

## Better Programmer tips

Proper names to variables

Space between a variable and operator

### ✓ Input Programs in Python

```
1 a=int(input())  
2 print(a)
```

```
10  
10
```

```
1 #Integer input  
2 num = int(input())  
3 print(num)
```

```
25  
25
```

```
1 #Character input  
2 character = input()  
3 print(character)
```

```
p  
p
```

```
1 #Float input  
2 decimal_num = float(input())  
3 print(decimal_num)
```

```
12.35  
12.35
```

```
1 #After dot 2 digits
2 decimal_num2 = float(input())
3 print("%.2f"%decimal_num2)
```

```
12.54321
12.54
```

```
1 #string input
2 words = input()
3 print(words)
4
```

```
My name is Sai
My name is Sai
```

```
1 #Quotient and remainder
2 num1, num2 = map( int, input().split(' ') )
3 Quotient = num1 // num2
4 Remainder = num1 % num2
5 print(f"{Quotient} and {Remainder}")
```

```
5 2
2 and 1
```

```
1 #Inputs taken in different lines
2 #Quotient and remainder
3 num1 = int(input())
4 num2 = int(input())
5 Quotient = num1 // num2
6 Remainder = num1 % num2
7 print(f"{Quotient} and {Remainder}")
```

```
5
2
2 and 1
```

```
1 #Swapping of two numbers
2
3 value1, value2 = map(int, input().split(' '))
4 print("Before swapping values are {0} and {1}".format(value1, value2))
5 value1, value2 = value2, value1
6 print("After swapping values are {0} and {1}".format(value1, value2))
```

```
10 20
Before swapping values are 10 and 20
After swapping values are 20 and 10
```

## ✓ Conditional Statements

```
1 #If example
2 num = int(input())
3 if num == 10:
4     print("Value is 10")
5
6 print("number is {}".format(num))
```

```
10
Value is 10
number is 10
```

```
1 #if else example
2 age = int(input())
3 if age >= 18:
4     print("Eligible to vote")
5 else:
6     print("Not eligible")
```

```
25
Eligible to vote
```

```
1 #Nested if
2 age = int(input())
3 if(age >= 18):
4     if(age % 2 == 0):
5         print("Eligible to vote and age is even")
6     else:
7         print("Eligible to vote and age is odd")
8 else:
9     print("Not eligible to vote")
```

```
25
Eligible to vote and age is odd
```

```
1 #if elif else example
2 #Check whether number is +ve or -ve or 0
3 num = int(input())
4 if(num > 0):
5     print("number is +ve")
6 elif(num < 0):
7     print("number is -ve")
8 else:
9     print("number is 0")
10
0
number is 0
```

## ✓ Loops

```
1 #print from 1 to num values using for loop
2 num = 5
3 for i in range(1,num + 1):
4     print(i)
1
2
3
4
5
```

```
1 #case 1
2 #range(start, stop, step)
3 # for(i = 1; i < 10; i = i + 2)
4 for i in range(1, 10, 2):
5     print(i)
1
3
5
7
9
```

```
1 #case 2
2 #for(i = 10; i >= 1; i = i - 1)
3 for i in range(10, 1, -1):
4     print(i)
```

```
10
9
8
7
6
5
4
3
2
```

```
1 #while loop
2 i = 1
3 while(i <= 10):
4     print(i)
5     i = i + 2
```

```
1
3
5
7
9
```

## ✓ Armstrong number

Ex1: 1634

$$1^4 + 6^4 + 3^4 + 4^4 = 1634$$

it is an Armstrong number

Ex2: 151

$$1^3 + 5^3 + 1^3 = 127$$

it is not an Armstrong number

```
1 #Armstrong number
2 #count of digits
3 num = int(input())
4 copy = num
5 count = 0
6 while(copy != 0):
7     copy = copy // 10
8     count = count + 1
9
10 #sum of digit power count
11 total_sum = 0
12 copy = num
13 while(copy != 0):
14     digit = copy % 10
15     total_sum += digit**count
16     copy = copy // 10
17
18 if(total_sum == num):
19     print("Armstrong number")
20 else:
21     print("Not an Armstrong number")
```

1630

Not an Armstrong number

```
1 #Another method
2 num = int(input())
3 num_str = str(num)
4 digits_count = len(num_str)
5
6 total_sum = 0
7 for digit in num_str:
8     total_sum += (int(digit)**digits_count)
9
10 if(total_sum == num):
11     print("Armstrong number")
12 else:
13     print("Not an Armstrong number")
```

154

Not an Armstrong number

```
1 #break
2 for num in range(1, 11):
3     if(num == 5):
4         break
5
6     print(num)
```

```
1
2
3
4
```

```
1 #continue
2 for num in range(1, 11):
3     if(num == 5):
4         continue
5
6     print(num)
```

```
1
2
3
4
6
7
8
9
10
```

## ✓ Lists

```
1 #Creating an empty 1-d list
2 nums = []
3 print(nums)
```

```
[]
```

```
1 #Creating an empty 1-d list
2 nums = list()
3 print(nums)
```

```
[]
```

```
1 #List examples
2 nums = [1,2,3,4]
3 decimal_nums = [1.1, 2.2, 3.5, 7.9]
4 characters = ['a', 'b', 'm', 'z']
5 words = ["MREC", "DS", "MECH", "HALL"]
6 mix = [1, 8.9, 'A', "sai"]
7
8 print(nums)
9 print(decimal_nums)
10 print(characters)
11 print(words)
12 print(mix)
```

```
[1, 2, 3, 4]
[1.1, 2.2, 3.5, 7.9]
['a', 'b', 'm', 'z']
['MREC', 'DS', 'MECH', 'HALL']
[1, 8.9, 'A', 'sai']
```

```
1 #list of values taken in the same line separated by space
2
3 size = int(input())
4 nums = list(map(int, input().split(' '))) [:size]
5 print(nums)
```

```
5
10 20 30 40 50 60 70 80
[10, 20, 30, 40, 50]
```

```
1 nums.append(100)
2 print(nums)
```

```
[10, 20, 30, 40, 50, 100]
```

```
1 nums.extend([12, 13])
2 print(nums)
```

```
[10, 20, 30, 40, 50, 100, 12, 13]
```

```
1 nums.insert(5, 60)
2 print(nums)
```

```
[10, 20, 30, 40, 50, 60, 100, 12, 13]
```



```
1 nums.remove(12)
2 print(nums)

[10, 20, 30, 40, 50, 60, 100, 13]
```

```
1 nums.sort()
2 print(nums)

[10, 13, 20, 30, 40, 50, 60, 100]
```

```
1 print(sum(nums))

323
```

```
1 print(max(nums))

100
```

```
1 print(min(nums))

10
```

```
1 print(len(nums))

8
```

You're given an array of integers, print the number of times each integer has occurred in the array.

### Example

#### Input :

```
10
1 2 3 3 4 1 4 5 1 2
```

#### Output :

```
1 occurs 3 times
2 occurs 2 times
3 occurs 2 times
4 occurs 2 times
5 occurs 1 times
```

```
2 #unique values count
3 size = int(input())
4 nums = list(map(int, input().split(' '))) [:size]
5 unique = []
6
7 for value in nums:
8     if value not in unique:
9         unique.append(value)
10    print("{0} occurs {1} times".format(value, nums.count(value)))

10
1 2 3 3 4 1 4 5 1 2
1 occurs 3 times
2 occurs 2 times
3 occurs 2 times
4 occurs 2 times
5 occurs 1 times
```