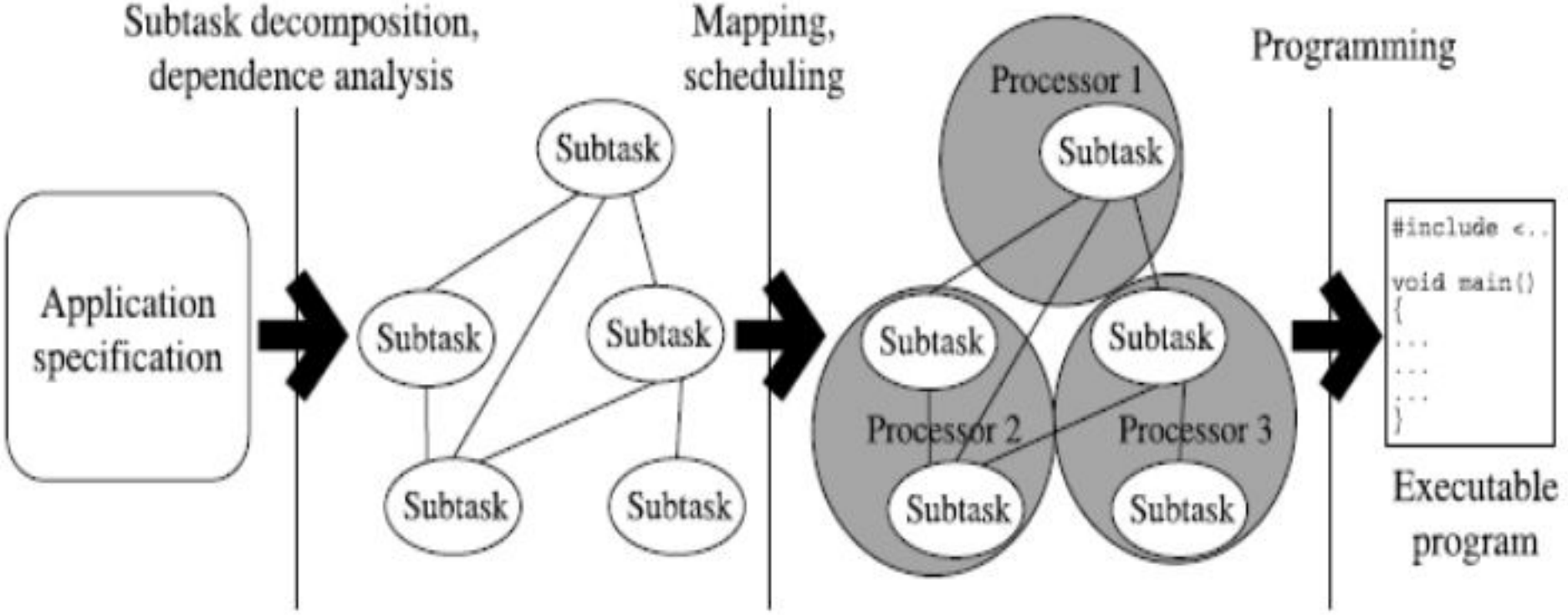
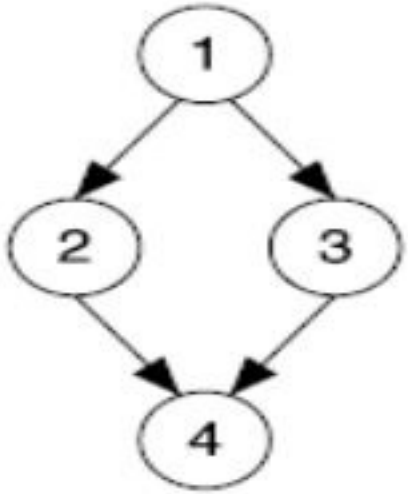
Parallel programming—process of parallelization

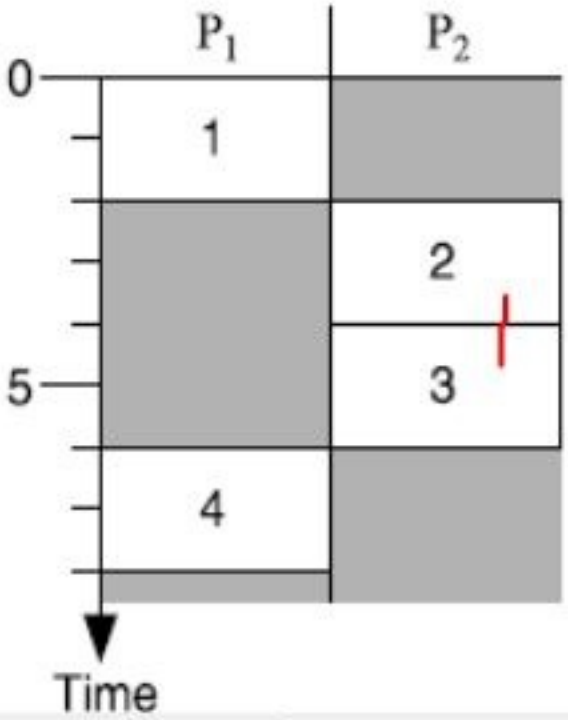


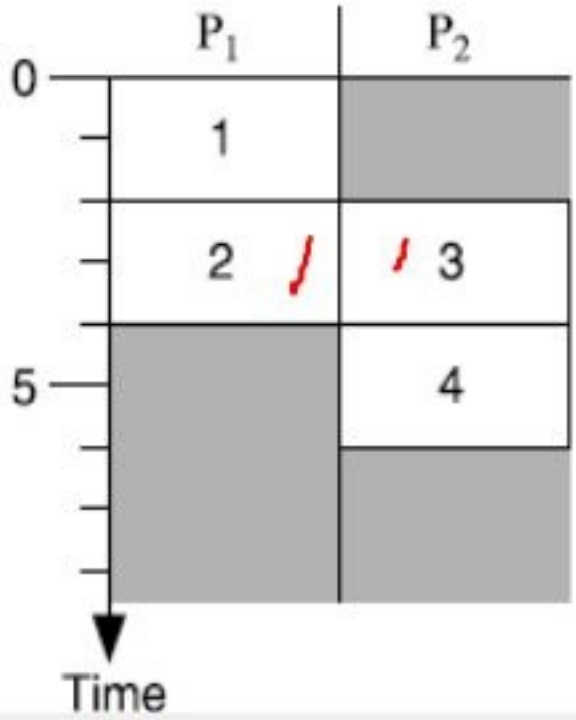
```
1: a = 2
2: u = a + 2
3: v = a * 7
4: x = u + v
```



DAG

Example of task graph representing a small program segment.

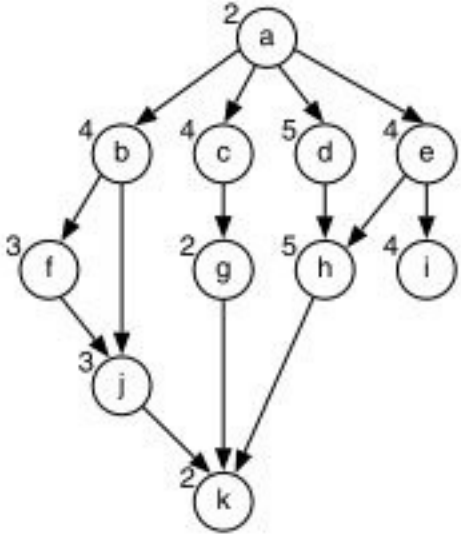


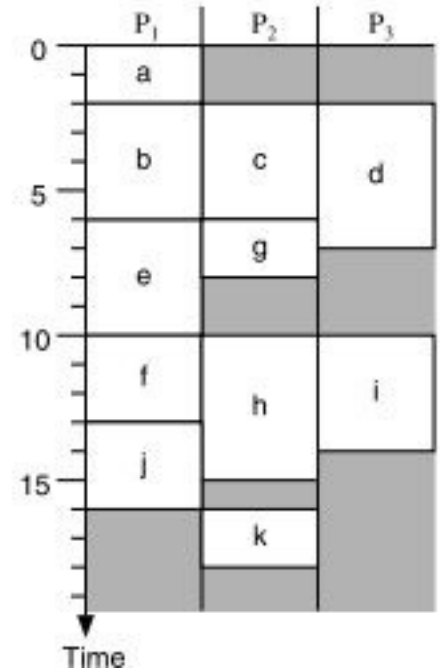


DAG

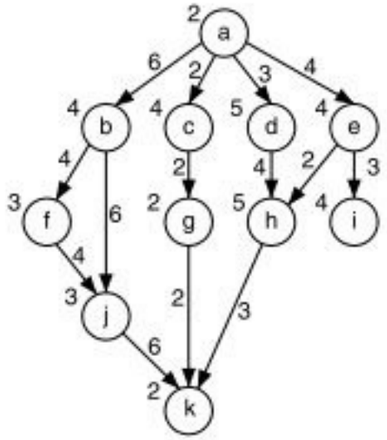
- Example 2 Program for x = a ∗ 7 + (a ∗ 5 + 2)
- 1: a = 2
- 2: v = a ∗ 5
- 3: u = v + 2
- 4: v = a ∗ 7
- 5: x = u + v

Without Communication cost

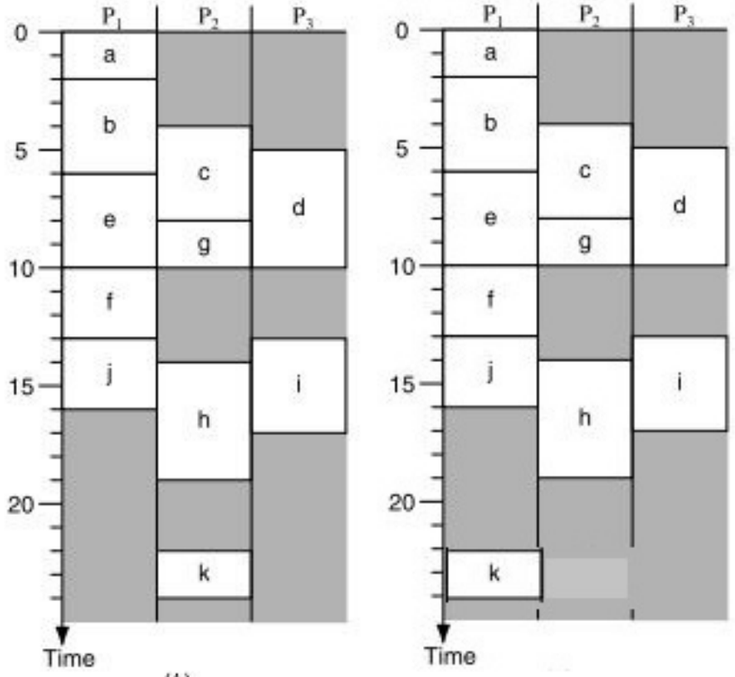




Breadth ****



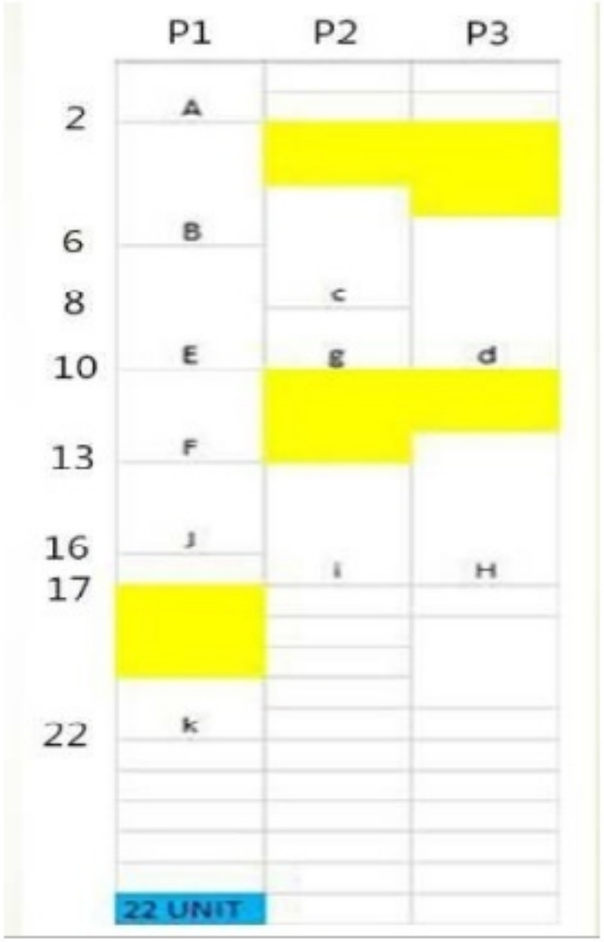
(a)



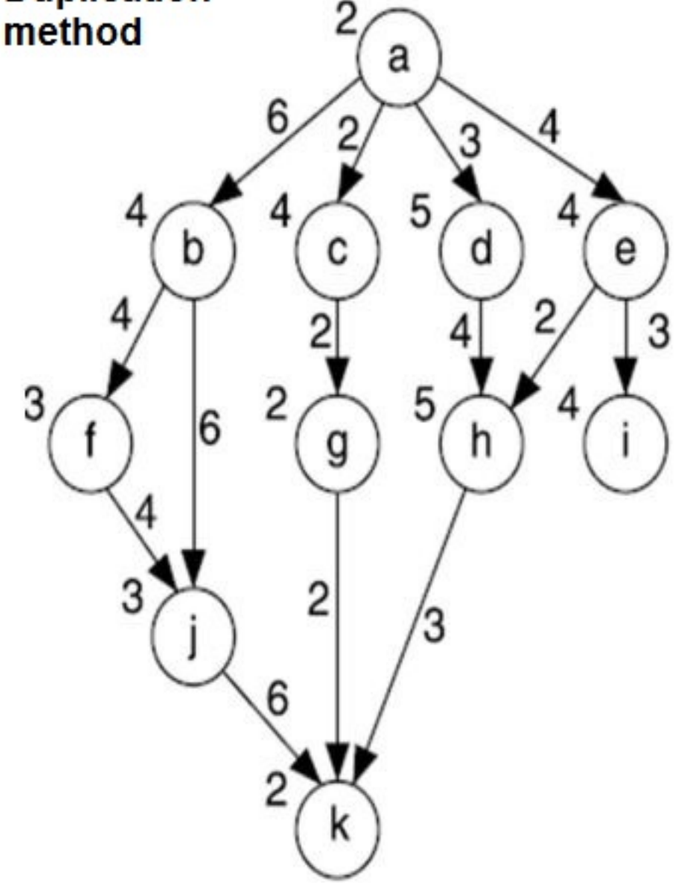
(b)

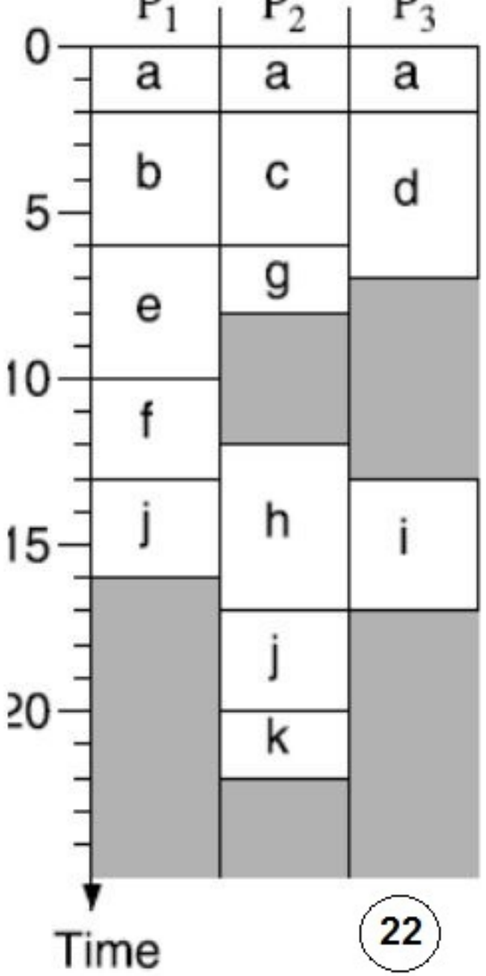
both

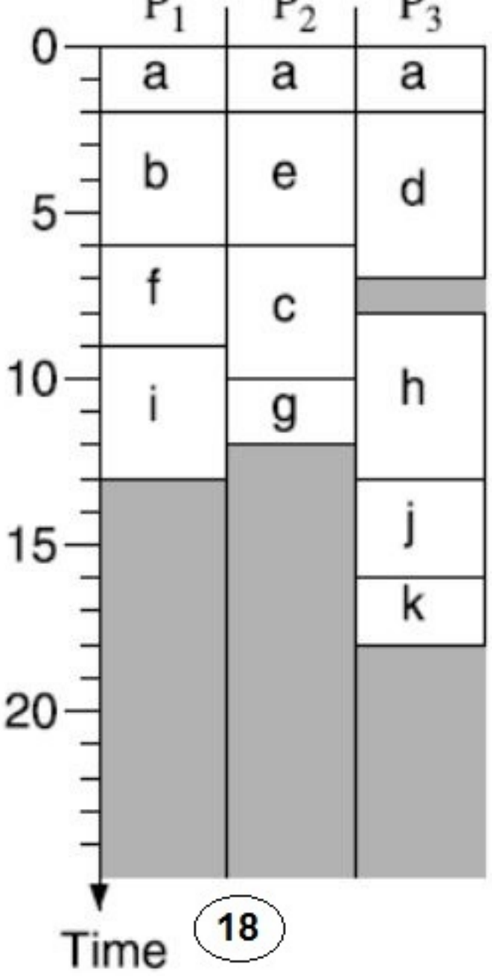
24

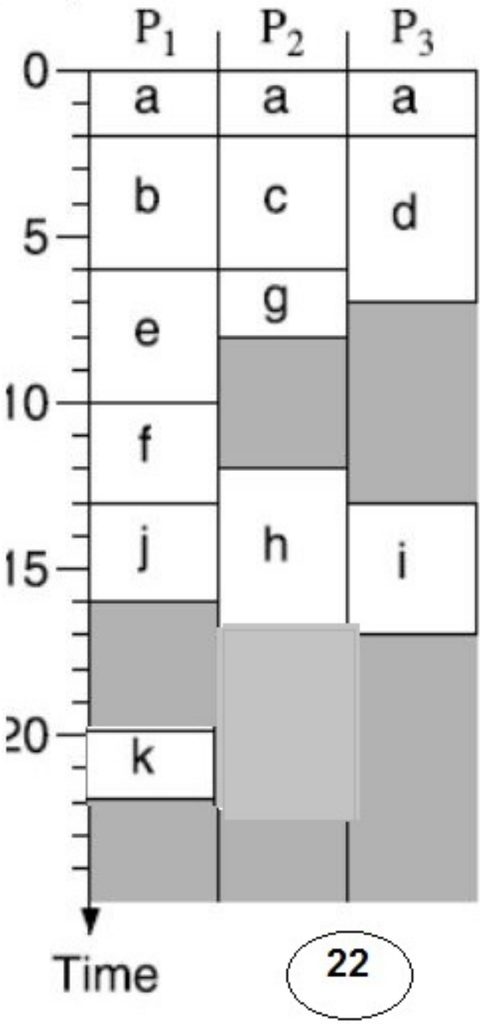


Duplication method

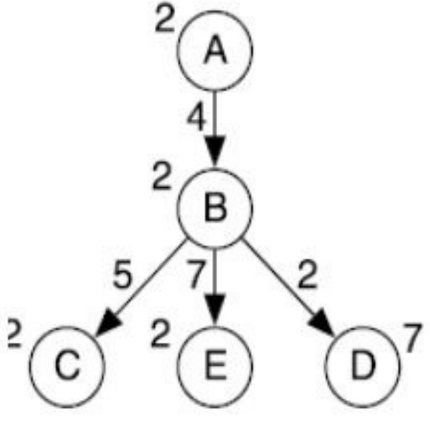




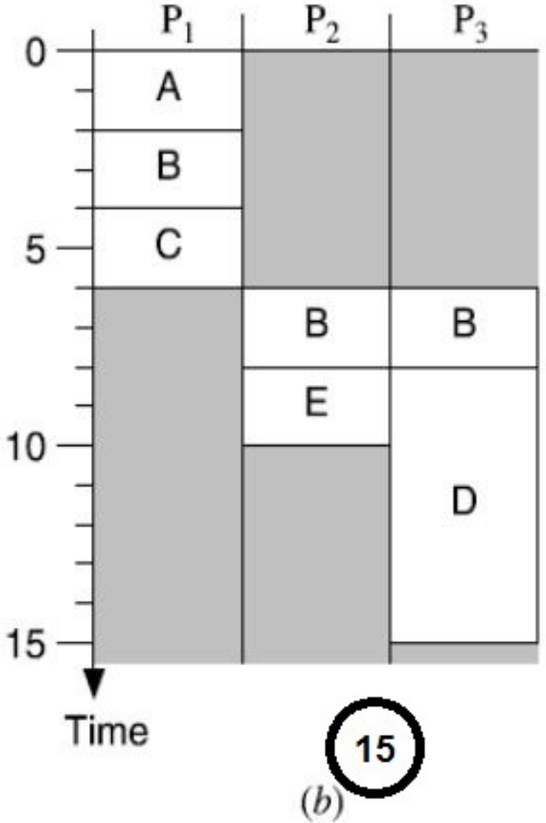




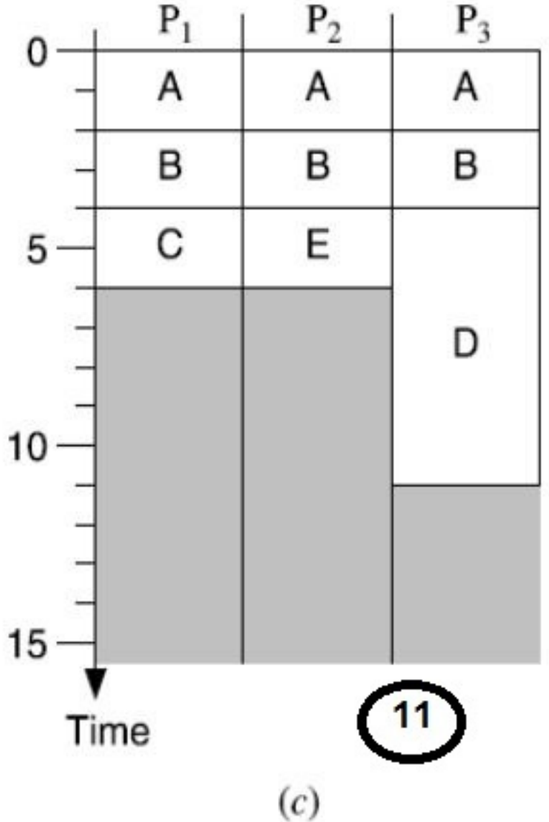
Duplication Method



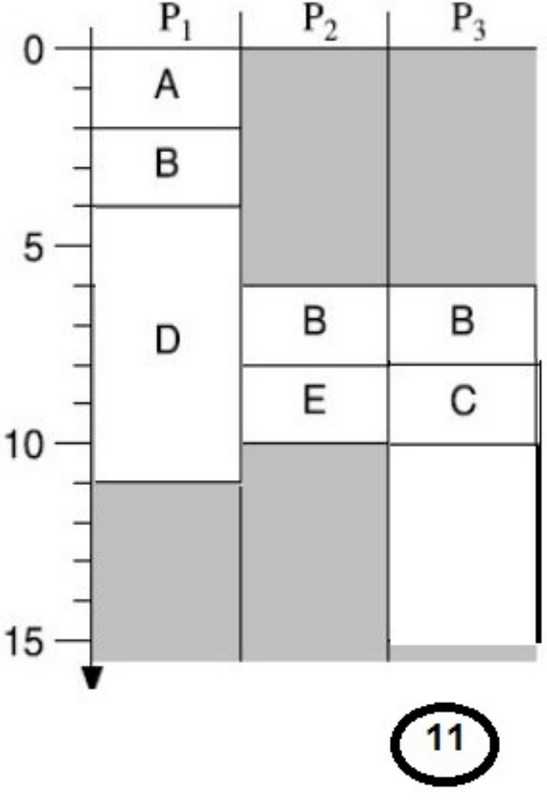
(a)



(b)



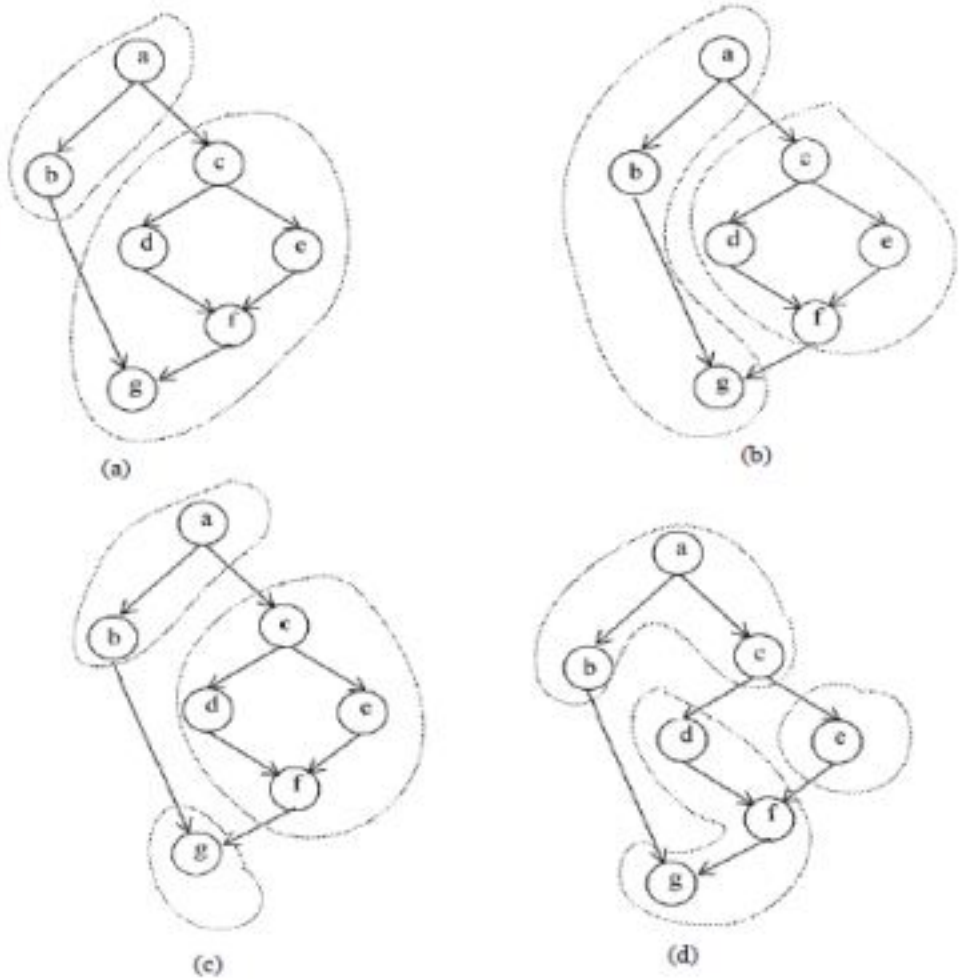
(c)

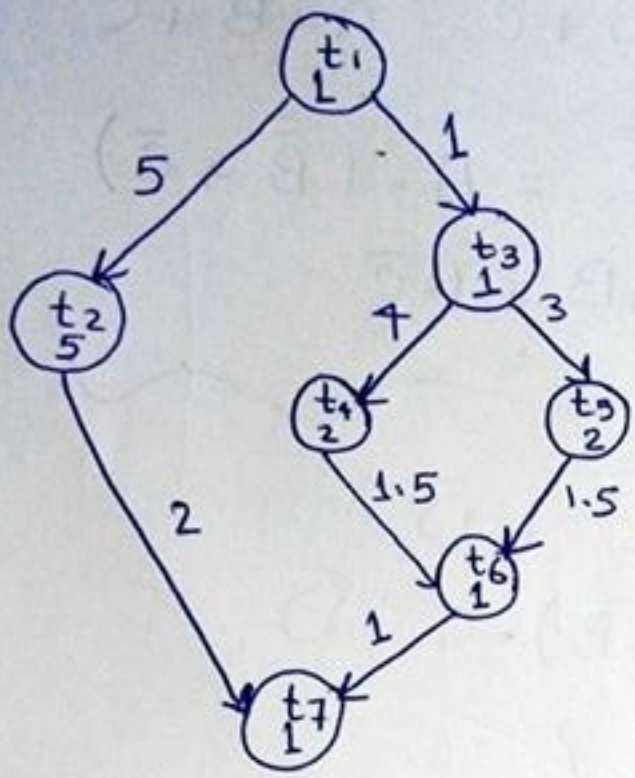


4- CLUSTRING

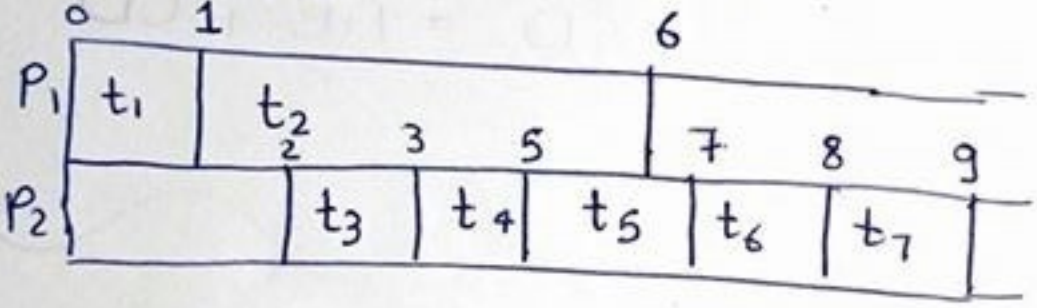
Clustering

- Different ways to cluster a task graph

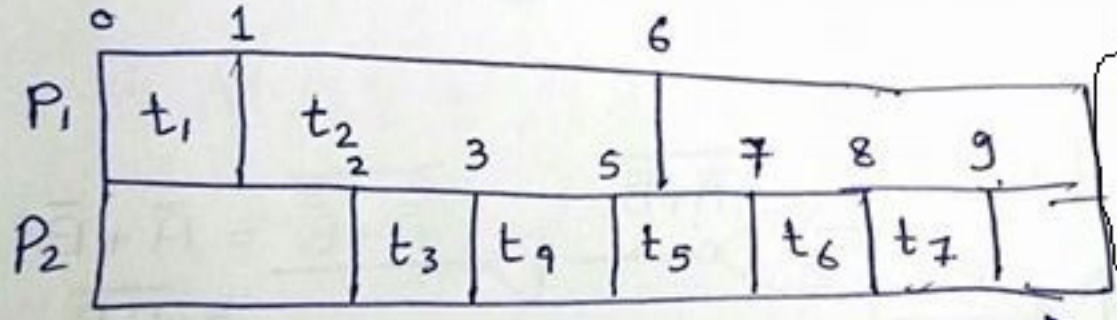




⇒ FCFS $t_1 \rightarrow t_7$



⇒ SJF $t_1 \rightarrow t_3 \rightarrow t_4 \rightarrow t_5 \rightarrow t_6 \rightarrow t_2 \rightarrow t_7$



⇒ RR