程式作業三

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**Dynamic Programming**

**資料結構**：用一個 2 dim int array跟一個2 dim string array

**演算法**：動態規劃

**時間複雜度**：O()

**Pseudo code**：

def DP(numberList, opList):

#初始化

for i 0 to len(numberList)

dp[i][i] = numberList[i]

step[i][i] = str(numberList[i])

for i =1 to len(numberList)

for j =0 to len(numberList)-i

for k=0 to i

op = opList[k+j]

num1 = dp[j][j+k]

num2 = dp[j+k+1][i+j]

num2\_min = dp[i+j][j+k+1]

value = (num1+num2) if op == "+" else ((num1-num2) if op == "-" else (num2 \* num1))

valuemin = (num1+num2\_min) if op == "+" else ((num1-num2\_min) op == "-" else (num2\_min \* num1))

maxvalue = max(value, valuemin)

minvalue = min(value, valuemin)

if dp[j][i+j] < maxvalue:

dp[j][j+i] = maxvalue

step[j][j+i] = "("+step[j][j+k]+op+step[j+k+1][i+j]+")"

if dp[i+j][j] > minvalue:

dp[i+j][j] = minvalue

step[i+j][j] = "("+step[j][j+k]+op+step[j+k+1][i+j]+")"

return dp[0][len(numberList)-1], step[0][len(numberList)-1][1:-1]

