1 find the maximum of list of numbers

```
list1 = [ ]
num = int(input("Enter number of elements in list: "))
for i in range(1, num + 1):
        ele = int(input("Enter elements: "))
        list1.append(ele)
print(list1)
print("Largest element is:", max(list1))
```

output

```
Enter number of elements in list: 4
Enter elements: 1
Enter elements: 5
Enter elements: 8
Enter elements: 2
[1, 5, 8, 2]
Largest element is: 8
```

2 To implement basic arithmetic operations using menu (switch statement)

```
def switch():
   a = int(input("Enter first value: "))
   b = int(input("Enter second value: "))
   print("Press 1 for Addittion \nPress 2 for Subtraction \nPress 3 for Multiplication \nPress 4
for Division")
   option = int(input("Enter your option: "))
   if option == 1:
      result = a+b
      print("Addition : ", result)
   elif option == 2:
      result = a-b
      print("Subtraction : ",result)
   elif option == 3:
      result = a*b
      print("Multiplication : ", result)
   elif option == 4:
      result = a/b
      print("Division : ",result)
   else:
      print("Invalid Value")
switch()
```

OUTPUT

```
Enter first value: 2
Enter second value: 5
Press 1 for Addittion
Press 2 for Subtraction
Press 3 for Multiplication
```

Press 4 for Division
Enter your option: 2
Subtraction : -3

3 To check a number is positive or negative.

```
num = int(input("Enter a number: "))
if num > 0:
   print("Positive number")
elif num == 0:
   print("Zero")
else:
   print("Negative number")
```

Output

Enter a number: -5
Negative number

4 list operations

```
my_list = []
n = int(input("Enter number of elements : "))
for i in range(0, n):
    ele = int(input())
    my_list.append(ele)
print(my_list)
my_list.insert(5, 7)
print("After inserting 7 at index 5: ", my_list)
# Remove a value from the list
my_list.remove(2)
print("After removing 2 ", my_list)
my_list.sort()
print("After sorting in ascending order: ", my_list)
print("Length of the list: ", len(my_list))
my_list.extend([8, 9, 10])
print("After extending the list: ", my_list)
```

Output

Enter number of elements : 6
1
2
4
5
6
0
[1, 2, 4, 5, 6, 0]
After inserting 7 at index 5: [1, 2, 4, 5, 6, 7, 0]
After removing 2: [1, 4, 5, 6, 7, 0]
After sorting in ascending order: [0, 1, 4, 5, 6, 7]
Length of the list: 6

After extending the list: [0, 1, 4, 5, 6, 7, 8, 9, 10]

5 **Dictionary operations**

```
car = {
"brand": "Ford",
"model": "Mustang",
"year": 1964
}
x = car.copy()
print(x)
car.update({"color": "White"})
print(car)
x = car.get("model")
print(x)
car.pop("model")
print(car)
x = car.keys()
print(x)
x = car.values()
print(x)
car.clear()
print(car)
```

Output

```
{'brand': 'Ford', 'model': 'Mustang', 'year': 1964}
{'brand': 'Ford', 'model': 'Mustang', 'year': 1964, 'color': 'White'}
Mustang
{'brand': 'Ford', 'year': 1964, 'color': 'White'}
dict_keys(['brand', 'year', 'color'])
dict_values(['Ford', 1964, 'White'])
{}
```

6 **Tuple operations**

```
my_tuple = (1, 2, 3, 4, 5)
print("Count method: ", my_tuple.count(2))
print("Index method: ", my_tuple.index(4))
print("Length of tuple: ", len(my_tuple))
print("Max value in tuple: ", max(my_tuple))
print("Min value in tuple: ", min(my_tuple))
print("Slicing method: ", my_tuple[1:4])
for i in my_tuple:
  print(i)
```

Output

```
Count method:  1
Index method:  3
Length of tuple:  5
Max value in tuple:  5
```

Min value in tuple: 1
Slicing method: (2, 3, 4)
1
2
3
4
5

7 String operations

```
str1 = "Hello"
str2 = " World"
print(str1*3)
print(str1+str2)
print(str1[4])
print(str1[2:4])
print('w' in str1)
print('Wo' not in str2)
print(r'Hello\n world')
print("The string str1 : %s"%(str1))
print(len(str2))
```

Output

```
HelloHelloHello
Hello World
o
ll
False
False
Hello\n world
The string str1 : Hello
6
```

8 Factorial of a number using function

```
num = int(input("Enter a number: "))
factorial = 1
if num < 0:
   print(" Factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

Output

```
Enter a number: 7
The factorial of 7 is 5040
```

9 To check if a string is palindrome or not

```
def isPalindrome(string):
    if (string == string[::-1]) :
       return "The string is a palindrome."
    else:
        return "The string is not a palindrome."
string=input("Enter string:")
print(isPalindrome(string))
```

Output

```
Enter string:tenet
The string is a palindrome.
```

10 Exception handling

```
try:
    x = int(input("Enter a number: "))
    y = 10 / x
    print("Result:", y)
except ValueError:
    print("Please enter a valid integer.")
except ZeroDivisionError:
    print("Cannot divide by zero.")
except Exception as e:
    print("An error occurred:", e)
finally:
    print("Program execution complete.")
```

Output

```
Enter a number: 0
Cannot divide by zero.
Program execution complete.
```

11 Use lambda function to double a given number and add 2 numbers.

```
double = lambda x: x * 2
add = lambda x, y: x + y
num = int(input("Enter a number: "))
num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))
result1 = double(num)
result2 = add(num1, num2)
print("Double of", num, "is", result1)
print("Sum of", num1, "and", num2, "is", result2)
```

Output

```
Enter a number: 7
Enter first number: 3
Enter second number: 4
Double of 7 is 14
Sum of 3 and 4 is 7
```

12 To sort elements

```
list1 = [ ]
num = int(input("Enter number of elements in list: "))
for i in range(1, num + 1):
        ele = int(input("Enter elements: "))
        list1.append(ele)
print(list1)
list1.sort()
print(list1)
```

Output

```
Enter number of elements in list: 6
Enter elements: 4
Enter elements: 5
Enter elements: 7
Enter elements: 3
Enter elements: 9
Enter elements: 1
[4, 5, 7, 3, 9, 1]
[1, 3, 4, 5, 7, 9]
```

13 To find largest of 3 numbers

```
a = int(input('Enter first number  : '))
b = int(input('Enter second number : '))
c = int(input('Enter third number  : '))
largest = 0
if a > b and a > c:
   largest = a
if b > a and b > c:
   largest = b
if c > a and c > b:
   largest = c

print(largest, "is the largest of three numbers.")
```

Output

```
Enter first number  : 4
Enter second number : 7
Enter third number  : 5
7 is the largest of three numbers.
```

14 To use filter function to filter only the even numbers from a list.

```
nums = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
print("Original list of integers:")
print(nums)
print("\nEven numbers from the said list:")
even_nums = list(filter(lambda x: x%2 == 0, nums))
print(even_nums)
```

Output
Original list of integers:
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
Even numbers from the said list:
[2, 4, 6, 8, 10]

15 **Regular expression (to remove leading zeros from an ip)**

```
import re
ip = "216.08.094.196"
string = re.sub('\.[0]*', '.', ip)
print(string)
```

Output:
216.8.94.196

16 **To match a string that contains only upper, lower, numbers and underscore**

```
import re
def text_match(text):
        patterns = '^[a-zA-Z0-9_]*$'
        if re.search(patterns,  text):
                return 'Found a match!'
        else:
                return('Not matched!')
print(text_match("The quick brown fox jumps over the lazy dog."))
print(text_match("Python_Exercises_1"))
```

Output
Not matched!
Found a match!