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Using the following algorithm:

```
n = length[p] - 1
for i = 1 to n do
    m[i][i] = 0
for l = 2 to n do
    for i = 1 to n-l+1 do
        j = i+l-1
        m[i][j] = ∞
        for k = i to j-1 do
            q = m[i][k] + m[k+1][j] + p_{i-1} p_k p_j
            if q < m[i][j] then
                m[i][j] = q
                s[i][j] = k
```

m

	1	2	3	4	5	6
1	0	6				
2		0	24			
3			0	60		
4				0	120	
5					0	210
6						0

s

	2	3	4	5	6
1	1				
2		2			
3			3		
4				4	
5					5

$l = 2 \quad j = 1+2-1 = 2$

$i = 1 \quad m[1,2] = m[1,1] + m[2,2] + p_0 p_1 p_2$
$= 6 \quad s[1,2] = 1$

$i = 2, j = 3 \quad m[2,3] = 24 \quad s[2,3] = 2$
$i = 3, j = 4 \quad m[3,4] = 60 \quad s[3,4] = 3$
$i = 4, j = 5 \quad m[4,5] = 120 \quad s[4,5] = 4$
$i = 5, j = 6 \quad m[5,6] = 210 \quad s[5,6] = 5$

$l = 3$
$i = 1 \; j =$
$i = 2,$
$i = 3,$
$i = 4,$

	1	2	3
1	0	6	18
2		0	2
3			0
4			
5			
6			

$l = 4$
$i = 1,$
$i = 2,$
$i = 3,$

	1	2
1	0	6
2		0
3		
4		
5		
6		

$l = 3$

$i = 1, j = 3$ $m[1,3] = 0 + 24 + 16 = 32$

$m[1,3] = 6 + 0 + 12 = 18$

$\therefore m[1,3] = 18, \quad s[1,3] = 2$

$i = 2, j = 4$ $m[2,4] = 64, \quad s[2,4] = 3$

$i = 3, j = 5$ $m[3,5] = 150, \quad s[3,5] = 4$

$i = 4, j = 6$ $m[4,6] = 288, \quad s[4,6] = 5$

m

	1	2	3	4	5	6
1	0	6	18			
2		0	24	64		
3			0	60	150	
4				0	120	288
5					0	210
6						0

s

	2	3	4	5	6
1	1	2			
2		2	3		
3			3	4	
4				4	5
5					5

$l = 4$

$i = 1, j = 4$ $m[1,4] = 0 + 64 + 60 = 124$

$= 6 + 64 + 15 = 85$

$= 18 + 0 + 20 = 38$

$\therefore m[1,4] = 38, \quad s[1,4] = 3$

$i = 2, j = 5$ $m[2,5] = 124, \quad s[2,5] = 4$

$i = 3, j = 6$ $m[3,6] = 276, \quad s[3,6] = 5$

m

	1	2	3	4	5	6
1	0	6	18	38		
2		0	24	64	124	
3			0	60	150	276
4				0	120	288
5					0	210
6						0

s

	2	3	4	5	6
1	1	2	3		
2		2	3	4	
3			3	4	5
4				4	5
5					5

Date:

$l = 5$

$i = 1, j = 5$ $m[1,5] = 0 + 124 + 12 = 136$

$= 6 + 150 + 18 = 174$

$= 18 + 120 + 24 = 162$

$= 38 + 0 + 30 = 68$

$\therefore m[1,5] = 68, \quad s[1,5] = 4$

$i = 2, j = 6$ $m[2,6] = 208, \quad s[2,6] = 5$

$l = 6$

$i = 1, j = 6$ $m[1,6] = 0 + 208 + 2 \times 7$

$= 6 + 276 + 3 \times 7$

$= 18 + 288 + 4 \times 7$

$= 38 + 210 + 5 \times 7$

$= 68 + 0 + 6 \times 7 = 110$

$m[1,6] = 110, \quad s[1,6] = 5$

m

	1	2	3	4	5	6
1	0	6	18	38	68	110
2		0	24	64	124	208
3			0	60	150	276
4				0	120	288
5					0	210
6						0

s

	2	3	4	5	6
1	1	2	3	4	5
2		2	3	4	5
3			3	4	5
4				4	5
5					5

min cost = 110

order of parenthesis :

$= (A \times B \times C \times D \times E) \times F$, $s[1,6] = 5$

$= ((A \times B \times C \times D) \times E) \times F$, $s[1,5] = 4$

$= (((A \times B \times C) \times D) \times E) \times F$, $s[1,4] = 3$

$= ((((A \times B) \times C) \times D) \times E) \times F$, $s[1,3] = 2$