

Priority Inversion

Priority Inversion

- Priority inversion is a situation in which a low-priority task executes while a higher priority task wait on it due to resource contentions
- Task interdependency

Priority Inversion Example

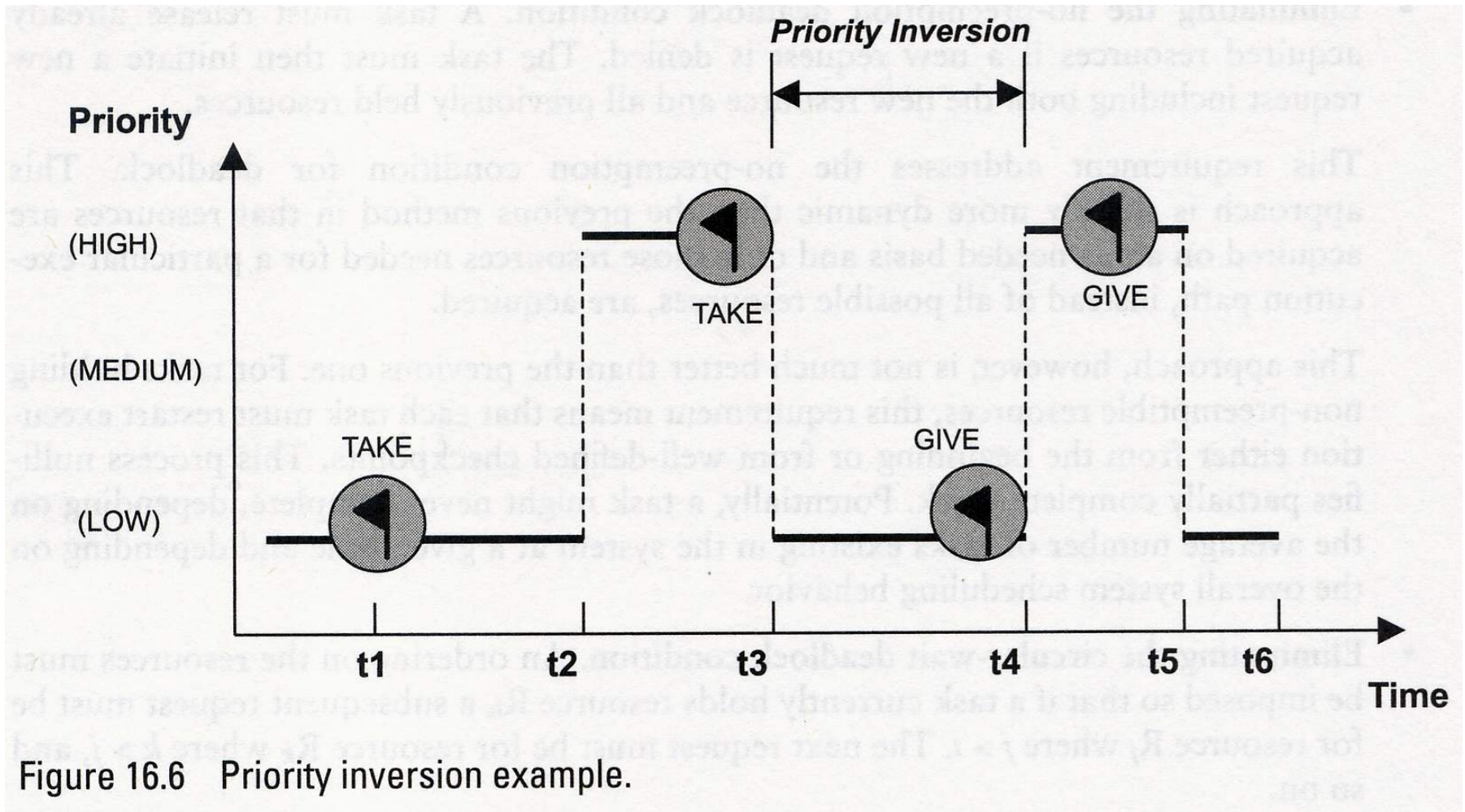


Figure 16.6 Priority inversion example.

Unbounded Priority Inversion Example

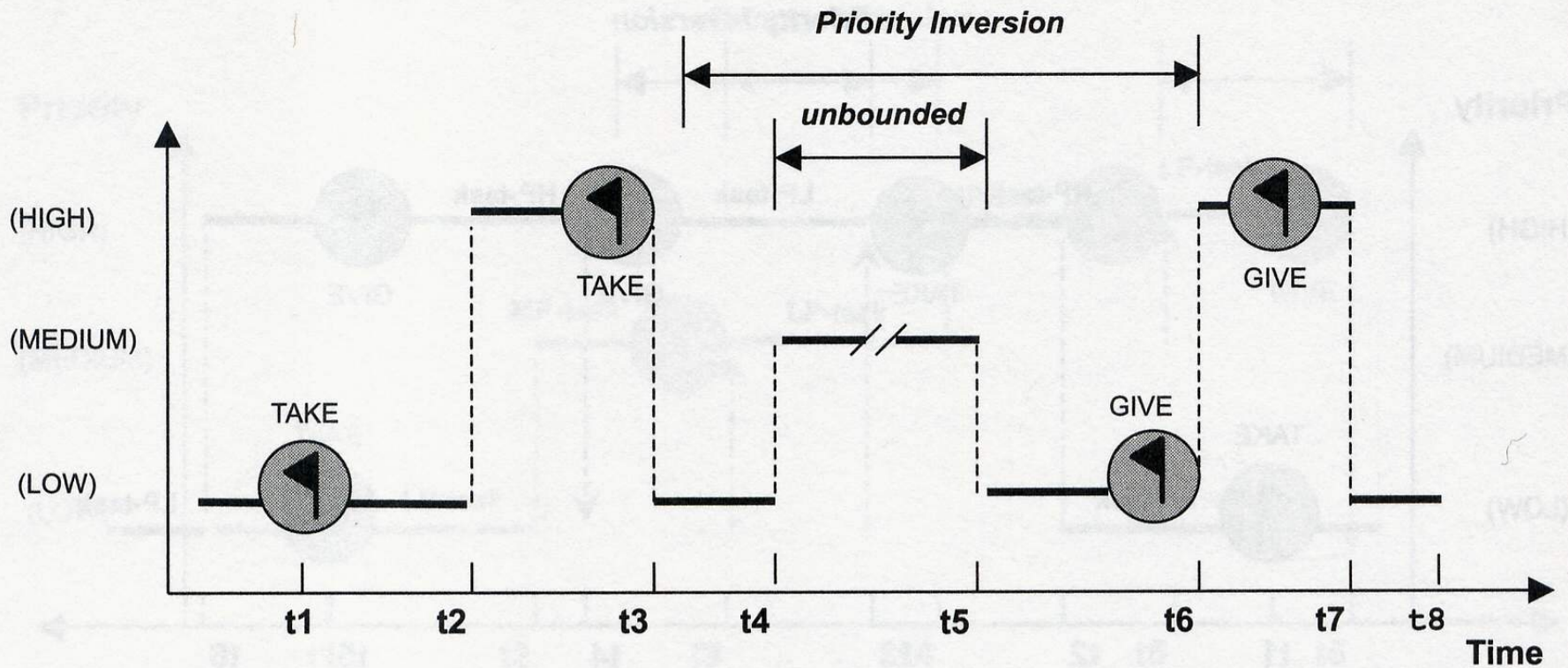


Figure 16.7 Unbounded priority inversion example.

Priority Inheritance Protocol

- R: resource, T: the Task requesting R
 1. If R is in use, T is blocked
 2. If R is free, R is allocated to T
 3. When a task of a higher priority requests the same resource, T's executing priority is raised to the requesting task's priority
 4. The task returns to its previous priority when it releases R

Priority Inheritance Protocol

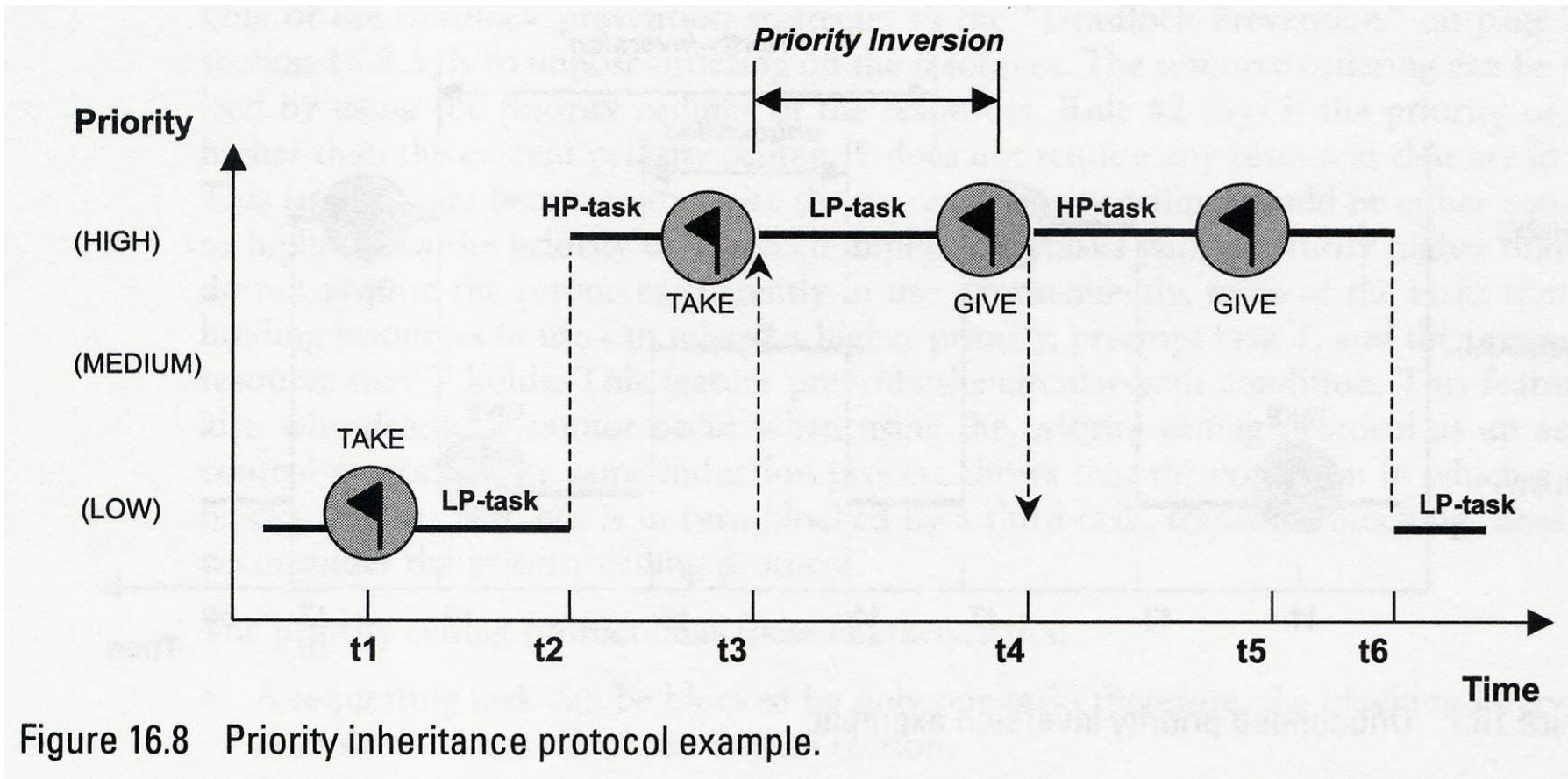


Figure 16.8 Priority inheritance protocol example.

Priority Inheritance Protocol

- Priority inheritance is dynamic

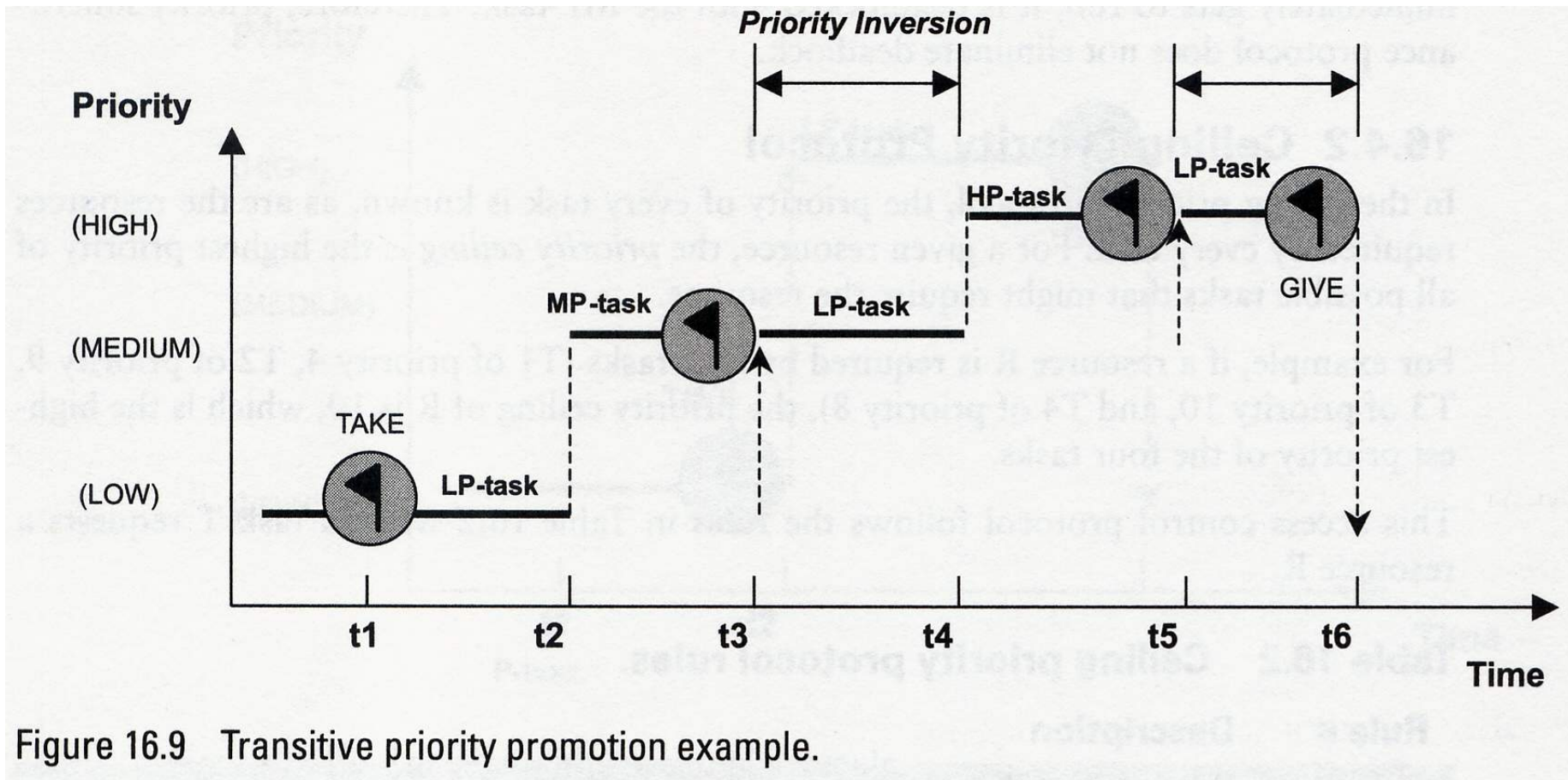


Figure 16.9 Transitive priority promotion example.