Lab 1: Scheduling

Information

吴悦天

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>
> 徐陈皓
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Alarm Clock

Data Structures

> 1 **declaration** , , .
> 30 .

```
pub struct Alarm(Mutex<Vec<(Arc<Thread>, i64)>>);
```

,

.

Algorithms

> 2 `sleep()` .
>
> `sleep()`
>
> . `sleep()`
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> , ,
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> . , ,
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> .
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> , .
>
> 3
>
> - -
>
> , - .
>
> -

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Synchronization

> 4 `sleep()`
>
> `sleep()` ,
>
> .

> `sleep()`
>
> ,
>
> .

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Priority Scheduling

Data Structures

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> 1 **declaration** , , .
>
> 30 .

```
pub struct Thread {
    tid: isize,
    name: &'static str,
    stack: usize,
    status: Mutex<Status>,
    context: Mutex<Context>,
    pub priority: AtomicU32,

    #[cfg(feature = "thread-scheduler-priority")]
    pub effective_priority: AtomicU32,

    #[cfg(feature = "thread-scheduler-priority")]
    pub donee: Mutex<Option<Arc<Thread>>>,

    #[cfg(feature = "thread-scheduler-priority")]
    pub donors: Mutex<Vec<Arc<Thread>>>,

    pub userproc: Option<UserProc>,
    pub pagetable: Option<Mutex<PageTable>>,
}
```

,

.

```
pub struct PriorityScheduler;
```

, .

```
pub struct Queue(Mutex<Vec<Arc<Thread>>, Intr>);
```

.

```
pub struct Donate;
```

,

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> 2 .
> (. .,).

, `effective_priority`, `donee,` `donors`.

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, ' ( ),

( ). . `donee`

-- , `donors` .

( ).

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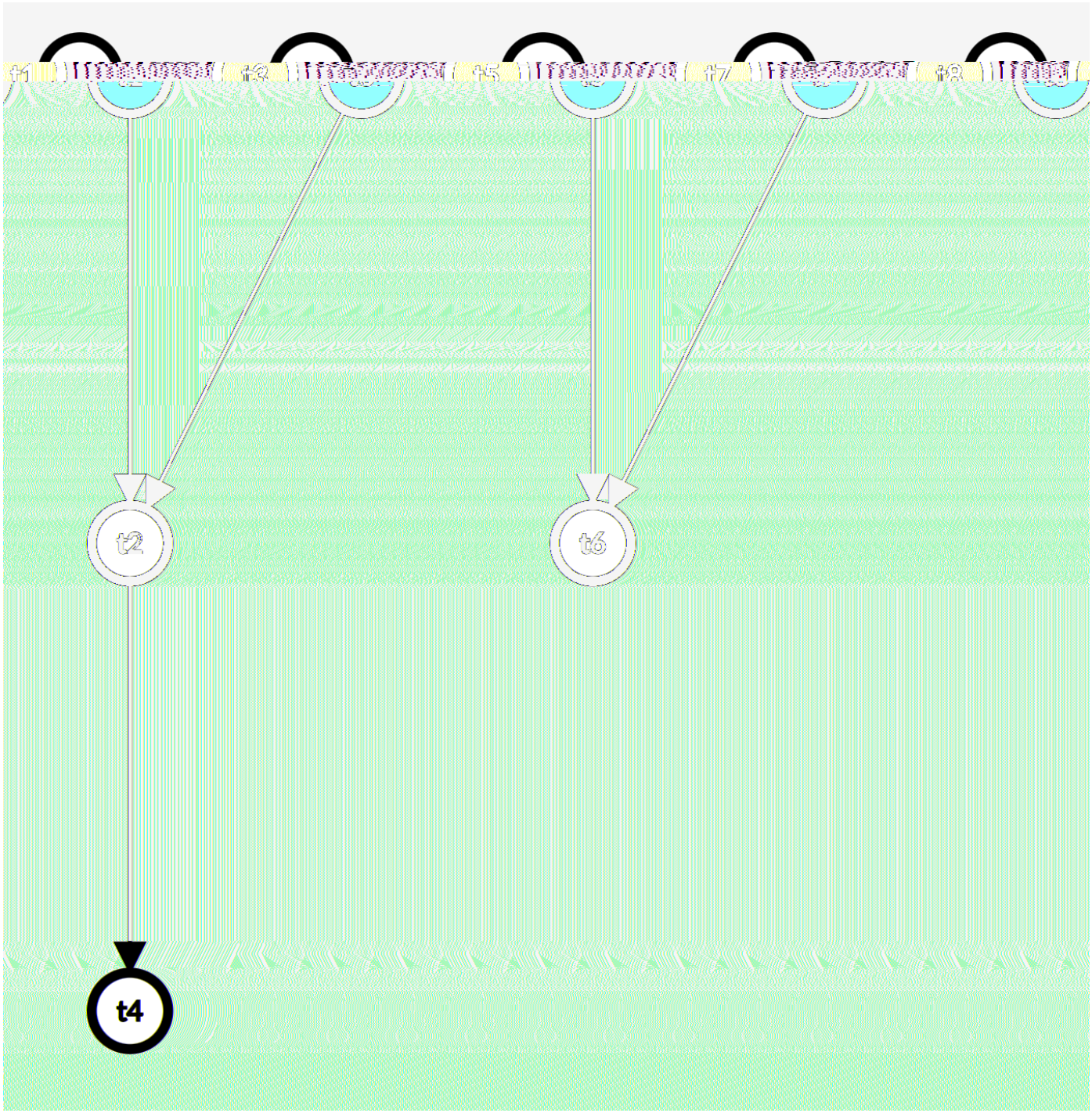

Algorithms

> 3 , ,
>
> ,
>
> , . `Sleep`
> , . `Intr`
> , . . `schedule` .

> 4 .

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1. . ,
' .
2. `down` ' , .
3. " " ,
.

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(, , .) .

> , - ,
> .

1. .
2. .
3. `up` ,
- .

Synchronization

> `thread::set_priority()`
> .

`thread::set_priority()` t
, `thread::get_priority()`,
.
, `set_priority()`, .
.

Rationale

> 1
> - .

1. / . ,
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). , ,
' `Vec` - .
2. .
, - (
-). - .