

```

list1=[]
list2=[]
n=int(input("enter value of list"))
for x in range(n):
    x=input("enter the values in list1")
    list1.append(x)
print("list1 =",list1)
for x in range(n):
    x=input("enter the values in list2")
    list2.append(x)
print("list2 =",list2)

merglist=list1+list2
print("merg list is =",merglist)
print("sorted list =",sorted(merglist))

```

```

↪ enter value of list4
enter the values in list116
enter the values in list114
enter the values in list113
enter the values in list117
list1 = ['16', '14', '13', '17']
enter the values in list212
enter the values in list211
enter the values in list210
enter the values in list215
list2 = ['12', '11', '10', '15']
merg list is = ['16', '14', '13', '17', '12', '11', '10', '15']
sorted list = ['10', '11', '12', '13', '14', '15', '16', '17']

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```

list1=[]
list2=[]
n=int(input("enter value of list"))
for x in range(n):
    x=input("enter the values in list1")
    list1.append(x)
print("list1 =",list1)
for x in range(n):
    x=input("enter the values in list2")
    list2.append(x)
print("list2 =",list2)

merglist=list1+list2
print("merg list is =",merglist)
print("sorted list =",sorted(merglist))
print("large number =",max(merglist))
print("small number =",min(merglist))

```

```

enter value of list4
enter the values in list115
enter the values in list113
enter the values in list112
enter the values in list111
list1 = ['15', '13', '12', '11']
enter the values in list218
enter the values in list217
enter the values in list216
list2 = ['11', '18', '17', '16']
merg list is = ['15', '13', '12', '11', '11', '18', '17', '16']
sorted list = ['11', '11', '12', '13', '15', '16', '17', '18']
large number = 18
small number = 11

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from math import *
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# Define the function to differentiate
def f(x):
    return sin(x)

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# Set the increment
h = 0.001

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# Create a list of x values from -pi to pi
x = [i*h for i in range(-int(pi/h), int(pi/h)+1)]

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# Compute the derivative approximation and compare with cosine

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for i in range(len(x)):
    fprime_approx = (f(x[i]+h) - f(x[i])) / h
    fprime_actual = cos(x[i])
    print("x = {:.3f}: f'(x) = {:.6f}, cos(x) = {:.6f}".format(x[i], fprime_approx, fprime_actual))

```

```

x = -1.427: f'(x) = 0.143796, cos(x) = 0.143301
x = -1.426: f'(x) = 0.144786, cos(x) = 0.144291
x = -1.425: f'(x) = 0.145775, cos(x) = 0.145280
x = -1.424: f'(x) = 0.146764, cos(x) = 0.146270
x = -1.423: f'(x) = 0.147753, cos(x) = 0.147259
x = -1.422: f'(x) = 0.148742, cos(x) = 0.148248
x = -1.421: f'(x) = 0.149731, cos(x) = 0.149237
x = -1.420: f'(x) = 0.150720, cos(x) = 0.150225
x = -1.419: f'(x) = 0.151708, cos(x) = 0.151214
x = -1.418: f'(x) = 0.152697, cos(x) = 0.152202
x = -1.417: f'(x) = 0.153685, cos(x) = 0.153191
x = -1.416: f'(x) = 0.154673, cos(x) = 0.154179
x = -1.415: f'(x) = 0.155661, cos(x) = 0.155167
x = -1.414: f'(x) = 0.156648, cos(x) = 0.156155
x = -1.413: f'(x) = 0.157636, cos(x) = 0.157142
x = -1.412: f'(x) = 0.158623, cos(x) = 0.158130
x = -1.411: f'(x) = 0.159611, cos(x) = 0.159117
x = -1.410: f'(x) = 0.160598, cos(x) = 0.160104
x = -1.409: f'(x) = 0.161585, cos(x) = 0.161091
x = -1.408: f'(x) = 0.162572, cos(x) = 0.162078
x = -1.407: f'(x) = 0.163558, cos(x) = 0.163065
x = -1.406: f'(x) = 0.164545, cos(x) = 0.164051
x = -1.405: f'(x) = 0.165531, cos(x) = 0.165038
x = -1.404: f'(x) = 0.166517, cos(x) = 0.166024
x = -1.403: f'(x) = 0.167503, cos(x) = 0.167010
x = -1.402: f'(x) = 0.168489, cos(x) = 0.167996
x = -1.401: f'(x) = 0.169474, cos(x) = 0.168982
x = -1.400: f'(x) = 0.170460, cos(x) = 0.169967
x = -1.399: f'(x) = 0.171445, cos(x) = 0.170953
x = -1.398: f'(x) = 0.172430, cos(x) = 0.171938
x = -1.397: f'(x) = 0.173415, cos(x) = 0.172923
x = -1.396: f'(x) = 0.174400, cos(x) = 0.173908
x = -1.395: f'(x) = 0.175385, cos(x) = 0.174892
x = -1.394: f'(x) = 0.176369, cos(x) = 0.175877
x = -1.393: f'(x) = 0.177353, cos(x) = 0.176861
x = -1.392: f'(x) = 0.178337, cos(x) = 0.177845
x = -1.391: f'(x) = 0.179321, cos(x) = 0.178829
x = -1.390: f'(x) = 0.180305, cos(x) = 0.179813
x = -1.389: f'(x) = 0.181288, cos(x) = 0.180797
x = -1.388: f'(x) = 0.182272, cos(x) = 0.181780
x = -1.387: f'(x) = 0.183255, cos(x) = 0.182763
x = -1.386: f'(x) = 0.184238, cos(x) = 0.183746
x = -1.385: f'(x) = 0.185221, cos(x) = 0.184729
x = -1.384: f'(x) = 0.186203, cos(x) = 0.185712
x = -1.383: f'(x) = 0.187186, cos(x) = 0.186694
x = -1.382: f'(x) = 0.188168, cos(x) = 0.187677
x = -1.381: f'(x) = 0.189150, cos(x) = 0.188659
x = -1.380: f'(x) = 0.190132, cos(x) = 0.189641
x = -1.379: f'(x) = 0.191113, cos(x) = 0.190623
x = -1.378: f'(x) = 0.192095, cos(x) = 0.191604
x = -1.377: f'(x) = 0.193076, cos(x) = 0.192586
x = -1.376: f'(x) = 0.194057, cos(x) = 0.193567
x = -1.375: f'(x) = 0.195038, cos(x) = 0.194548
x = -1.374: f'(x) = 0.196019, cos(x) = 0.195529
x = -1.373: f'(x) = 0.196999, cos(x) = 0.196509
x = -1.372: f'(x) = 0.197980, cos(x) = 0.197490
x = -1.371: f'(x) = 0.198960, cos(x) = 0.198470
x = -1.370: f'(x) = 0.199940, cos(x) = 0.199450

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