'ajay']
```

8.

Write a Python program that iterates through a list of numbers and appends the square of each number to a new list using a for loop and if statement to check if the number is positive.

```
def square(numbers):  
    squared_positives=[]  
    for n in numbers:  
        if n>0:  
            squared_positives.append(n**2)  
    return squared_positives  
li=[-1,-3,-4,3,4,5,6,7,8,8]  
square(li)
```

```
[9, 16, 25, 36, 49, 64, 64]
```