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Problem1

### (a)+(b)

t=1

while True:

sn=str(input("(a)+(b): Enter a positive integer with square-number length: "))

while t\*\*2<len(sn):

if len(sn)==t\*\*2:

break

t=t+1

if len(sn)==t\*\*2: # 若確定字數為平方數就繼續

break

else:

print("Not square-number length. Try again!") # 若字數不為平方數就重來一次

### (c) 把數字變成list

print("(c) Put numbers into a 1-dim list, and print out.")

dim1=[]

i=0

while i<len(sn):

dim1 += [int(sn[i])] # 一個一個取出來

i=i+1

print(dim1)

print()

### (d)

print("(d) Compute the neighbor product in 1-dim list, and print out.")

ndim1=[]

i=0

while i<len(dim1):

s=1

if i==0: # 判斷的為第一個字，只要乘自己跟後面一個

s=dim1[i]\*dim1[i+1]

elif i==len(dim1)-1:# 判斷的為最後一個字，只要乘自己跟前面一個

s=dim1[len(dim1)-1]\*dim1[len(dim1)-2]

else:# 判斷的不為第一個字也不為第一個字，要乘自己跟前面一個跟後面一個

s=dim1[i-1]\*dim1[i]\*dim1[i+1]

ndim1.extend([s])

i=i+1

print(ndim1)

print()

### (e)

print("(e) Put numbers into a 2-dim list, and print out.")

i=0 # 因為為3 的平方數，所以分成三列

dim2=[]

while i+t<=len(dim1):

if i+t==len(dim1):

dim1\_=dim1[i:]

else:

dim1\_=dim1[i:i+t]

dim2.append(dim1\_)

i=i+3

j=0 # 再把List的每一項print出來

while j<len(dim2):

print(dim2[j])

j=j+1

print()

### (f)

print("(f) Zero padding to the 2-dim list, and print out.")

u=[0]\*(t+2) #最前面跟最後面個補一列全為0

dim2.insert(0,u)

dim2.append(u)

i=1

while i<len(dim2)-1: # 中間每列的前後都要補0

dim2[i]=[0]+dim2[i]+[0]

i=i+1

j=0

while j<len(dim2):

print(dim2[j])

j=j+1

print()

### (g)

print("(g) Compute the neighbor summation in 2-dim list, and print out.")

r=1

ndim2=[]

while r<len(dim2)-1:

c=1

s=[]

while c<len(dim2[r])-1: # 判斷的數跟自己跟上下左右相加

s=s+[dim2[r][c]+dim2[r-1][c]+dim2[r+1][c]+dim2[r][c-1]+dim2[r][c+1]]

c=c+1

ndim2.append(s)

r=r+1

j=0

while j<len(ndim2):

print(ndim2[j])

j=j+1

print()

Problem2

line=[input("Enter the matrix by multiple lines: "+"\n")]

while line!="q":

a=[input("")]

line=line+a

if a==["q"]:

break

line.pop()

i=0

while i+1<len(line):

if len(line)!=len(line[i]):

exit(0)

if len(line[i])!=len(line[i+1]):

break

i=i+1

print(line)

p=0

line2=[]

while p<len(line):

line1=list(line[p])

line2.append(line1)

p=p+1

print(line2)

a=0

while a<len(line2):

if "0" in line2[a]:

b=0

while b<len(line2[a]):

if line2[a][b]==0:

line2[a]=["0"]\*int(len(line2[a]))

i=1

while a-i>=0:

line2[a-i][b]="0"

i=i+1

j=1

while a+j<len(line2):

line2[a+j][b]="0"

break

b=b+1

a=a+1

print(line2)

t=0

while t<len(line2):

s=0

while s<len(line2[t]):

print(line2[t][s])

s=s+1

t=t+1