```
# Write a program reverse input number

num=int(input("Enter any number "))
rev=0

while num>0:
    d=num%10
    rev=(rev*10)+d
    num=num//10

print(f'reverse number is {rev}')
```

Output

```
Enter any number 123
reverse number is 321

Enter any number 4567
reverse number is 7654
```

Example:

```
# Write a program to find input number is pal or not

num=int(input("Enter any number "))
num1=num
rev=0

while num>0:
    d=num%10
    rev=(rev*10)+d
    num=num//10

if num1==rev:
```

```
    print("Pal")
else:
    print("Not Pal")
```

Output

```
Enter any number 121
Pal

Enter any number 232
Pal

Enter any number 255
Not Pal
```

Example:

```
# Write a program to find input number is an armstrong
# number or not

'''
What is armstrong number?
An Armstrong number is a special number that's equal
to the sum of its digits each raised to the power of the
number of digits.
For example, 153 is an Armstrong number
because 1³ + 5³ + 3³ = 153'''

num=int(input("Enter any number (100-999):"))
num1=num
s=0

while num>0:
    d=num%10
```

```
    s=s+(d**3)
    num=num//10

if num1==s:
    print("armstrong number")
else:
    print("not armstrong number")
```

Output

```
    Enter any number (100-999):153
armstrong number

Enter any number (100-999):125
not armstrong number

Enter any number (100-999):370
armstrong number

Enter any number (100-999):407
armstrong number
```

Example:

```
# Write a program count set and unset bits in input number

num=int(input("Enter any number "))
c1=0
c2=0

while num>0:
    r=num%2
    if r==0:
        c1+=1
```

```
    else:
        c2+=1
    num=num//2

print(f'set bit count {c2}')
print(f'unset bit count {c1}')
```

Output

```
Enter any number 5
set bit count 2
unset bit count 1

Enter any number 12
set bit count 2
unset bit count 2
```

for loop

"for" is keyword which represents for loop in python.
For loop is used to iterate values from iterables/collections.
Python's for statement iterates over the items of any sequence (a list or a string), in the order that they appear in the sequence. For loop iterates the values from any collection type.

In application development for loop is used,

1. To repeat block of statements number of times
2. To read values from collections and performing some operation on collection of data

Syntax:

```
for variable-name in collection/iterable:
```

```
    statement-1
    statement-2
```

for loop each time read a value/item from iterable/collection.
It assigns value/item to variable
After assigning to variable, execute statement-1, statement-2

Example:

```
for x in "NIT":
   print("PYTHON")


for n in "PYTHON":
   print(n)

#for n in 10:
#    print("Hello")

for n in [10,20,30,40,50]:
   print("Hello")

for n in [10,20,30,40,50]:
   print(n)
```

Output

```
PYTHON
PYTHON
PYTHON
P
Y
T
```

H
O
N
Hello
Hello
Hello
Hello
Hello
10
20
30
40
50

Example:

```
# Write a program to find length of string

s=input("Enter any String ")
c=0

for x in s:
    c=c+1


print(f'length of string {s} is {c}')
```

Output

```
Enter any String python
length of string python is 6
```

Example:

```
# Write a program to count alphabets,
```

```
# digits and special characters in given string

str1=input("Enter any String ")
ac=0
dc=0
sc=0

for ch in str1:
    if ch>='A' and ch<='Z' or ch>='a' and ch<='z':
        ac+=1
    elif ch>='0' and ch<='9':
        dc+=1
    else:
        sc+=1

print(f'Alphabets count {ac}')
print(f'Digit count {dc}')
print(f'Special Character count {sc}')
```

Output

```
Enter any String abc@$12*
Alphabets count 3
Digit count 2
Special Character count 3
```

Example:

```
# Write a program to count vowels in a given string

str1=input("Enter any string ")
c=0

for ch in str1:
```

```
    if ch in "aeiouAEIOU":
        c+=1


print(c)
```

Output

```
Enter any string java
2

Enter any string python
1
```

range data type

range is an immutable sequence data type. This data type is used to generate sequence of integer values in increment order or decrement order.

In application development range data type is used,

1. To repeat for loop number of times
2. To generate values for other collections.

The range type represents an immutable sequence of numbers and is commonly used for looping a specific number of times in for loops.

Syntax1: range(stop)
Syntax2: range(start,stop,step)

Range data type is having 3 attributes/inputs

1. Start
2. Stop

3. Step

Start: Define starting value of the range (included)
Stop: Define ending value of the range (excluded)
Step: **define difference between values within range (default 1)**

All these values must be integer type
Step should not be zero