1. Write a program to calculate f(x) = sin(x) where x is in degree.

```
import math;

def f(x):
  radian = n* (math.pi / 180)
  value = math.sin(radian)

  return value

n= int(input("Enter your value in degree: "))
print(f(n))
```

```
Enter your value in degree: 5
0.08715574274765817
```

2.Create a function that accepts a list of numbers and returns the sum of elements on the list. For example: If a list [1, 3, 6, 8, 12] is passed as an argument to a function, the function should return a value of 30.

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```
def h(x):
  y = 0
  for values in x:
    y += values
  return y

numbers=[0,1,2,3,4,5]
print (h(numbers))
```

```
15
```

3.Write a program to calculate the sum of digit of a number using fuction.

```
def getSum(n):

    sum = 0
    while (n != 0):

        sum = sum + (n % 10)
        n = n//10

    return sum

n = int(input("Enter your number for the program:"))
print(getSum(n))
```

```
Enter your number for the program:10
1
```

4.Write a program to calculate the smallest divisor of a number using function. for example: samllest divisor of 15 is 3.

```
def smallest(divisor):
  for i in range(2,number+1):
    rem = number%i
    if (rem==0):
      print ("The smallest divisor for {} is {}. ".format(number,i))
      break
number = int(input("Please enter a number for the calculation:"))
smallest(number)
```

```
Please enter a number for the calculation:20
The smallest divisor for 20 is 2.
```

5.Write a program to check a given number is perfect number or not using function.

A positive integer is called a perfect number if it is equal to the sum of all of its divisors, including 1 but excluding the number itself. For example, 6 = 1 + 2 + 3.

```
def f(x):
  sum1 = 0
  for i in range(1, x):
    if(x % i == 0):
      sum1 = sum1 + i
  if (sum1 == x):
    print("The number is a Perfect number!")
  else:
    print("The number is not a Perfect number!")

x = int(input("Enter any number: "))
print(f(x))
```

```
Enter any number: 28
The number is a Perfect number!
None
```

6.Write a function that takes two integers m and n as arguments and prints out an m×n box consisting of asterisks.

* for example: rectangle(3,4) should print following output:

```
def f(i,j):
  for j in range(1, j+1):
    for i in range(1,i+1):
      print("*", end=" ")
    print()
i= int(input("Enter your row for matrix:"))
j= int(input("Enter your column for matrix:"))
f(i,j)
```

```
Enter your row for matrix:4
Enter your column for matrix:3
* * * *
* * * *
* * * *
```

7.Write a python program to create a matrix of dimensions m x n without using any additional libraries and display the values.

```
def create_matrix(m,n):
    matrix = [[0 for j in range (n)] for j in range (m)]
    for i in range(m):
        for j in range(n):
            matrix[i][j] = 1
    return matrix

a = create_matrix(2,2)
print(a)
```

```
[[1, 1], [1, 1]]
```

8.Write a program for addition of two matrices.

```
rows = int(input('Enter number of rows: '))
cols  = int(input('Enter number of column: '))

print() # for new line
print('Enter values for matrix A')

matrix_A = [[int(input(f"column {j+1} -> Enter {i+1} element:")) for j in range(cols)] for i in range(rows) ]

print() # for new line
print('Enter values for matrix B ')
matrix_B = [[int(input(f"column {j+1} -> Enter {i+1} element:")) for j in range(cols)] for i in range(rows) ]

print() #for new line

print('Matrix-A :')
for i in matrix_A:
    print(i)

print() #for new line
```

```
print('Matrix-B :')
for i in matrix_B:
    print(i)

# resultant matrix (matrix that store answer and intially it is Zero)
result = [[0 for j in range(cols)] for i in range(rows)]
# addition
for i in range(rows):
    for j in range(cols):
        result[i][j] = matrix_A[i][j] + matrix_B[i][j]

print() #for new line
print('Addition of Matrix-A and Matrix-B is :')

for i in result:
    print(i)
```

```
 ENter number of rows: 3
 ENter number of column: 2

 Enter values for matrix A
 column 1 -> ENter 1 element:4
 column 2 -> ENter 1 element:2
 column 1 -> ENter 2 element:3
 column 2 -> ENter 2 element:5
 column 1 -> ENter 3 element:7
 column 2 -> ENter 3 element:8

 Enter values for matrix B
 column 1 -> ENter 1 element:4
 column 2 -> ENter 1 element:5
 column 1 -> ENter 2 element:12
 column 2 -> ENter 2 element:11
 column 1 -> ENter 3 element:14
 column 2 -> ENter 3 element:15

 Matrix-A :
 [4, 2]
 [3, 5]
 [7, 8]

 Matrix-B :
 [4, 5]
 [12, 11]
 [14, 15]

 Addition of Matrix-A and Matrix-B is :
 [8, 7]
 [15, 16]
 [21, 23]
```

9.Write a program to identify the given matrix is diagonal matrix or not.

```
def check_diagonal_matrix(matrix):
    for i in range(len(matrix)):
        for j in range(len(matrix[i])):
            if i != j and matrix[i][j] != 0:
                return False
    return True

matrix = [[1, 0, 0], [0, 2, 0], [0, 0, 3]]

print(check_diagonal_matrix(matrix))
```

```
 True
```

Double-click (or enter) to edit

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