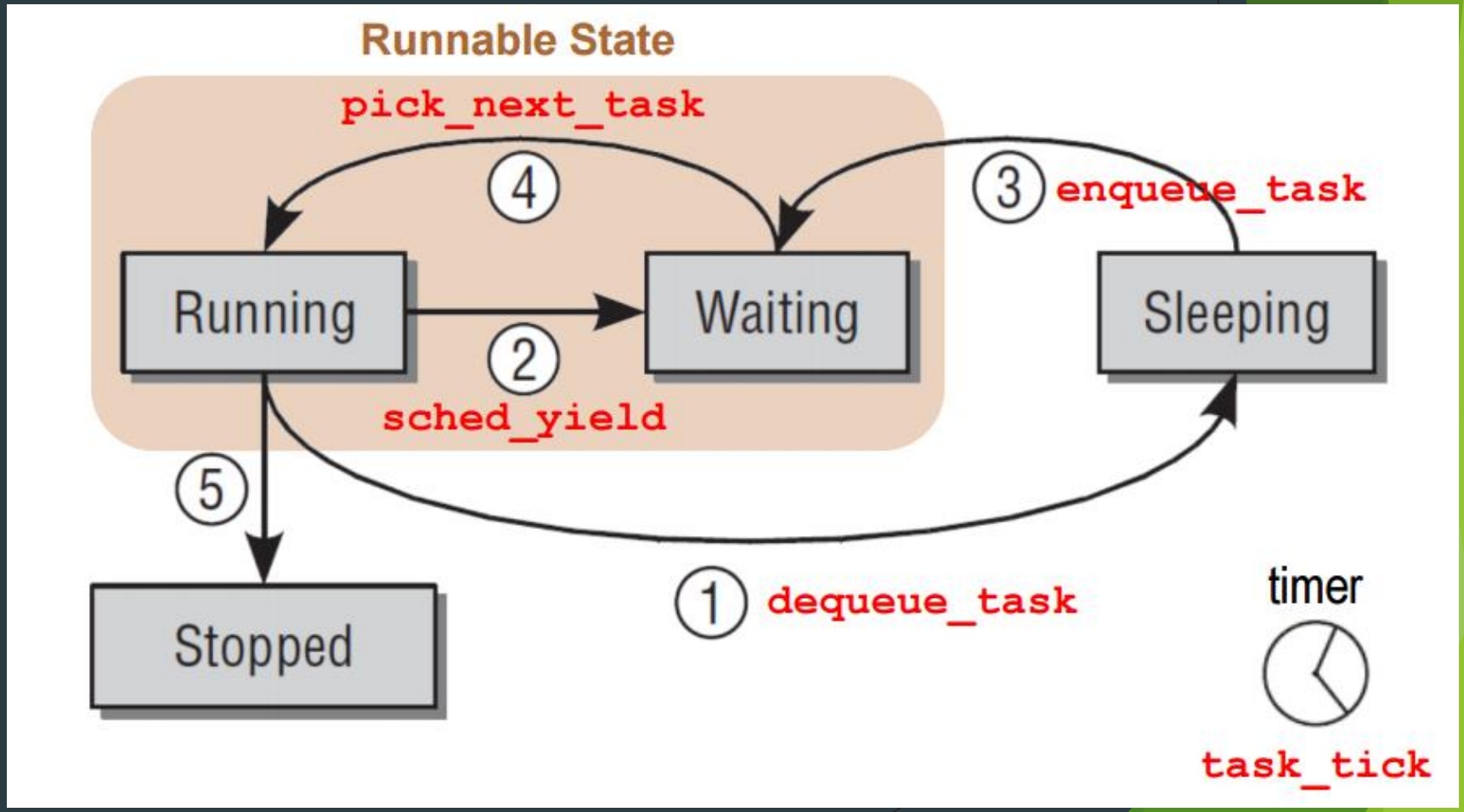
Relationships between Generics Functions and Process States



Hints (1/4)

- static void enqueue_task_weighted_rr(struct rq *rq, struct task_struct *p, int wakeup, bool b)
- static void dequeue_task_weighted_rr(struct rq *rq, struct task_struct *p, int sleep)

- HINT 1: 可利用 functions list_add_tail() 和 list_del() 去 enqueue 和 dequeue task_struct *p
- HINT 2: 請記得去更新 rq->weighted_rr.nr_running 的數值

Hints (2/4)

- static void yield_task_weighted_rr(struct rq *rq)
- HINT: 可利用 function list_move_tail() 去將 the current task (rq->curr) 放到 queue 的尾端

Hints (3/4)

- static void task_tick_weighted_rr(struct rq *rq, struct task_struct *p,int queued)
- task_tick is called by the periodic scheduler each time it is activated.
- HINT:
- 1) 每次對 p->task_time_slice 的 值做減一的動作
- 2) 當 p->task_time_slice 的值到零
  - 2.1) 重設 各個Task自己的weighted_time_slice
    - p->task_time_slice=p->weighted_time_slice
  - 2.2) 呼叫 set_tsk_need_resched(q)
  - 2.3) yield/requeue 該 task

補充說明: task_struct

- Task_time_slice:
  - 紀錄time slice 消耗的狀況.
- Weighted_time_slice
  - 當需要重新補充time slice時,需要補充多少time slice?
  - weighted_time_slice作為補充多少time slice的依據.

```
1219 struct task_struct {
1220     ...
1221     //+ OS Proj2: weighted_rr
1222     unsigned int task_time_slice;
1223     unsigned int weighted_time_slice;
1224     ...
1225         //+ OS Proj2: weighted_rr
1226     struct list_head weighted_rr_list_item;
```

補充說明: initial weighted time slice

In “kernel/sched.c”

```
static void __sched_fork(struct task_struct *p)
{
    ...
    //+ OS  Proj2: weighted_rr
    INIT_LIST_HEAD(&p->weighted_rr_list_item);
    p->task_time_slice = weighted_rr_time_slice;
    p->weighted_time_slice = weighted_rr_time_slice;
    ...
}

//+ OS  Proj2: weighted_rr
SYSCALL_DEFINE1(sched_weighted_rr_setquantum, unsigned int, quantum)
{
    weighted_rr_time_slice = quantum;
    return;
}
```

Hints (4/4)

- static struct task_struct *pick_next_task_weighted_rr(struct rq *rq)
- pick_next_task selects the next task that is supposed to run, while put_prev_task is called before the currently executing task is replaced with another one.
- HINT:
- 1) 若 weighted_rr.queue 是空的， 回傳 NULL (或是用weighted_rr.nr_running判斷.)
- 2) 否則，用 list_first_entry() 去取得並回傳 weighted_rr.queue 中的第一筆 entry/task