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In [3]: #add two number
num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))
sum = num1 + num2
print("Sum:", sum)
```

Enter first number: 55
Enter second number: 54
Sum: 109

```
In [5]: #amstrong number
def is_armstrong(num):#2,3,
    order = len(str(num))#2 -> '2' -> 1
    sum = 0
    temp = num
    while temp > 0:
        digit = temp % 10
        sum += digit ** order
        temp //= 10
    return num == sum

# Example usage:
num = int(input("Enter a number: "))
if is_armstrong(num):
    print(num, "is an Armstrong number")
else:
    print(num, "is not an Armstrong number")
```

Enter a number: 24
24 is not an Armstrong number

```
In [6]: #prime number
def is_prime(num):
    if num <= 1:
        return False
    for i in range(2, int(num**0.5) + 1):
        if num % i == 0:
            return False
    return True

num = int(input("Enter a number: "))
if is_prime(num):
    print(num, "is an prime number")
else:
    print(num, "is not an prime number")
```

Enter a number: 53
53 is an prime number

```
In [7]: #leargest number of arrey
lst = [int(x) for x in input("Enter elements of the list separated by space: ").split()]
print("The largest among the array is ",max(lst))
```

Enter elements of the list separated by space: 5 4 6 7
The largest among the array is 7

```
In [13]: #swap element1
def swap_elements(lst, idx1, idx2):
```

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lst[idx1], lst[idx2] = lst[idx2], lst[idx1]

lst = []

size = int(input("Enter the size of array :"))
for i in range(size):
    lst.append(int(input("Enter the No.")))

elt1 = int(input("Enter index of first element to swap: "))
elt2 = int(input("Enter index of second element to swap: "))
swap_elements(lst, elt1, elt2)
print("List after swapping:", lst)

```

Enter the size of array :2
Enter the No.6
Enter the No.2
Enter index of first element to swap: 0
Enter index of second element to swap: 1
List after swapping: [2, 6]

In [14]: *#reversing list*

```

lst = [int(x) for x in input("Enter elements of the list separated by space: ").split()]
lst_rev = lst[::-1]
print("Reversed list:", lst_rev)

```

Enter elements of the list separated by space: 1 2 3 4 5
Reversed list: [5, 4, 3, 2, 1]

In [15]: *#define odd even number*

```

def find_odd_even(lst):
    odd = [x for x in lst if x % 2 != 0]
    even = [x for x in lst if x % 2 == 0]
    return odd, even

lst = [int(x) for x in input("Enter elements of the list separated by space : ").split()]
odd, even = find_odd_even(lst)
print("Odd numbers:", odd)
print("Even numbers:", even)

```

Enter elements of the list separated by space : 1 2 3 5 7 8
Odd numbers: [1, 3, 5, 7]
Even numbers: [2, 8]

In [16]: *#matrix addition*

```

import numpy as np

matrix1 = np.array([[1, 2], [3, 4]])
matrix2 = np.array([[5, 6], [7, 8]])
print("Matrix addition:")
print(np.add(matrix1, matrix2))

```

Matrix addition:
[[6 8]
[10 12]]

In [17]: *#matrix multiplication*

```

import numpy as np

matrix1 = np.array([[1, 2, 3], [3, 4, 6]])
matrix2 = np.array([[5, 6], [7, 8], [1, 2]])

```

```
print("Matrix multiplication:")
print(np.dot(matrix1, matrix2))
```

Matrix multiplication:
[[22 28]
[49 62]]

```
In [22]: #palindrome
def is_palindrome(s):
    s = s.lower()
    return s == s[::-1]

# Example usage:
string = input("Enter a string: ")
if is_palindrome(string):
    print("Palindrome")
else:
    print("Not a palindrome")
```

Enter a string: timja
Not a palindrome

```
In [24]: #size of the tuple
tuple1 = tuple(int(x) for x in input("Enter elements of the tuple separated by space : "))
print("Size of the tuple:", len(tuple1))
```

Enter elements of the tuple separated by space : 1 2 4 6 7 8
Size of the tuple: 6

```
In [25]: #date and time
import datetime
print("Current date and time:", datetime.datetime.now())
```

Current date and time: 2024-03-12 16:24:12.185812

```
In [26]: #print G
def print_pattern_G():
    pattern = ""
    for i in range(7):
        for j in range(7):
            if (j == 1 and i != 0 and i != 6) or ((i == 0 or i == 6) and (j > 1 and j < 6)):
                pattern += "*"
            else:
                pattern += " "
        pattern += "\n"
    print(pattern)

print_pattern_G()
```

```
***
*   *
*
* ***
*   *
*   *
***
```

```
In [2]: #find sum of array
arr = list(int(x) for x in input("Enter elements of the list separated by space : ").split())
print("Sum of the array:", sum(arr))
```

Enter elements of the list separated by space : 1 2 4 7
Sum of the array: 14

```
In [3]: #Sum of squares of first n natural numbers
def sum_of_squares(n): #n=10
    return sum(list(i**2 for i in range(1, n+1))) # 1+4+9+16+25+36+49+64+81+100

# Example usage:
n = int(input("Enter a number: "))
print("Sum of squares of first", n, "natural numbers is:", sum_of_squares(n))
```

Enter a number: 20
Sum of squares of first 20 natural numbers is: 2870

```
In [5]: vowels = ['a','e','i','o','u','A','E','I','O','U']

def check_vowel(s):
    for char in s:
        if char in vowels:
            return True
    return False

def find_vowels(s):
    if check_vowel(s):
        return [char for char in s if char in vowels]

# Example usage:
string = input("Enter a string: ")
print("Vowels in the string are:", find_vowels(string))
```

Enter a string: raja
Vowels in the string are: ['a', 'a']

```
In [6]: #Euclidean distance
import math
def euclidean_distance(point1, point2):
    return math.sqrt(sum([(x - y) ** 2 for x, y in zip(point1, point2)]))

# Example usage:
point1 = (1, 2, 3)
point2 = (4, 5, 6)
print("Euclidean distance:", euclidean_distance(point1, point2))
```

Euclidean distance: 5.196152422706632

```
In [7]: #Linear search
def linear_search(arr, target):
    return next(("Element found at index ", i) for i in range(len(arr)) if arr[i] == target)

# Example usage:
arr = [int(x) for x in input("Enter elements of the array separated by space: ").split()]
target = int(input("Enter the target element to search: "))
linear_search(arr, target)
```

Enter elements of the array separated by space: 1 2 3 4 5 6
Enter the target element to search: 2

Out[7]: ('Element found at index ', 1)

```
In [8]: #Largest number smallest number
arr = [int(x) for x in input("Enter elements of the list separated by space: ").split()]
```

```
print("Smallest element:", min(arr))  
print("Largest element:", max(arr))
```

Enter elements of the list separated by space: 1 2 3 4

Smallest element: 1

Largest element: 4

In []: