```
A |XXX    XXX    XXX   |
B |---XXX        XX---X  |
C |------X---XX------XX|


Task  Per   Exe   Util
A     7     3     0.43
B     12    3     0.25
C     20    5     0.25
                  0.93


Families:  3
Limit:     0.78
Utilization test inconclusive

Task A
w_A(0) = 3 = 3
w_A(1) = 3 = 3
R_A = 3 <= 7 OK!


Task B
w_B(0) = 3 = 3
w_B(1) = 3 + 3*ceil(3/7) = 6
w_B(2) = 3 + 3*ceil(6/7) = 6
R_B = 6 <= 12 OK!


Task C
w_C(0) = 5 = 5
w_C(1) = 5 + 3*ceil(5/12) + 3*ceil(5/7) = 11
w_C(2) = 5 + 3*ceil(11/12) + 3*ceil(11/7) = 14
w_C(3) = 5 + 3*ceil(14/12) + 3*ceil(14/7) = 17
w_C(4) = 5 + 3*ceil(17/12) + 3*ceil(17/7) = 20
w_C(5) = 5 + 3*ceil(20/12) + 3*ceil(20/7) = 20
R_C = 20 <= 20 OK!
```

```
A |--------------------XXXXXXXXX------------------#|
B |----------XXXXXXXXX                  XXXXXXXXXX|
C |XXXXXXXXXX                 XXXXXXXXXX          |
```

Task	Per	Exe	Util
A	50	12	0.24
B	40	10	0.25
C	30	10	0.33
			0.82

Families: 3
Limit: 0.78
Utilization test inconclusive

Task C
$w_C(0) = 10 = 10$
$w_C(1) = 10 = 10$
$R_C = 10 <= 30$ OK!

Task B
$w_B(0) = 10 = 10$
$w_B(1) = 10 + 10*ceil(10/30) = 20$
$w_B(2) = 10 + 10*ceil(20/30) = 20$
$R_B = 20 <= 40$ OK!

Task A
$w_A(0) = 12 = 12$
$w_A(1) = 12 + 10*ceil(12/40) + 10*ceil(12/30) = 32$
$w_A(2) = 12 + 10*ceil(32/40) + 10*ceil(32/30) = 42$
$w_A(3) = 12 + 10*ceil(42/40) + 10*ceil(42/30) = 52$
$w_A(4) = 12 + 10*ceil(52/40) + 10*ceil(52/30) = 52$
$R_A = 52 > 50$
Failed to meet deadline

```
A |---------XXXXXXX----XXXXXXXXXXXX----XXXX-----XXX----XXXXXX|
B |----XXXXX                           XXXXX                 |
C |XXXX            XXXX            XXXX            XXXX       |

Task  Per   Exe   Util
A     80    32    0.40
B     40    5     0.12
C     16    4     0.25
                  0.78


Families:  2
Limit:     0.83
Utilization test successful

Task C
w_C(0) = 4 = 4
w_C(1) = 4 = 4
R_C = 4 <= 16 OK!


Task B
w_B(0) = 5 = 5
w_B(1) = 5 + 4*ceil(5/16) = 9
w_B(2) = 5 + 4*ceil(9/16) = 9
R_B = 9 <= 40 OK!


Task A
w_A(0) = 32 = 32
w_A(1) = 32 + 5*ceil(32/40) + 4*ceil(32/16) = 45
w_A(2) = 32 + 5*ceil(45/40) + 4*ceil(45/16) = 54
w_A(3) = 32 + 5*ceil(54/40) + 4*ceil(54/16) = 58
w_A(4) = 32 + 5*ceil(58/40) + 4*ceil(58/16) = 58
R_A = 58 <= 80 OK!
```

```
A |---------------XXXXX-----XXXXXXXXXXXXXXX---------------XXXXX-----XXXXXXXXXXXXXXX|
B |-----XXXXXXXXXX                           -----XXXXXXXXXX                       |
C |XXXXX               XXXXX                 XXXXX               XXXXX             |
```

Task	Per	Exe	Util
A	80	40	0.50
B	40	10	0.25
C	20	5	0.25
			1.00

```
Families:  1
Limit:     1.00
Utilization test successful
```

Task C
$w_C(0) = 5 = 5$
$w_C(1) = 5 = 5$
$R_C = 5 <= 20$ OK!

Task B
$w_B(0) = 10 = 10$
$w_B(1) = 10 + 5*\lceil 10/20 \rceil = 15$
$w_B(2) = 10 + 5*\lceil 15/20 \rceil = 15$
$R_B = 15 <= 40$ OK!

Task A
$w_A(0) = 40 = 40$
$w_A(1) = 40 + 10*\lceil 40/40 \rceil + 5*\lceil 40/20 \rceil = 60$
$w_A(2) = 40 + 10*\lceil 60/40 \rceil + 5*\lceil 60/20 \rceil = 75$
$w_A(3) = 40 + 10*\lceil 75/40 \rceil + 5*\lceil 75/20 \rceil = 80$
$w_A(4) = 40 + 10*\lceil 80/40 \rceil + 5*\lceil 80/20 \rceil = 80$
$R_A = 80 <= 80$ OK!

```
A |XXX    XXX    XXX   |
B |---XXX        XX---X |
C |------X---XX-----#X|
```

Task	Period		Deadl	Exe	Util
A	7	4	3	0.43	
B	12	8	3	0.25	
C	20	18	4	0.20	
				0.88	

Task A
$w_A(0) = 3 = 3$
$w_A(1) = 3 = 3$
$R_A = 3 <= 4$ OK!

Task B
$w_B(0) = 3 = 3$
$w_B(1) = 3 + 3*ceil(3/7) = 6$
$w_B(2) = 3 + 3*ceil(6/7) = 6$
$R_B = 6 <= 8$ OK!

Task C
$w_C(0) = 4 = 4$
$w_C(1) = 4 + 3*ceil(4/12) + 3*ceil(4/7) = 10$
$w_C(2) = 4 + 3*ceil(10/12) + 3*ceil(10/7) = 13$
$w_C(3) = 4 + 3*ceil(13/12) + 3*ceil(13/7) = 16$
$w_C(4) = 4 + 3*ceil(16/12) + 3*ceil(16/7) = 19$
$w_C(5) = 4 + 3*ceil(19/12) + 3*ceil(19/7) = 19$
$R_C = 19 > 18$

```
A |X   X   X   X     |
B |----X-XXX          |
C |---------X-X----XXXX|
D |-XXX       XXX     |
```

```
Task  Per   Exe   Util
A     5     1     0.20
B     20    4     0.20
C     25    6     0.24
D     12    3     0.25
                  0.89
```

```
Families:  3
Limit:     0.78
Utilization test inconclusive
```

Task A
$w_A(0) = 1 = 1$
$w_A(1) = 1 = 1$
$R_A = 1 <= 5$ OK!

Task D
$w_D(0) = 3 = 3$
$w_D(1) = 3 + 1*ceil(3/5) = 4$
$w_D(2) = 3 + 1*ceil(4/5) = 4$
$R_D = 4 <= 12$ OK!

Task B
$w_B(0) = 4 = 4$
$w_B(1) = 4 + 3*ceil(4/12) + 1*ceil(4/5) = 8$
$w_B(2) = 4 + 3*ceil(8/12) + 1*ceil(8/5) = 9$
$w_B(3) = 4 + 3*ceil(9/12) + 1*ceil(9/5) = 9$
$R_B = 9 <= 20$ OK!

Task C
$w_C(0) = 6 = 6$
$w_C(1) = 6 + 4*ceil(6/20) + 3*ceil(6/12) + 1*ceil(6/5) = 15$
$w_C(2) = 6 + 4*ceil(15/20) + 3*ceil(15/12) + 1*ceil(15/5) = 19$
$w_C(3) = 6 + 4*ceil(19/20) + 3*ceil(19/12) + 1*ceil(19/5) = 20$
$w_C(4) = 6 + 4*ceil(20/20) + 3*ceil(20/12) + 1*ceil(20/5) = 20$
$R_C = 20 <= 25$ OK!

```
A |XXX          XXX          X|
B |---XXXX        -XXXX       |
C |-------XXX        ---XXX   |
D |----------XX----------XX#|

Task  Per   Exe   Util
A     12    3     0.25
B     14    4     0.29
C     16    3     0.19
D     25    5     0.20
                  0.92


Families:  4
Limit:     0.76
Utilization test inconclusive

Task A
w_A(0) = 3 = 3
w_A(1) = 3 = 3
R_A = 3 <= 12 OK!

Task B
w_B(0) = 4 = 4
w_B(1) = 4 + 3*ceil(4/12) = 7
w_B(2) = 4 + 3*ceil(7/12) = 7
R_B = 7 <= 14 OK!

Task C
w_C(0) = 3 = 3
w_C(1) = 3 + 4*ceil(3/14) + 3*ceil(3/12) = 10
w_C(2) = 3 + 4*ceil(10/14) + 3*ceil(10/12) = 10
R_C = 10 <= 16 OK!

Task D
w_D(0) = 5 = 5
w_D(1) = 5 + 3*ceil(5/16) + 4*ceil(5/14) + 3*ceil(5/12) = 15
w_D(2) = 5 + 3*ceil(15/16) + 4*ceil(15/14) + 3*ceil(15/12) = 22
w_D(3) = 5 + 3*ceil(22/16) + 4*ceil(22/14) + 3*ceil(22/12) = 25
w_D(4) = 5 + 3*ceil(25/16) + 4*ceil(25/14) + 3*ceil(25/12) = 28
w_D(5) = 5 + 3*ceil(28/16) + 4*ceil(28/14) + 3*ceil(28/12) = 28
R_D = 28 > 25
Failed to meet deadline
```

```
A |--X  X     X     X  |
B |XX                  |
C |-------XXX-X----XX|
D |---XX-X      XXX   |
```

Task	Period		Deadl	Exe	Util
A	5	5	1	0.20	
B	20	4	2	0.10	
C	25	20	6	0.24	
D	12	10	3	0.25	
				0.79	

Task B
$w_B(0) = 2 = 2$
$w_B(1) = 2 = 2$
$R_B = 2 <= 4$ OK!

Task A
$w_A(0) = 1 = 1$
$w_A(1) = 1 + 2*ceil(1/20) = 3$
$w_A(2) = 1 + 2*ceil(3/20) = 3$
$R_A = 3 <= 5$ OK!

Task D
$w_D(0) = 3 = 3$
$w_D(1) = 3 + 1*ceil(3/5) + 2*ceil(3/20) = 6$
$w_D(2) = 3 + 1*ceil(6/5) + 2*ceil(6/20) = 7$
$w_D(3) = 3 + 1*ceil(7/5) + 2*ceil(7/20) = 7$
$R_D = 7 <= 10$ OK!

Task C
$w_C(0) = 6 = 6$
$w_C(1) = 6 + 3*ceil(6/12) + 1*ceil(6/5) + 2*ceil(6/20) = 13$
$w_C(2) = 6 + 3*ceil(13/12) + 1*ceil(13/5) + 2*ceil(13/20) = 17$
$w_C(3) = 6 + 3*ceil(17/12) + 1*ceil(17/5) + 2*ceil(17/20) = 18$
$w_C(4) = 6 + 3*ceil(18/12) + 1*ceil(18/5) + 2*ceil(18/20) = 18$
$R_C = 18 <= 20$ OK!

```
A |XX       XX       XX       XX       XX       |
B |--XX              XX                    XX  |
C |----XXXX              XXXX                  |
D |----------XXXXX                             |
E |----------------X----------XXXXXX--XX--X|
```

```
Task  Per   Exe   Util
A      8     2     0.25
B     18     2     0.11
C     20     4     0.20
D     45     5     0.11
E     50    10     0.20
                   0.87
```

```
Families:  5
Limit:     0.74
Utilization test inconclusive
```

Task A
w_A(0) = 2 = 2
w_A(1) = 2 = 2
R_A = 2 <= 8 OK!

Task B
w_B(0) = 2 = 2
w_B(1) = 2 + 2*ceil(2/8) = 4
w_B(2) = 2 + 2*ceil(4/8) = 4
R_B = 4 <= 18 OK!

Task C
w_C(0) = 4 = 4
w_C(1) = 4 + 2*ceil(4/18) + 2*ceil(4/8) = 8
w_C(2) = 4 + 2*ceil(8/18) + 2*ceil(8/8) = 8
R_C = 8 <= 20 OK!

Task D
w_D(0) = 5 = 5
w_D(1) = 5 + 4*ceil(5/20) + 2*ceil(5/18) + 2*ceil(5/8) = 13
w_D(2) = 5 + 4*ceil(13/20) + 2*ceil(13/18) + 2*ceil(13/8) = 15
w_D(3) = 5 + 4*ceil(15/20) + 2*ceil(15/18) + 2*ceil(15/8) = 15
R_D = 15 <= 45 OK!

Task E
w_E(0) = 10 = 10
w_E(1) = 10 + 5*ceil(10/45) + 4*ceil(10/20) + 2*ceil(10/18) +
2*ceil(10/8) = 25
w_E(2) = 10 + 5*ceil(25/45) + 4*ceil(25/20) + 2*ceil(25/18) +
2*ceil(25/8) = 35
w_E(3) = 10 + 5*ceil(35/45) + 4*ceil(35/20) + 2*ceil(35/18) +
2*ceil(35/8) = 37
w_E(4) = 10 + 5*ceil(37/45) + 4*ceil(37/20) + 2*ceil(37/18) +
2*ceil(37/8) = 39
w_E(5) = 10 + 5*ceil(39/45) + 4*ceil(39/20) + 2*ceil(39/18) +
2*ceil(39/8) = 39
R_E = 39 <= 50 OK!