

BST

	1	2	2	4	5	6
KEYWORD	CASE	ELSE	END	IF	OF	THEN
PROBABILITY	0.05	0.15	0.05	0.35	0.05	0.35

COST TABLE

	0	1	2	3	4	5	6
1	0	0.05					
2		0	0.15				
3			0	0.05			
4				0	0.35		
5					0	0.05	
6						0	0.35
7							0

ROOT TABLE

	0	1	2	3	4	5	6
1		1					
2			2				
3				3			
4					4		
5						5	
6							6
7							

$$C(i,j) = \min_{1 \leq k \leq j} \{ C(i, k-1) + C(k+1, j) \} + \sum_{s=i}^j p_s \quad \text{for } 1 \leq i \leq j \leq n$$

$$\begin{aligned}
 C(1,2) &= \min \begin{cases} \text{for } k=1: C[1,0] + C[2,2] + \sum_{s=1}^2 p_s \\ \text{for } k=2: C[1,1] + C[3,2] + \sum_{s=1}^2 p_s \end{cases} \\
 &= \min [0 + 0.15 + 0.05 + 0.15, \quad 0.05 + 0 + 0.05 + 0.15] \\
 &= \min [0.35, 0.25] = \boxed{0.25}
 \end{aligned}$$

$$\begin{aligned}
 C(2,3) &= \min \begin{cases} \text{for } k=2: C[2,1] + C[3,3] + \sum_{s=2}^3 p_s \\ \text{for } k=3: C[2,2] + C[4,3] + \sum_{s=2}^3 p_s \end{cases} \\
 &= \min [0 + 0.05 + 0.05 + 0.15, \quad 0.15 + 0 + 0.05 + 0.15] \\
 &= \min [0.25, 0.35] = \boxed{0.25}
 \end{aligned}$$

$$\begin{aligned}
 C(3,4) &= \min \begin{cases} \text{for } k=3: C[3,2] + C[4,4] + \sum_{s=3}^4 p_s \\ \text{for } k=4: C[3,3] + C[5,4] + \sum_{s=3}^4 p_s \end{cases} \\
 &= \min [0 + 0.35 + 0.35 + 0.05, \quad 0.05 + 0.35 + 0.05 + 0] \\
 &= \min [0.75, 0.45] = \boxed{0.45}
 \end{aligned}$$

$$\begin{aligned}
 C(4,5) &= \min \begin{cases} \text{for } k=4: C[4,3] + C[5,5] + \sum_{s=4}^5 p_s \\ \text{for } k=5: C[4,4] + C[6,5] + \sum_{s=4}^5 p_s \end{cases} \\
 &= \min [0.35 + 0.05 + 0 + 0.05, \quad 0.05 + 0.35 + 0.35 + 0] \\
 &= \min [0.45, 0.75] \\
 &= \boxed{0.45}
 \end{aligned}$$

$$C(5,6) = \min[0.75, 0.25] = \underline{\underline{0.25}}$$

COST TABLE

	0	1	2	3	4	5	6
1	0	0.05	.25				
2		0	0.15	.25			
3			0	0.05	.65		
4				0	0.35	.45	
5					0	0.05	.45
6						0	0.35
7							0

ROOT TABLE

	0	1	2	3	4	5	6
1		1	2				
2			2	2			
3				3	4		
4					4	4	
5						5	6
6							6
7							

Applying same calculations for subtrees of length 3

$$C(1,3) = \min[0.5, 0.35, 0.5] = \underline{\underline{0.35}}$$

$$C(2,4) = \min[1, 1.05, 0.8] = \underline{\underline{0.8}}$$

$$C(3,5) = \min[0.9, 0.55, 0.97] = \underline{\underline{0.55}}$$

$$C(4,6) = \min[1.2, 1.45, 1.2] = \underline{\underline{1.2}}$$

COST TABLE

	0	1	2	3	4	5	6
1	0	0.05	.25	.35			
2		0	0.15	.25	.8		
3			0	0.05	.65	.55	
4				0	0.35	.45	1.2
5					0	0.05	.45
6						0	0.35
7							0

ROOT TABLE

	0	1	2	3	4	5	6
1		1	2	2			
2			2	2	4		
3				3	4	4	
4					4	4	4
5						5	6
6							6
7							

continuing this

final cost & root table:

COST TABLE

	0	1	2	3	4	5	6
1	0	0.05	.25	.35	.95	1.05	1.9
2		0	0.15	.25	.8	0.9	1.65
3			0	0.05	.65	.55	1.3
4				0	0.35	.45	1.2
5					0	0.05	.45
6						0	0.35
7							0

ROOT TABLE

	0	1	2	3	4	5	6
1		1	2	2	4	4	4
2			2	2	4	4	4
3				3	4	4	4
4					4	4	4
5						5	6
6							6
7							

FINAL BST

