

3.4.) int bin 2 (int n, int k)

{

index i, j;

int B[k+1]

memset(B, 0, sizeof B)

B[0] = 1;

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

for(j=minimum(j,k); j>0; j--)

B[j] = B[j] + B[j-1];

} return B[k];

3.5)

$D^0 =$

1	2	3	4	5	6	7
1	0	4			10	
2	3	0	18			
3		6	0			
4		5	15	0	2	19
5			12	1	0	
6					0	10
7			8			0

$D^1 =$

1	2	3	4	5	6	7
1	0	4			16	
2	3	0	18		13	
3		6	0			
4		5	15	0	2	19
5			12	1	0	
6					0	10
7			8			0

$D^2 =$

1	2	3	4	5	6	7
1	0	4	22		10	
2	3	0	18		13	
3	9	6	0	24		19
4	8	5	15	0	2	18
5			12	1	0	
6					0	10
7			8			0

$D^3 =$

1	2	3	4	5	6	7
1	0	4	22		16	
2	3	0	18		13	
3	9	6	0	24		19
4	8	5	15	0	2	18
5	2	1	8	12	1	0
6					0	10
7			8			0

$D^4 =$

1	2	3	4	5	6	7
1	0	4	37	22	29	10
2	3	0	33	18	20	13
3	9	6	0	24	26	19
4	8	5	15	0	2	18
5	9	6	12	1	0	19
6					0	10
7	16	13	23	8	10	26

$D^5 =$

1	2	3	4	5	6	7
0	4	36	22	24	16	27
3	0	32	18	20	13	23
9	6	0	24	26	19	29
8	5	14	0	2	18	5
9	6	12	1	0	19	6
					0	10
16	13	23	8	10	26	0

$$D^c =$$

	1	2	3	4	5	6	7
1	0	4	36	22	24	10	20
2	3	0	32	18	20	13	23
3	9	6	0	24	26	19	29
4	8	5	14	0	2	18	5
5	9	6	12	1	0	19	6
6						0	10
7	16	13	22	8	10	26	0

$$D =$$

	1	2	3	4	5	6	7
1	0	4	36	22	24	10	20
2	3	0	32	18	20	13	23
3	9	6	0	24	26	19	29
4	8	5	14	0	2	18	5
5	9	6	12	1	0	19	6
6	26	23	32	18	20	0	10
7	16	13	22	8	10	26	0

$$P =$$

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

$$3.6) P[7][3] \neq 0$$

$\text{path}(7, P[7][3]) \rightarrow \text{print } 5 \rightarrow \text{path}(P[7][3], 3) \rightarrow P[5][3] \leftarrow$

$$P[7][5] \neq 0$$

$\text{path}(7, P[7][5]) \rightarrow \text{print } 4 \rightarrow \text{path}(P[7][5], 5) \rightarrow P[4][5] \leftarrow$

3.13) $A_1 (10 \times 4)$
 $A_2 (4 \times 5)$
 $A_3 (5 \times 20)$
 $A_4 (20 \times 2)$
 $A_5 (2 \times 50)$

$$A_1 \times A_2 \times A_3 \times A_4 \times A_5$$

$$M[1,2] = 10 \times 4 \times 5 = 200$$

$$M[2,3] = 4 \times 5 \times 20 = 400$$

$$M[3,4] = 5 \times 20 \times 2 = 200$$

$$M[4,5] = 20 \times 2 \times 50 = 2000$$

M	1	2	3	4	5	P	1	2	3	4	5
1	0	200	1200	320	1320	1		1	1	1	4
2		0	400	240	640	2			2	3	4
3			0	200	700	3				3	4
4				0	2000	4					4
5					0	5					

$$M[1,3] = M[1,2] + M[2,3] + (10 \times 4 \times 20) = 1200$$

$$M[1,3] = M[1,2] + M[3,3] + (10 \times 5 \times 20) = 1200$$

$$M[2,4] = M[2,3] + M[3,4] + (4 \times 5 \times 2) = 240$$

$$M[2,4] = M[2,3] + M[4,4] + (4 \times 20 \times 2) = 560 \times$$

$$M[3,5] = M[3,4] + M[4,5] + (5 \times 20 \times 50) = 7000 \times$$

$$M[3,5] = M[3,4] + M[5,5] + (5 \times 2 \times 50) = 700$$

$$M[1,4] = \min \left(\begin{aligned} &M[1,1] + M[2,4] + 10 \times 4 \times 2 = 320, \\ &M[1,2] + M[3,4] + 10 \times 5 \times 2 = 500, \\ &M[1,3] + M[4,4] + 10 \times 20 \times 2 = 1600 \end{aligned} \right) = 320$$

$$M[2,5] = \min \left(\begin{aligned} &M[2,2] + M[3,5] + 4 \times 5 \times 50 = 1700, \\ &M[2,3] + M[4,5] + 4 \times 20 \times 50 = 6400, \\ &M[2,4] + M[5,5] + 4 \times 2 \times 50 = 640 \end{aligned} \right) = 640$$

$$M[1,5] = \min \left(\begin{aligned} &M[1,1] + M[2,5] + 10 \times 4 \times 50 = 2640, \\ &M[1,2] + M[3,5] + 10 \times 5 \times 50 = 3900, \\ &M[1,4] + M[5,5] + 10 \times 2 \times 50 = 1320, \\ &M[1,3] + M[4,5] + 10 \times 20 \times 50 = 103200 \end{aligned} \right) = 1320$$