#include<bits/stdc++.h>

using namespace std;

int MatrixChainOrder(int p[], int i, int j,int dp[][1001])

{

if(i == j)

return 0;

int k;

int min = INT\_MAX;

int count;

if(dp[i][j]!=-1){

return dp[i][j];

}

for (k = i; k < j; k++)

{

count = MatrixChainOrder(p, i, k, dp) +

MatrixChainOrder(p, k + 1, j, dp) +

p[i - 1] \* p[k] \* p[j];

if (count < min)

min = count;

}

return dp[i][j] = min;

}

int main()

{

int dp[1001][1001];

memset(dp,-1,sizeof(dp));

int arr[] = {1, 2, 3, 4, 3};

int n = sizeof(arr)/sizeof(arr[0]);

cout << "Minimum number of multiplications is "

<< MatrixChainOrder(arr, 1, n - 1,dp);

}

Output-

Minimum number of multiplications is 30