import java.io.\*;

class Main

{

public static void main(String args[])throws IOException

{

InputStreamReader isr = new InputStreamReader(System.in);

BufferedReader br = new BufferedReader(isr);

int k,i,d,j,n,cost;

System.out.println("Enter no. of elements");

n=Integer.parseInt(br.readLine());

int p[] = new int[n];

int m[][] = new int[n][n];

int s[][] = new int[n][n];

System.out.println("Enter profit values");

for(i=0;i<n;i++)

{

p[i] = Integer.parseInt(br.readLine());

}

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

s[i][j] = 0;

m[i][j] = 0;

}

}

for ( d=1; d<n-1; d++)

{

for (i=1; i<n-d; i++)

{

j = i+d;

m[i][j] = 9999;

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

{

cost = m[i][k] + m[k+1][j] + p[i-1]\*p[k]\*p[j];

if (cost < m[i][j])

{

m[i][j] = cost;

s[i][j] =k;

}

}

}

}

System.out.println("M matrix");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

System.out.print(m[i][j] + " ");

}

System.out.println();

}

System.out.println("S matrix");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

System.out.print(s[i][j] + " ");

}

System.out.println();

}

}

}