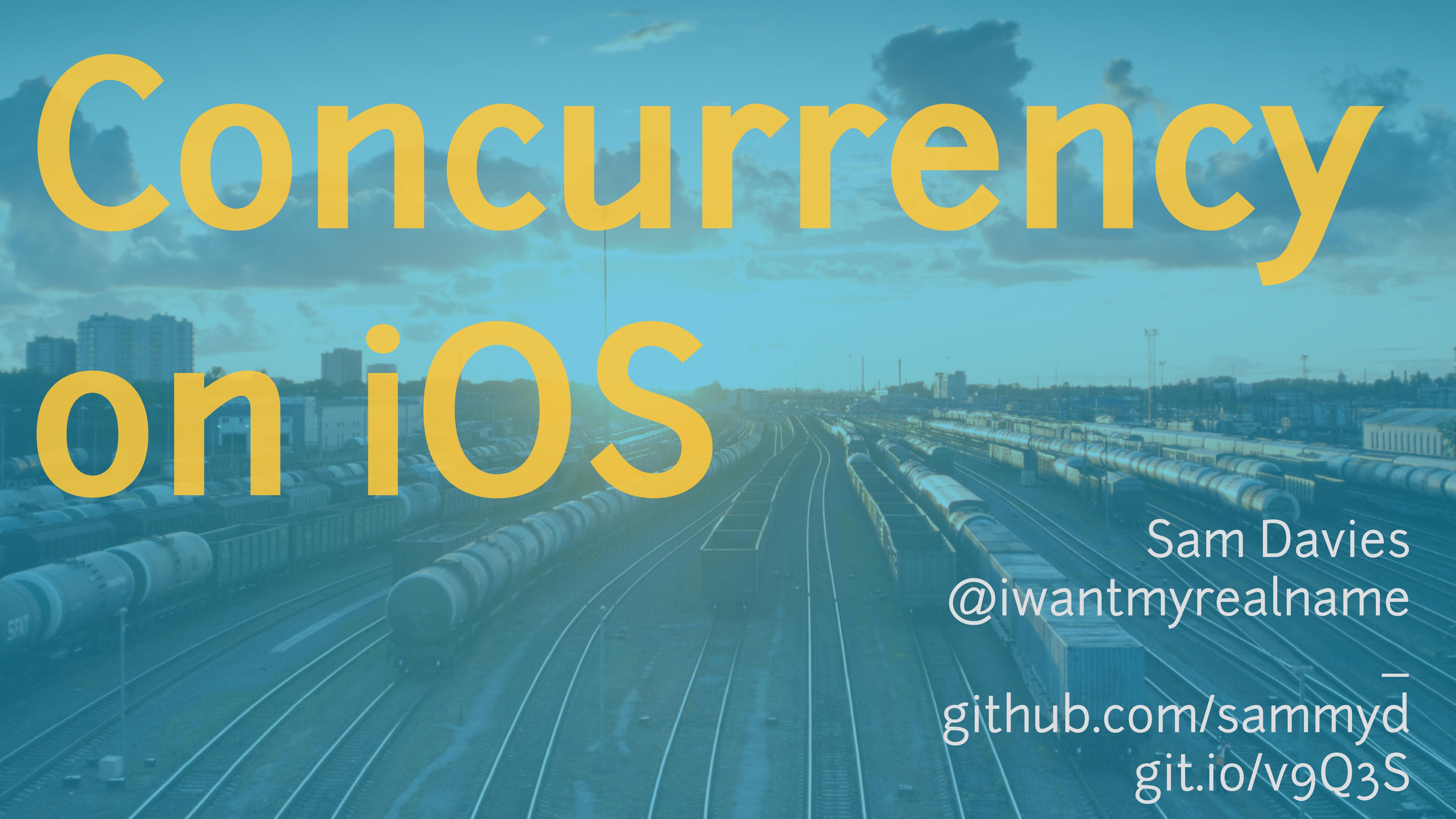


Concurrency on iOS

A photograph of a large industrial facility, likely a port or rail yard, featuring numerous train tracks filled with shipping containers. In the background, there are several tall buildings and a city skyline under a sky filled with scattered clouds.

Sam Davies
@iwantmyrealname
github.com/sammyd
git.io/vgQ3S

concurrency
is a card



what is
concurrency?



why use
concurrency?



common
concurrency
problems

A black and white photograph of a group of male runners in mid-stride during a race. They are wearing singlets with 'UT' and the number '10' on them. The runner in the foreground has 'UT' and '10' on his singlet, and 'ASICS' on his headband. The runner behind him has 'UT' and '10' on his singlet. The runner to the right has 'UT' and '10' on his singlet. The runner to the left has 'UT' and '10' on his singlet. The runner to the far left has 'UT' and '10' on his singlet. The runner to the far right has 'UT' and '10' on his singlet.

race condition

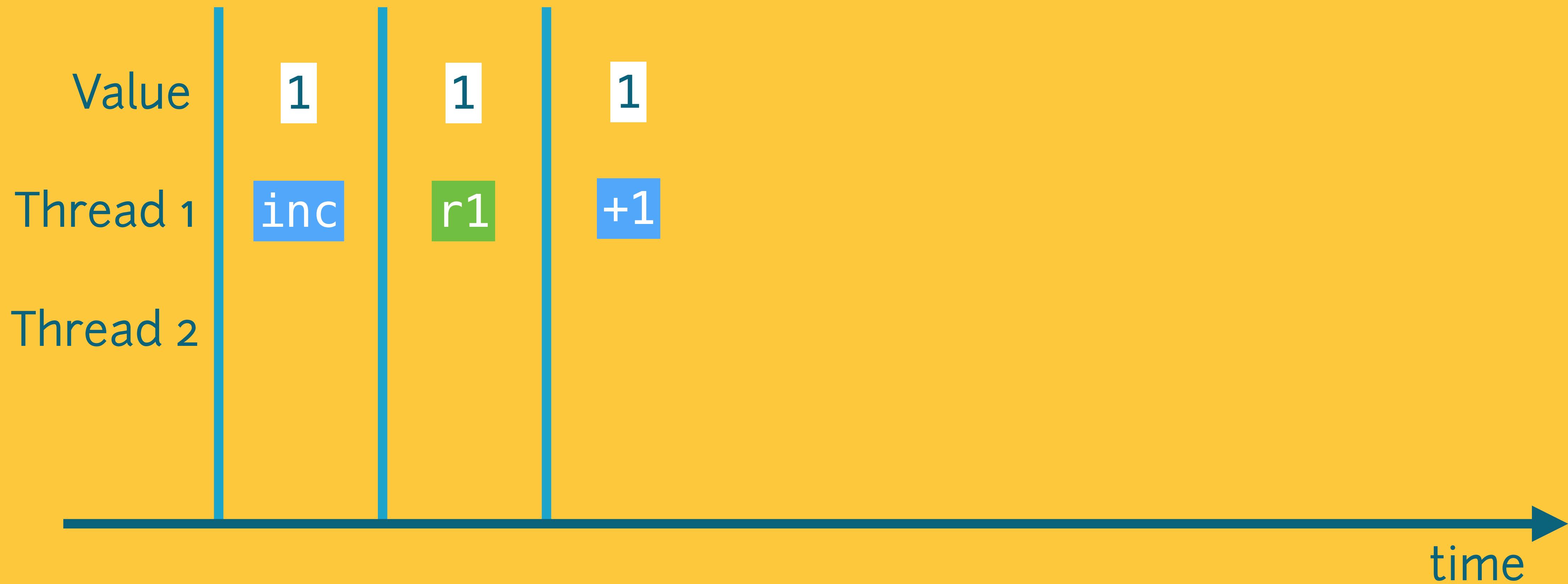
Race Condition



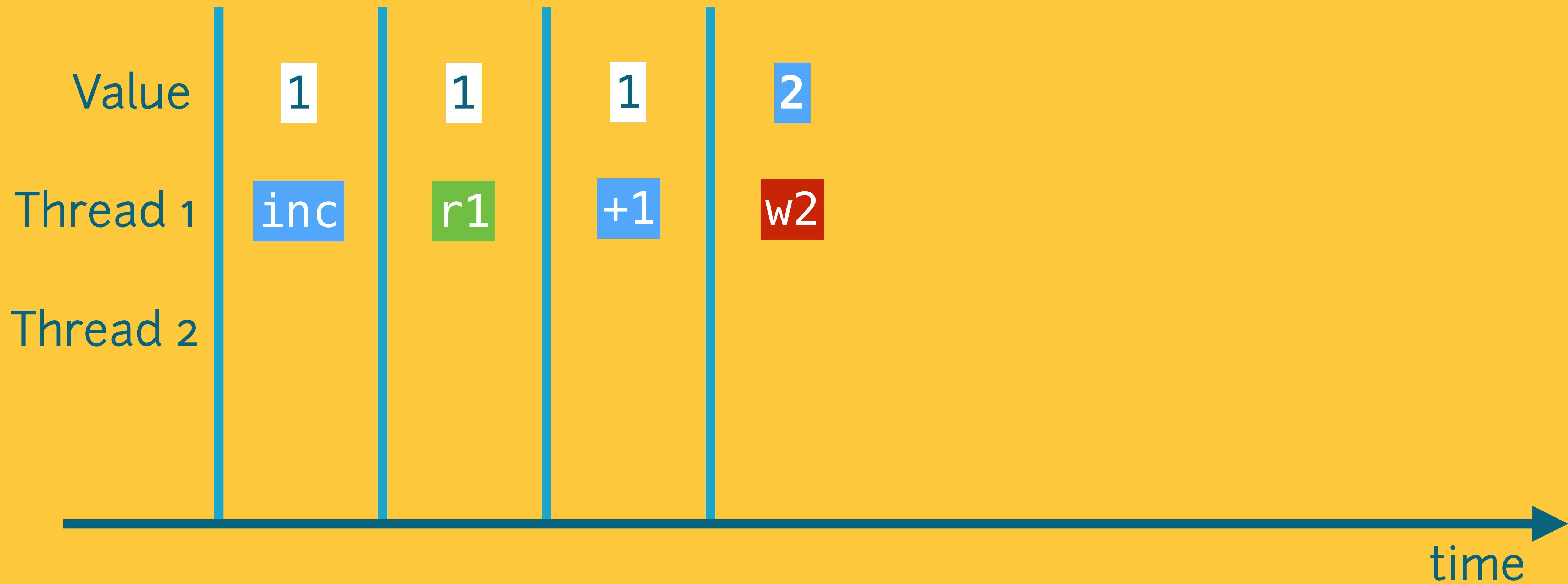
Race Condition



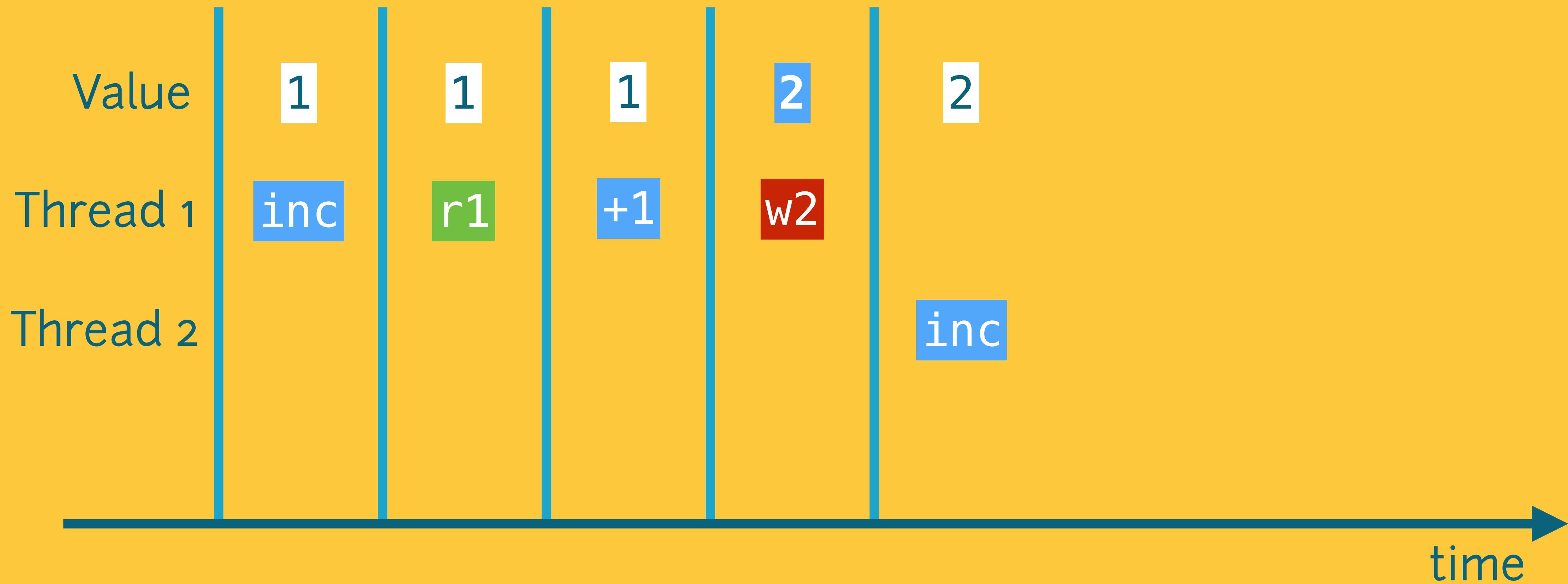
Race Condition



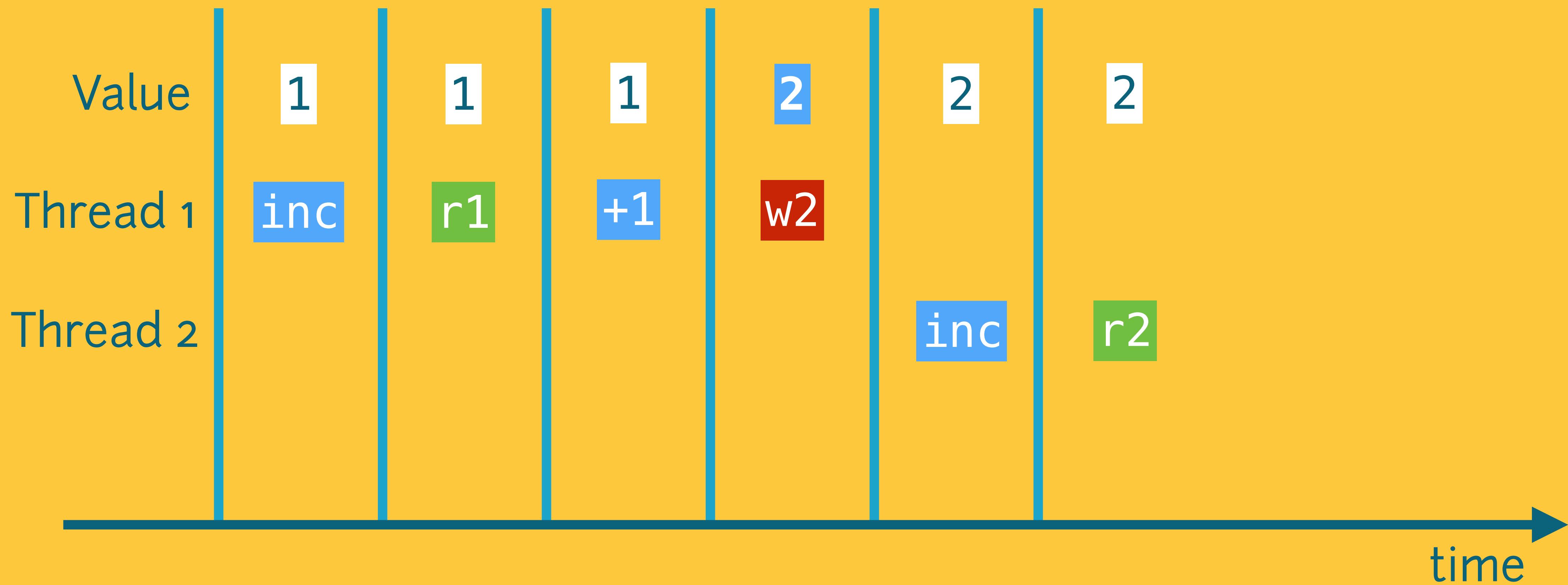
Race Condition



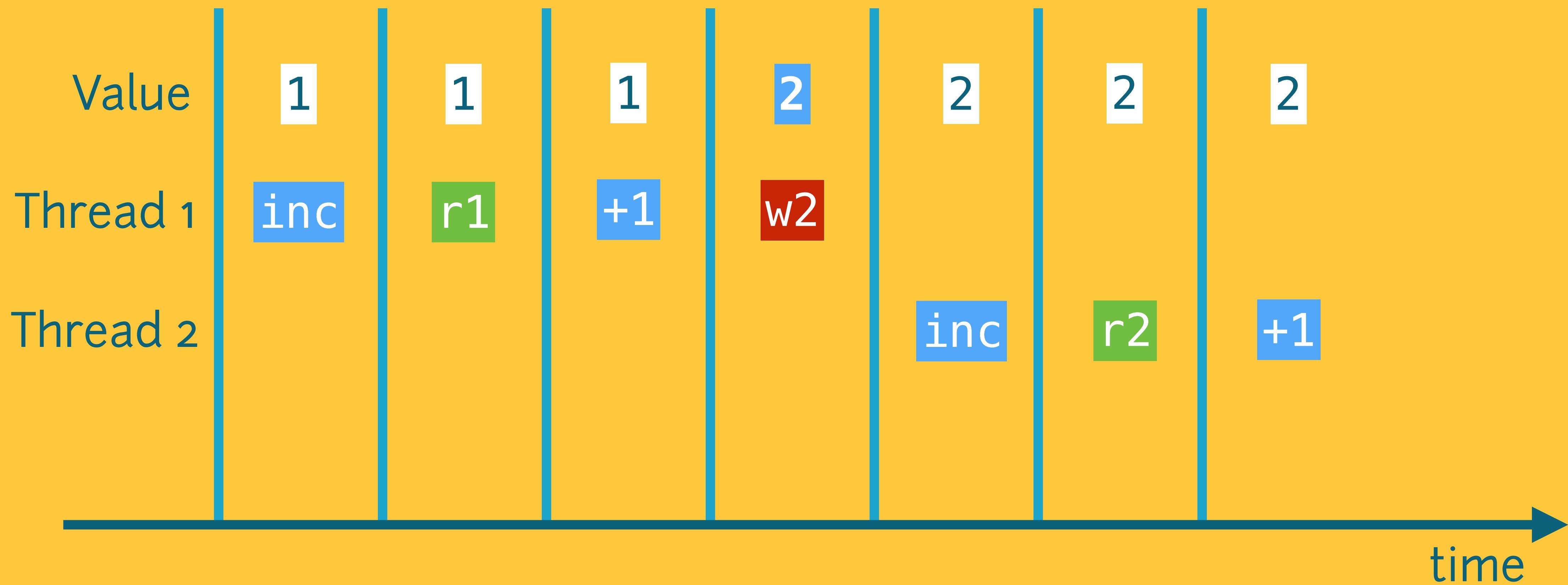
Race Condition



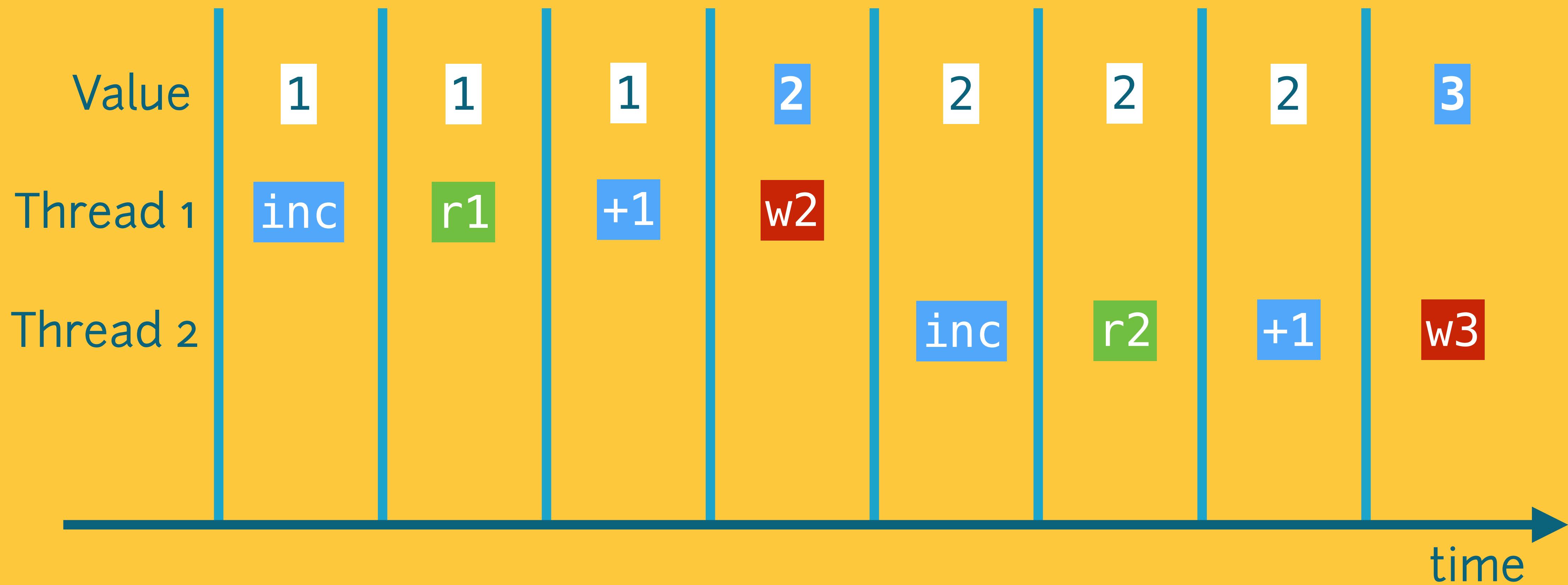
Race Condition



Race Condition



Race Condition



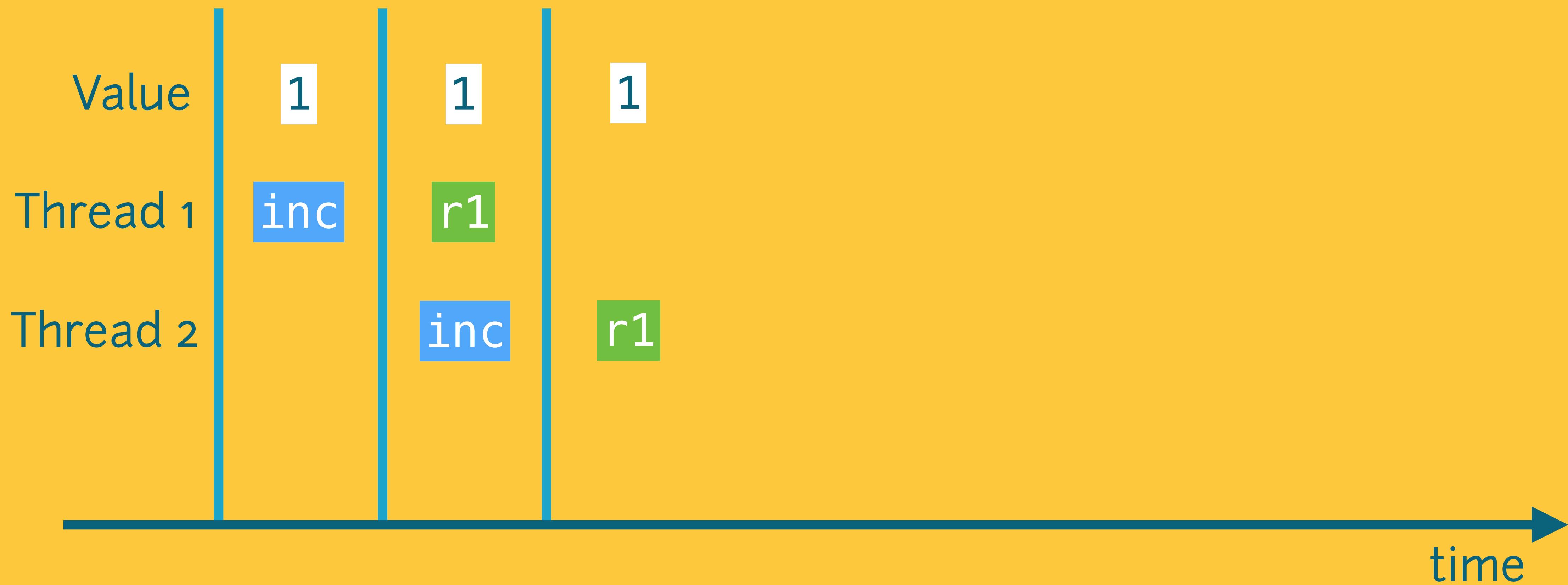
Race Condition



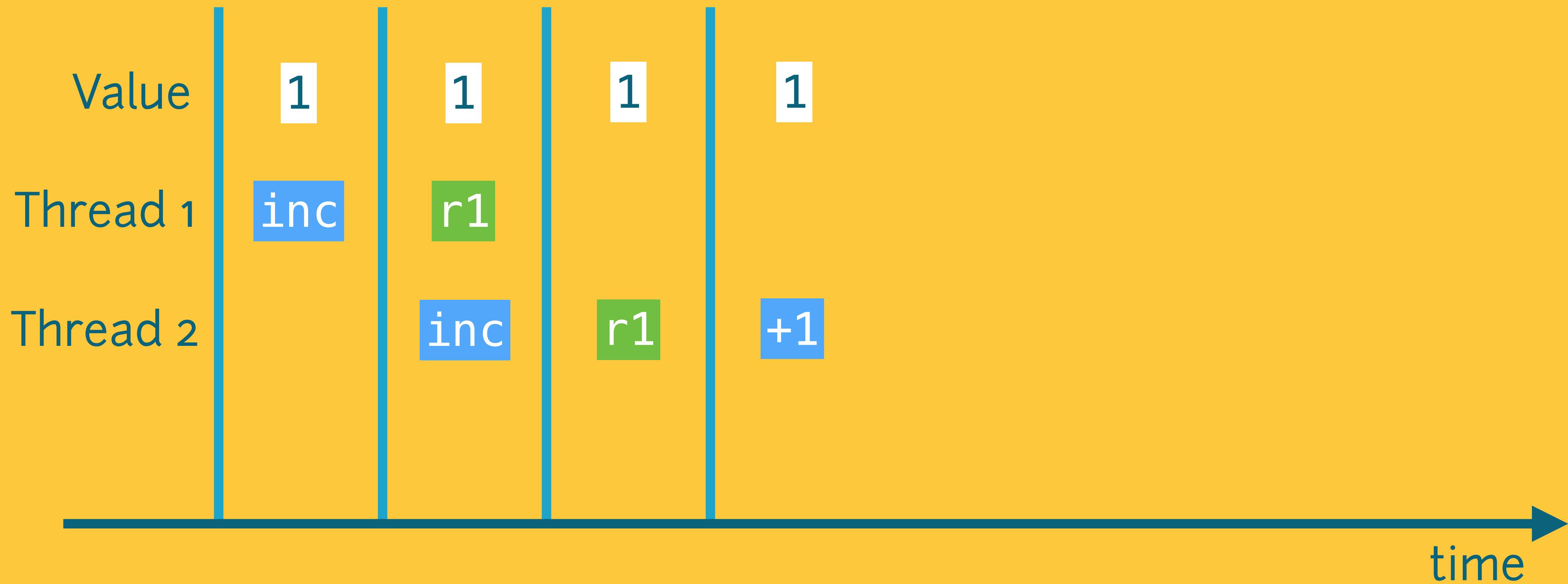
Race Condition



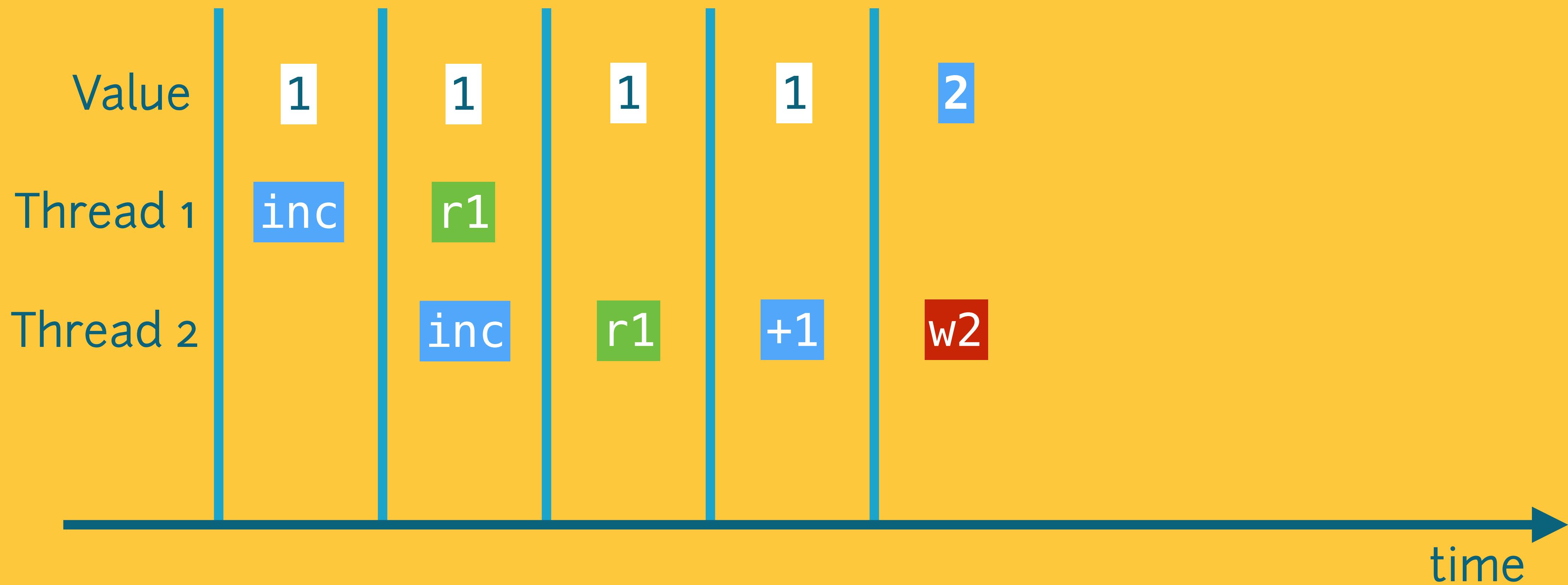
Race Condition



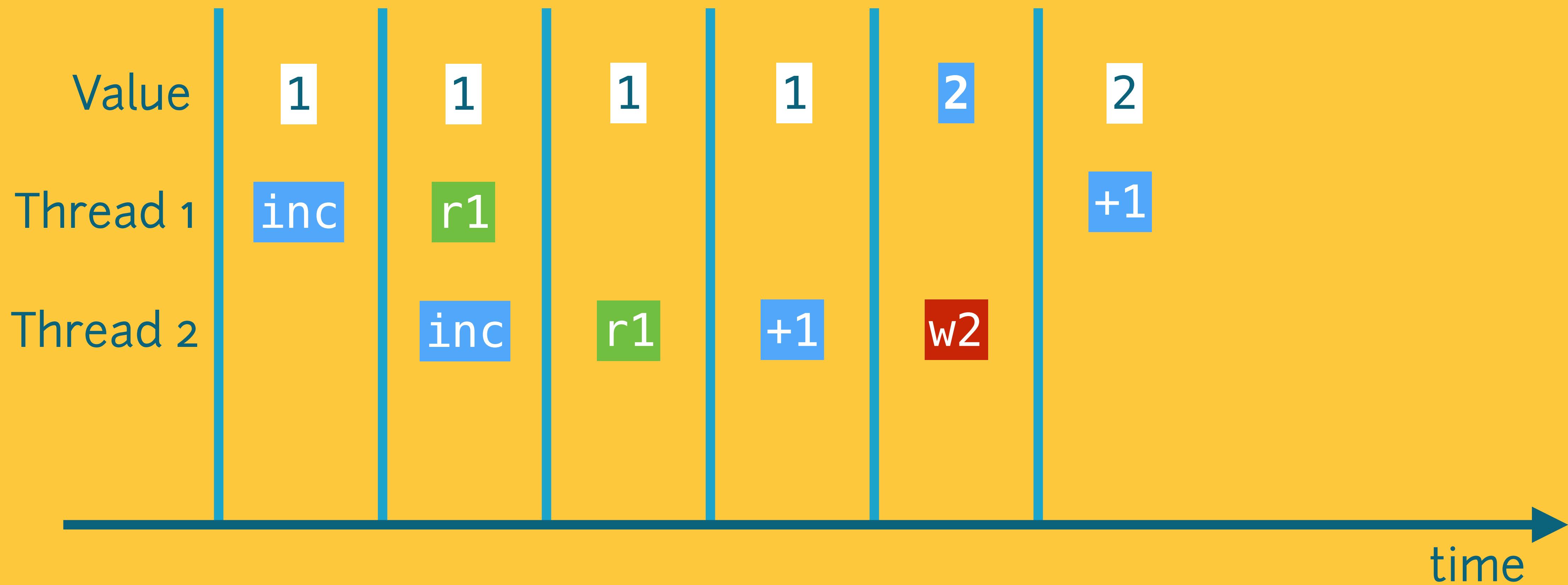
Race Condition



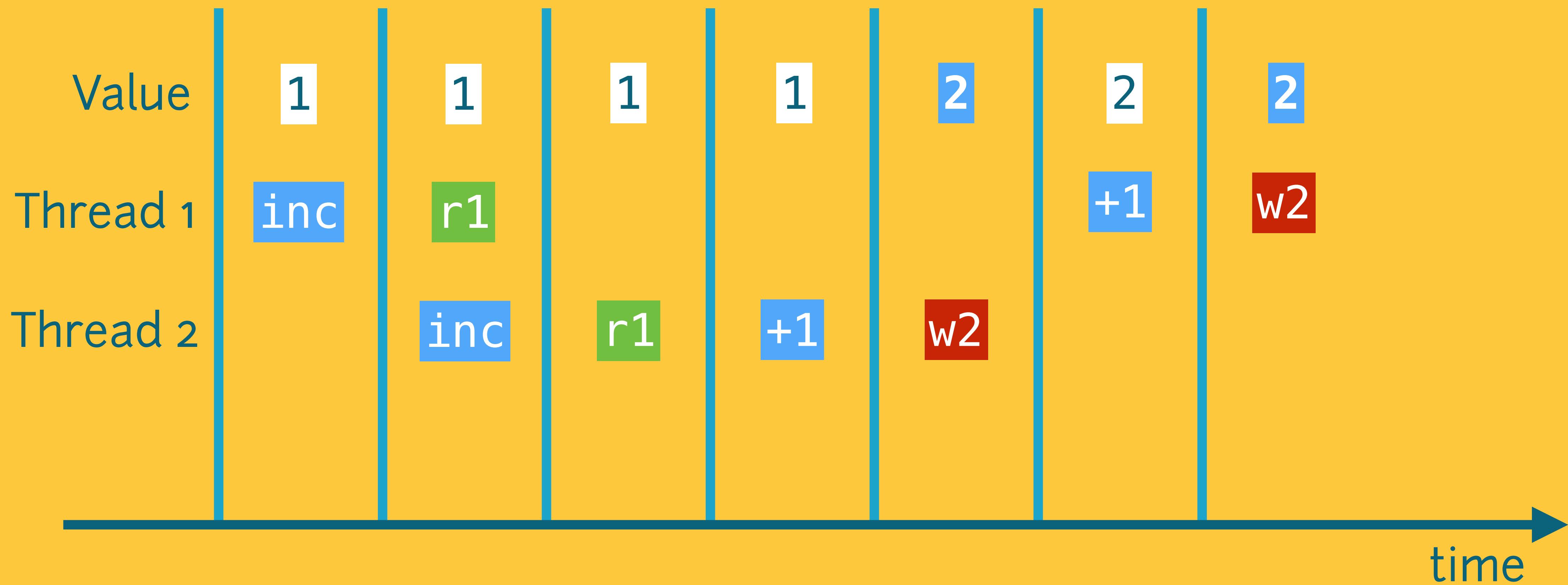
Race Condition



Race Condition



Race Condition





priority

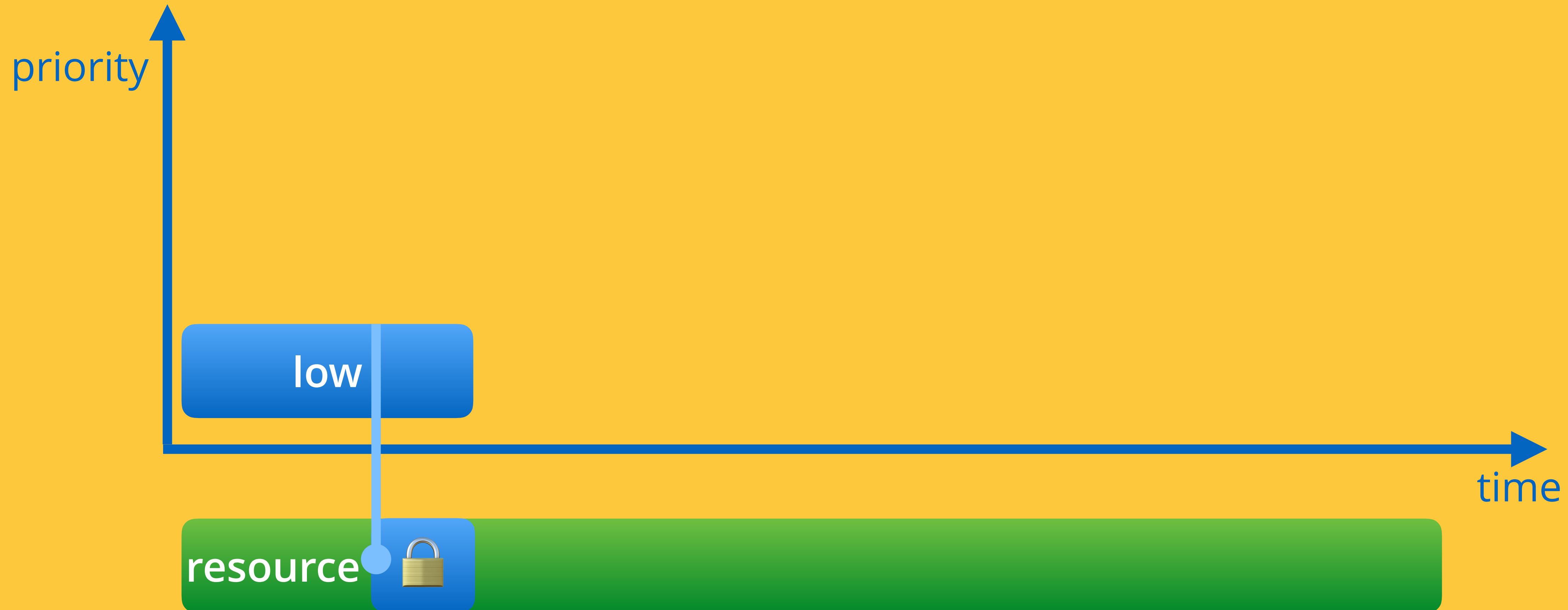


migration

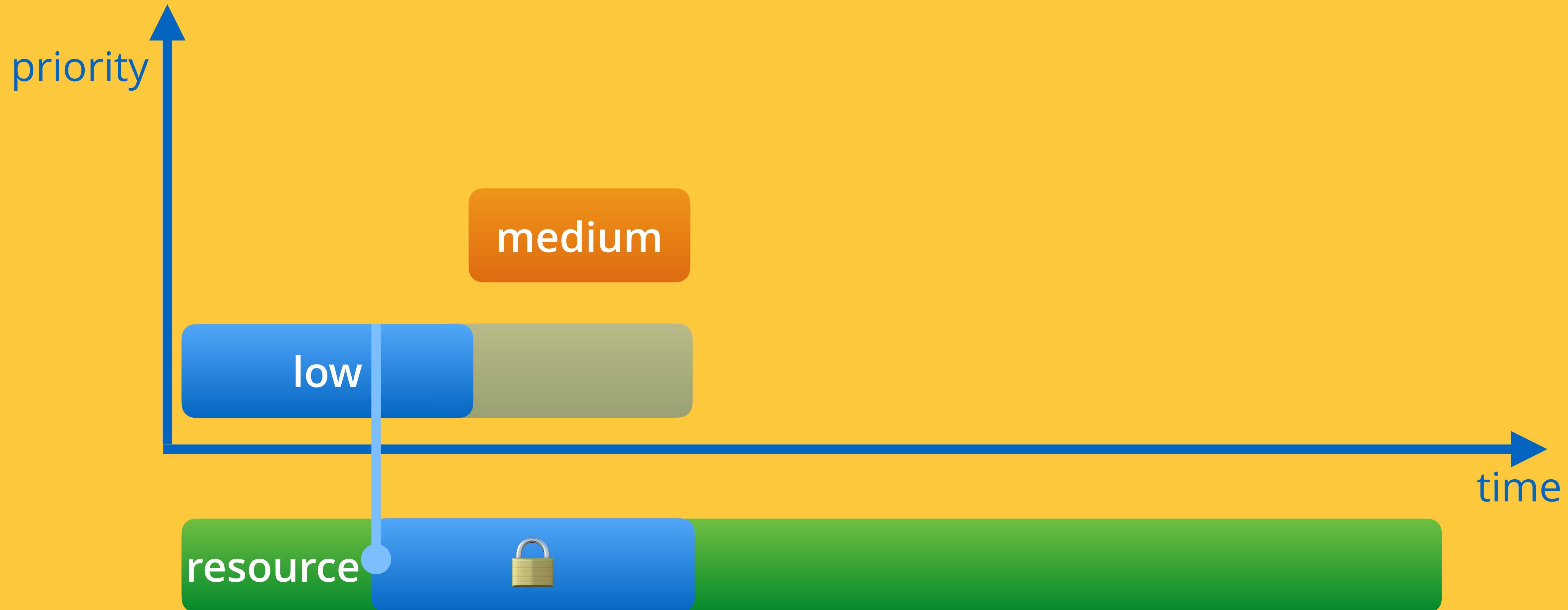
Priority Inversion



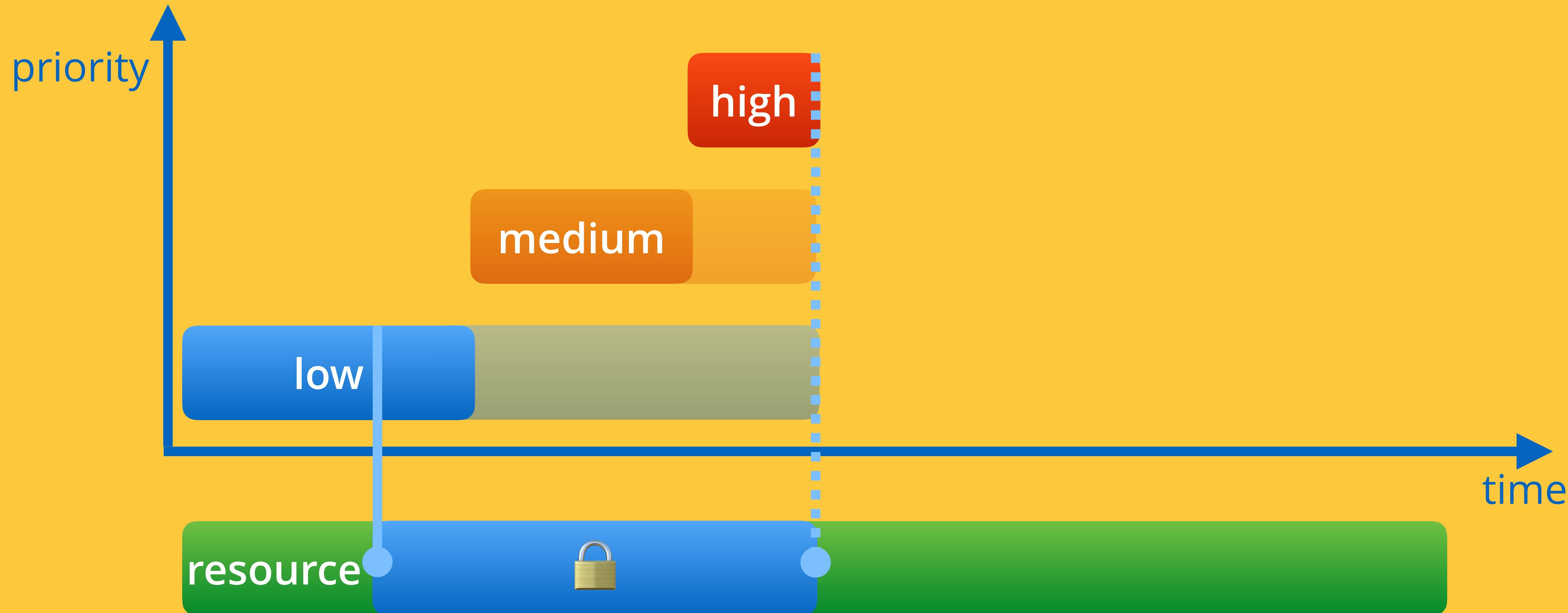
Priority Inversion



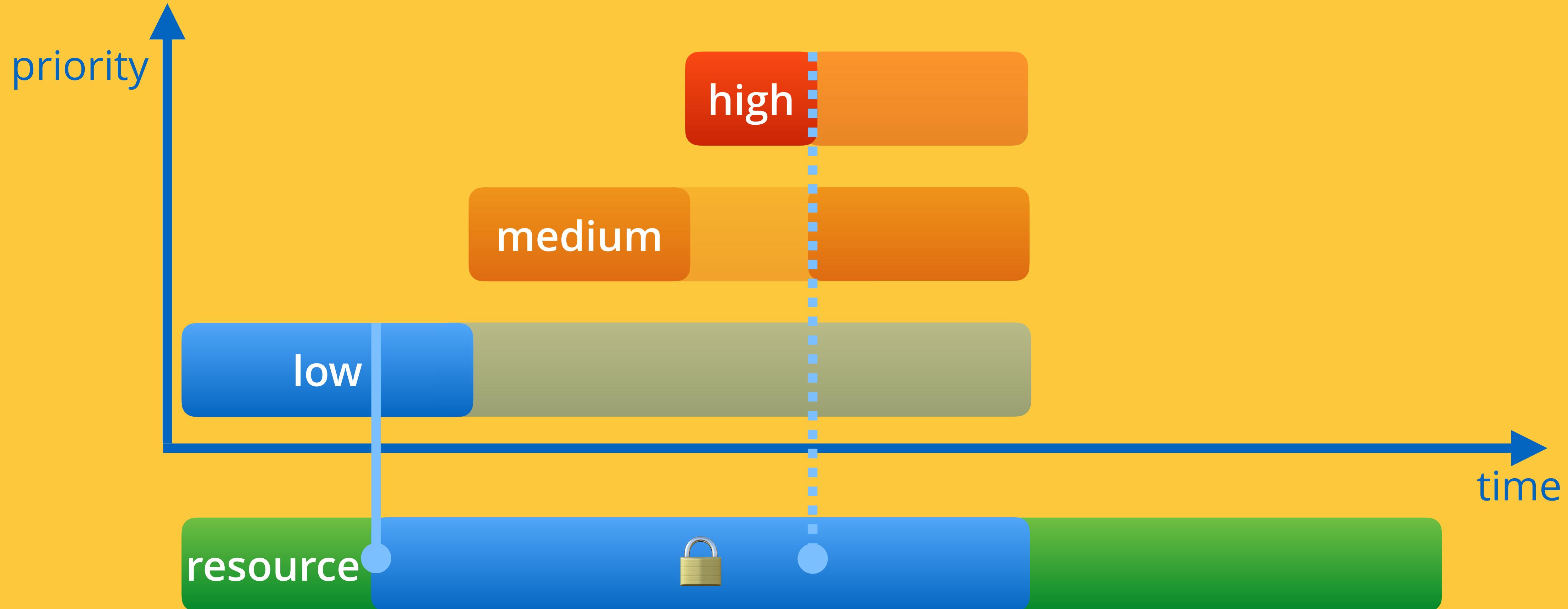
Priority Inversion



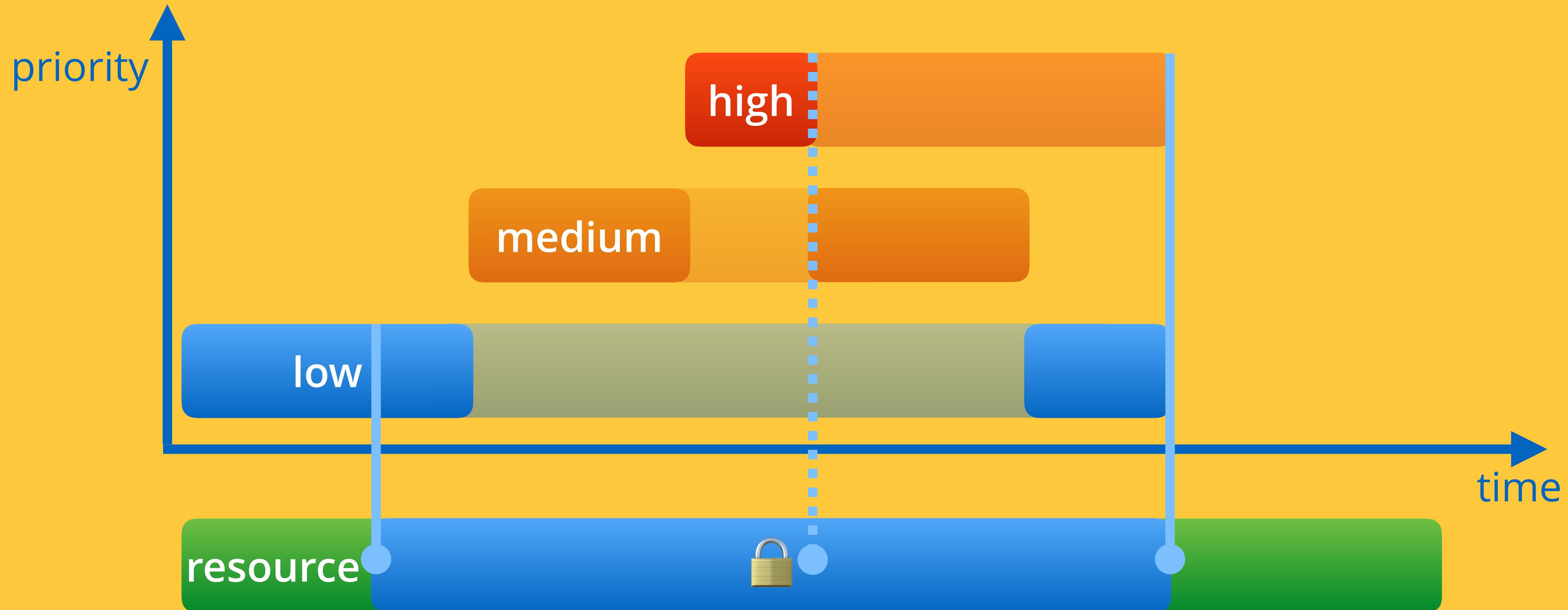
Priority Inversion



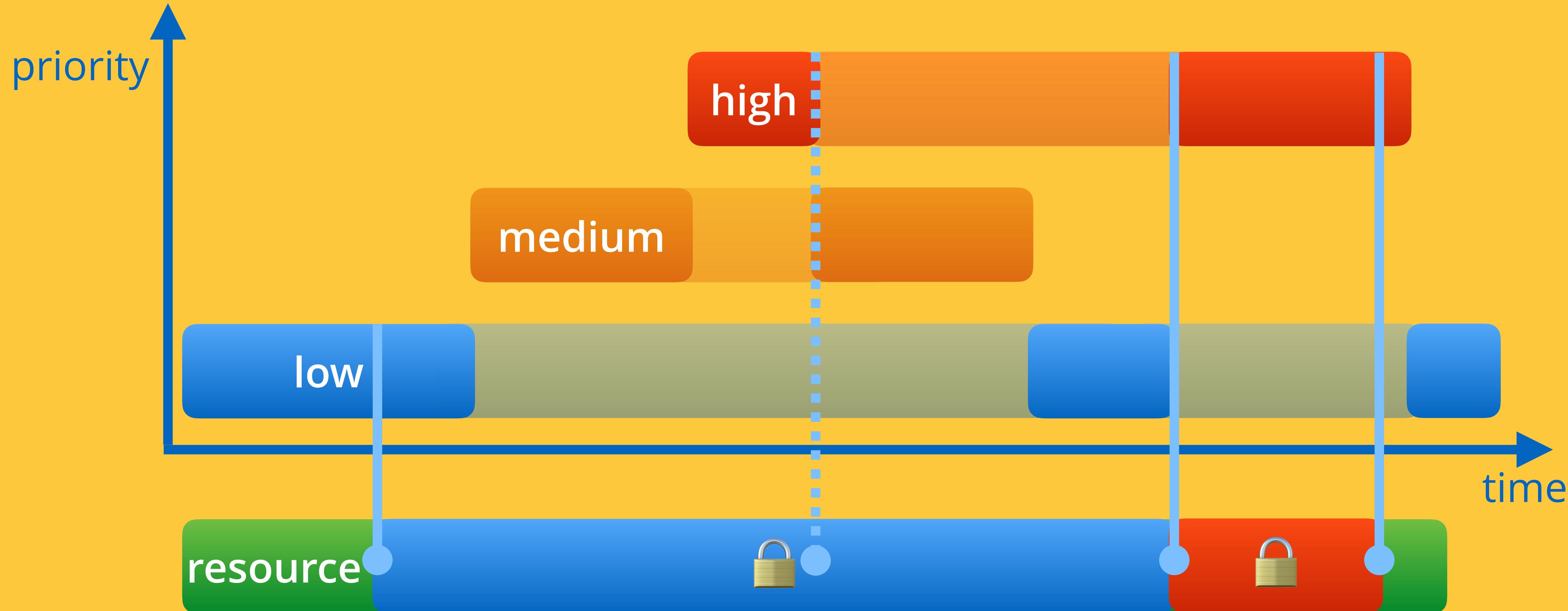
Priority Inversion

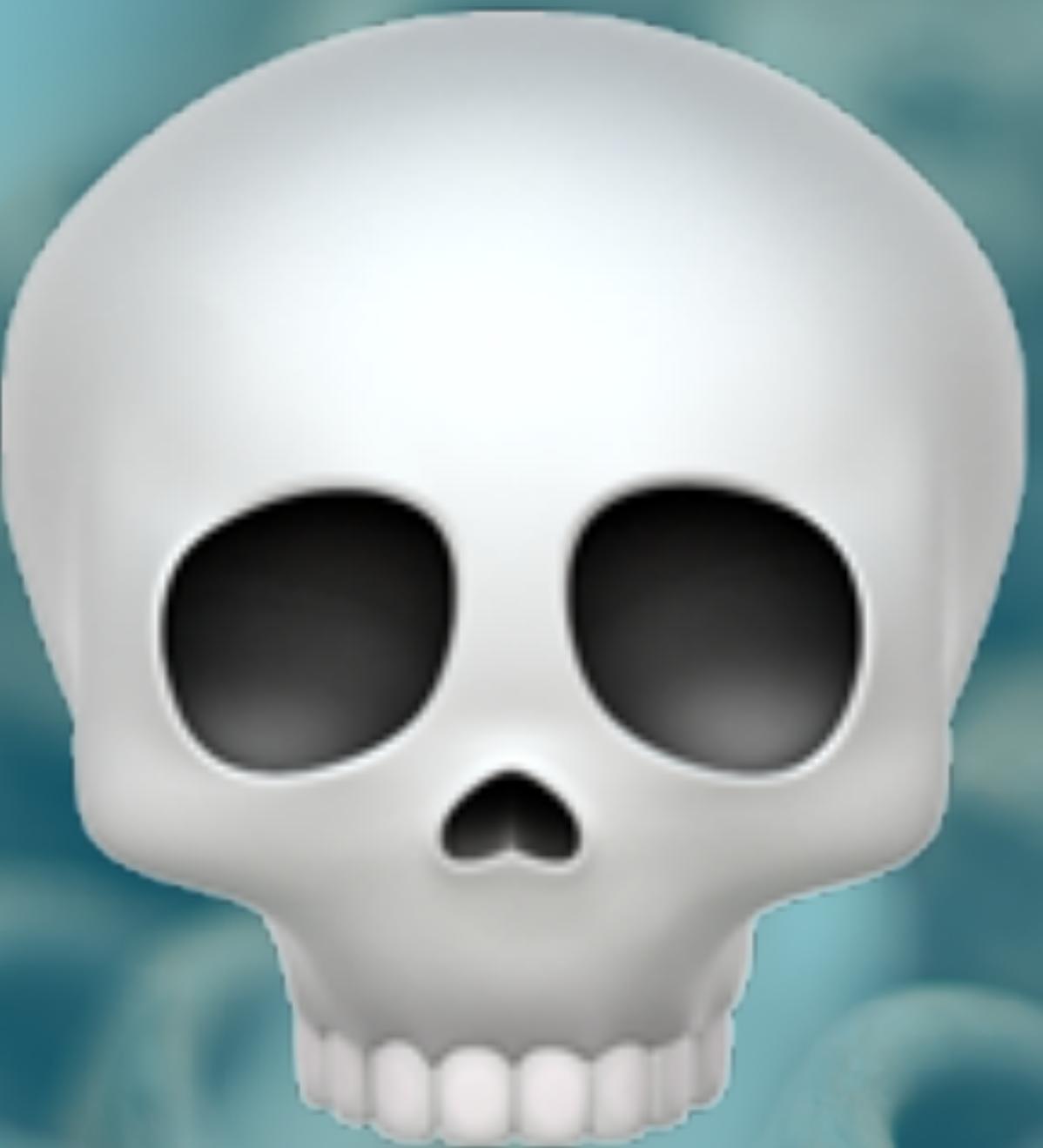


Priority Inversion



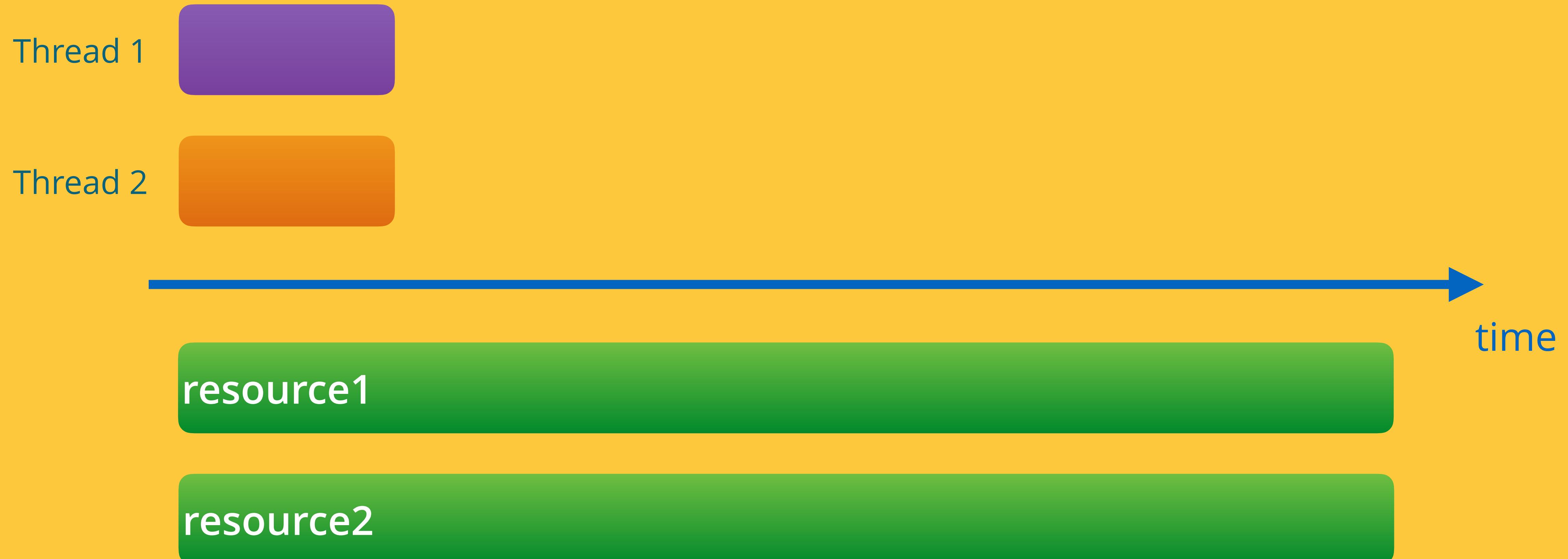
Priority Inversion



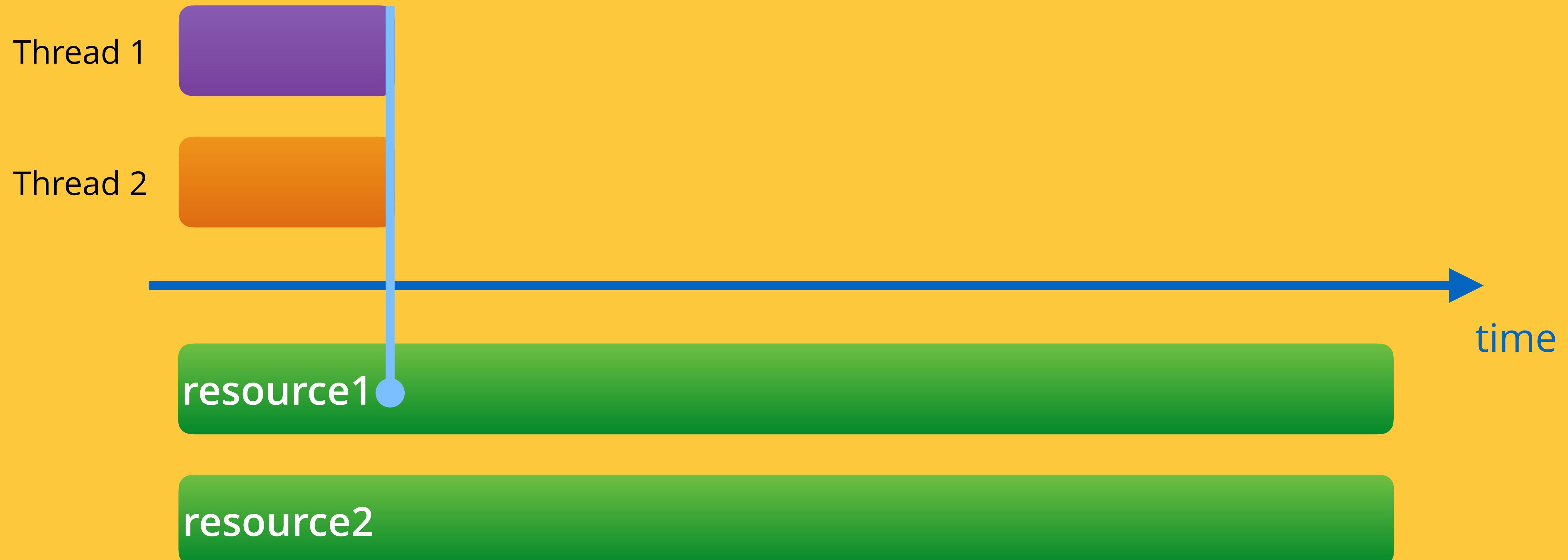


deadlock

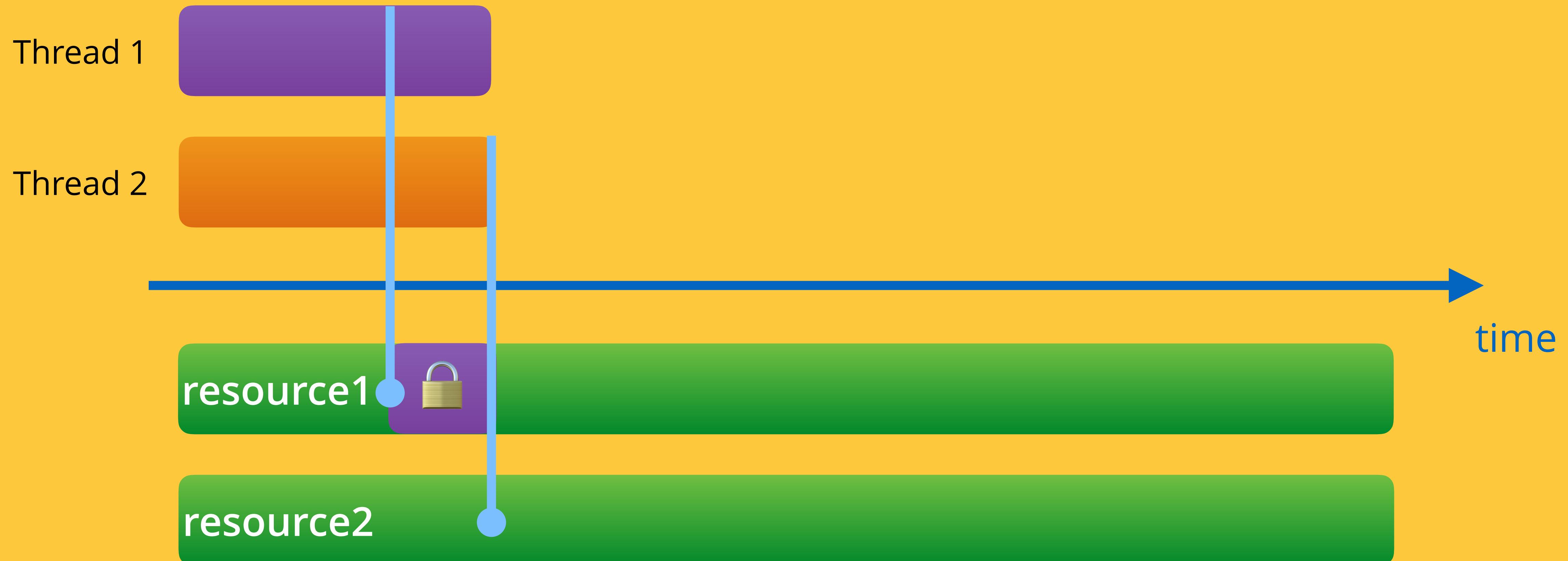
Deadlock



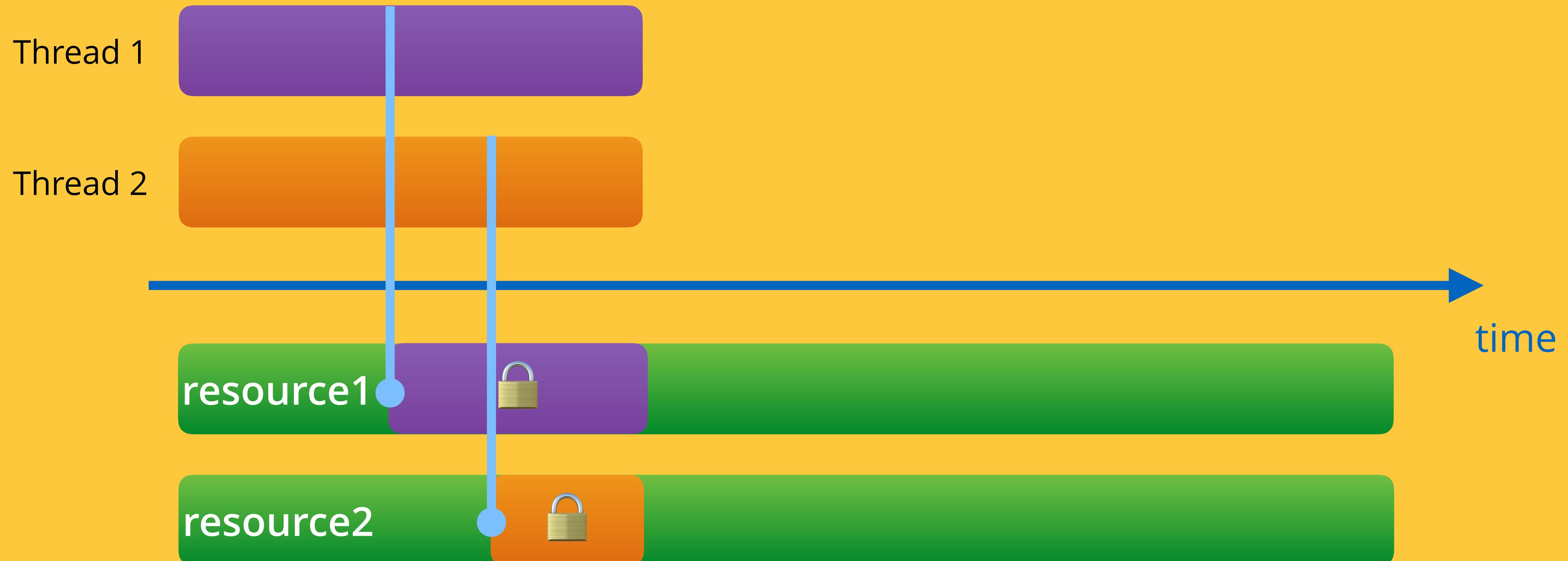
Deadlock



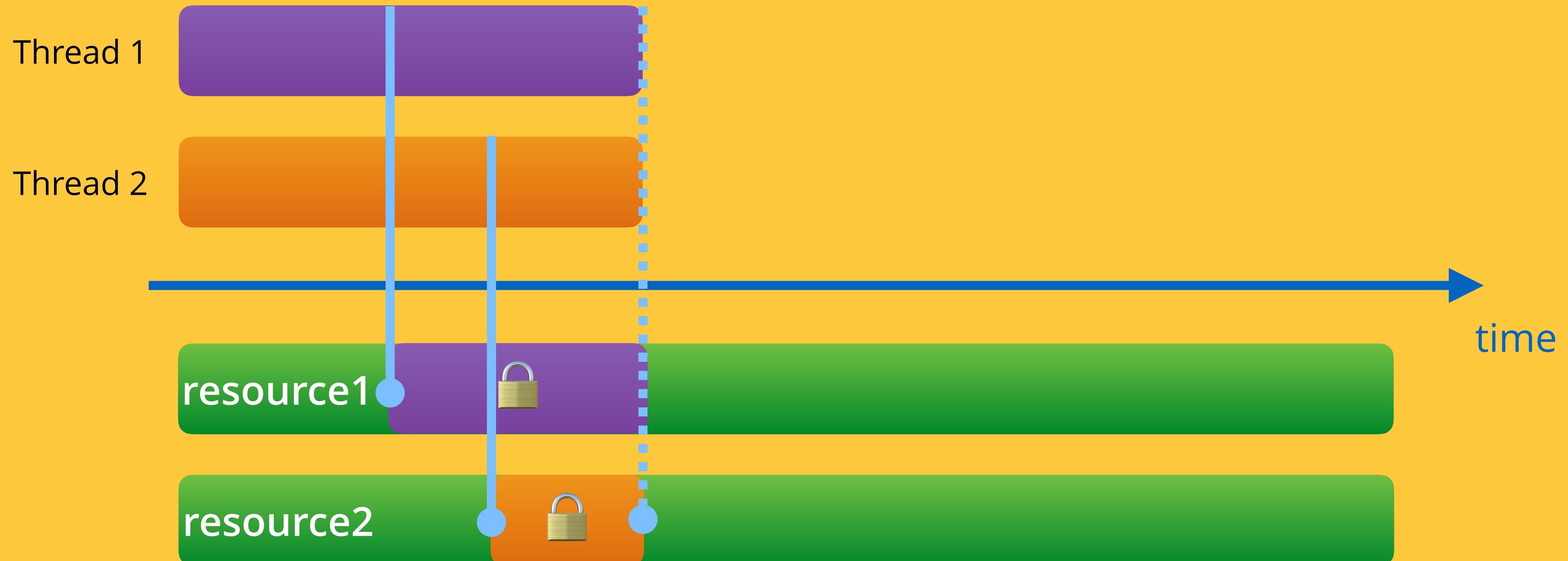
Deadlock



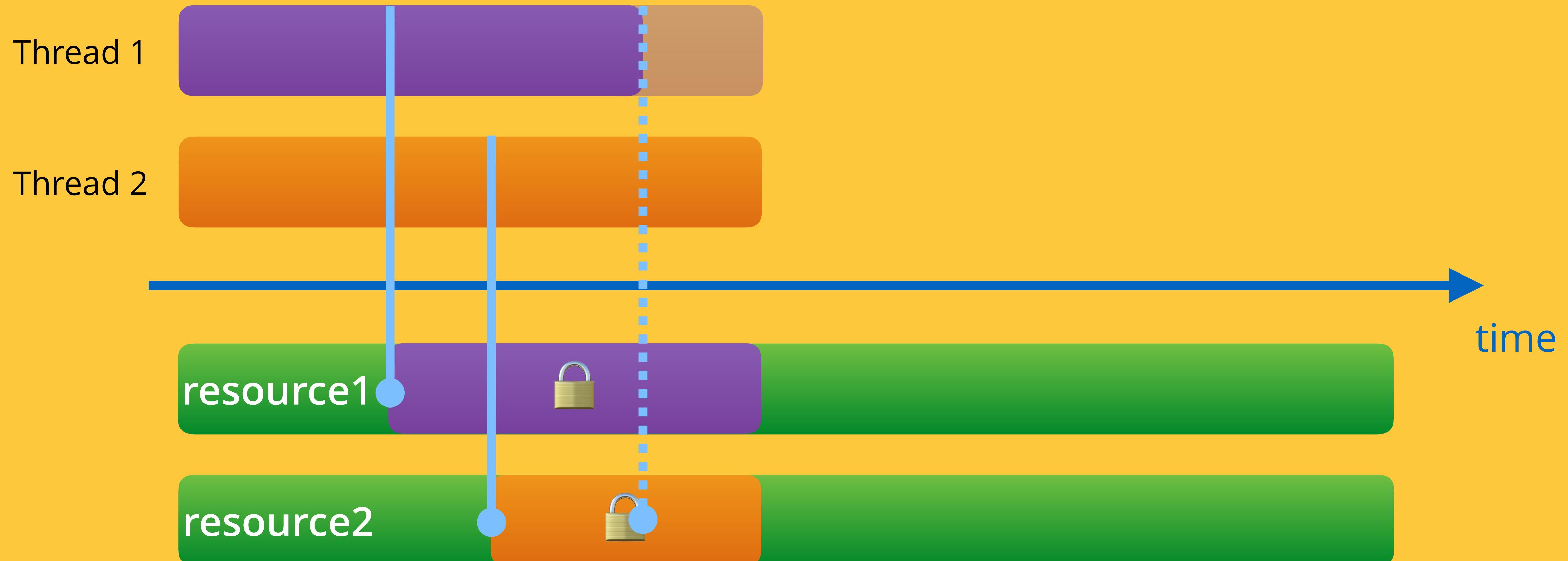
Deadlock



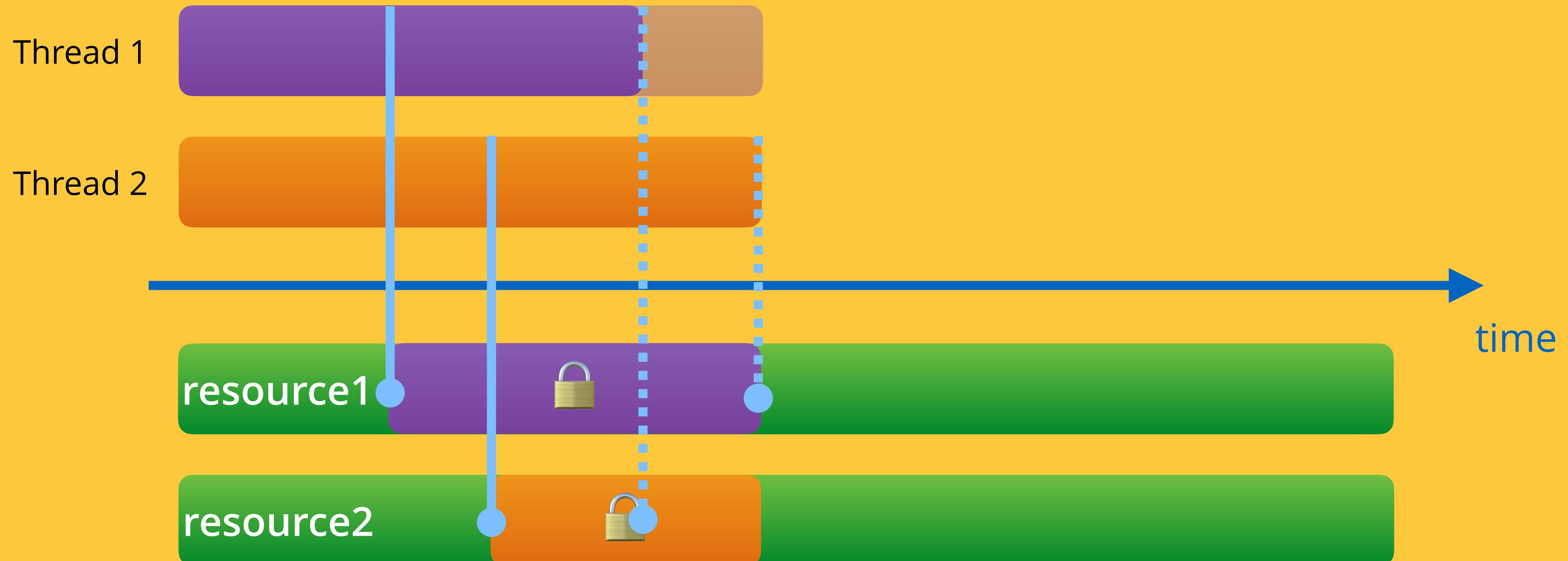
Deadlock



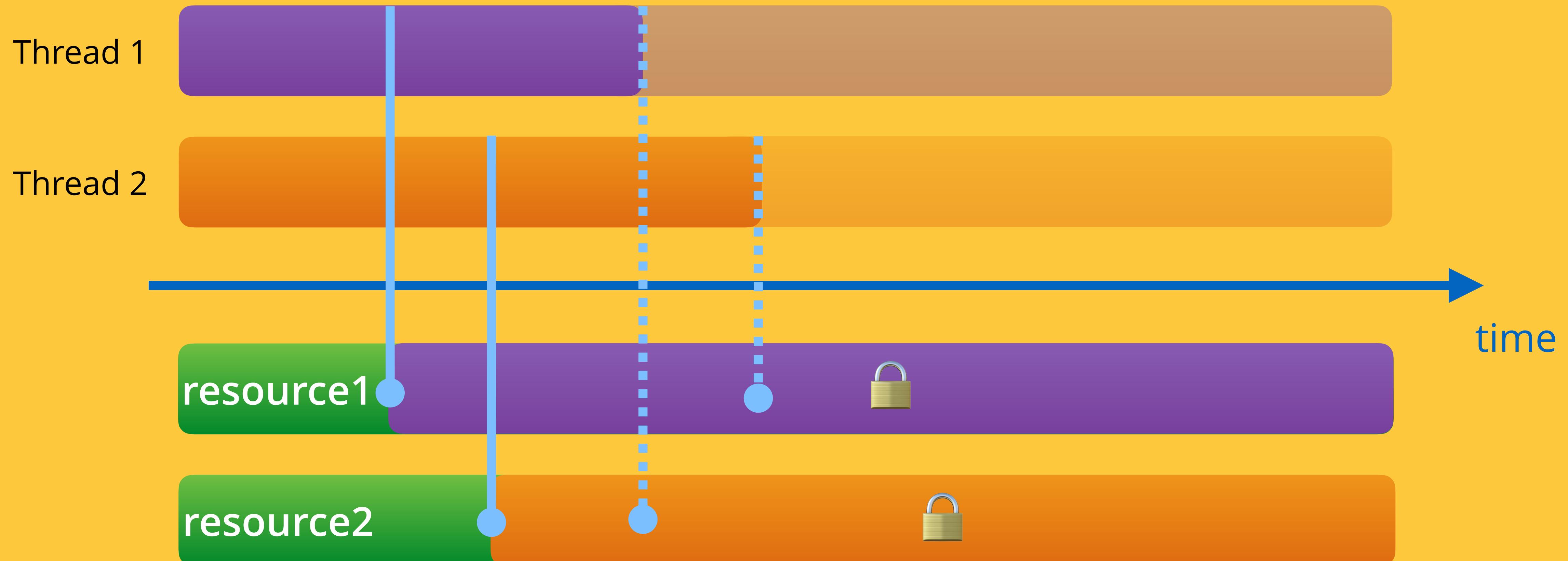
Deadlock



Deadlock



Deadlock





queueueueueueue paradigm

Tasks & Queues

Queue



Thread 1

Thread 2

Tasks & Queues

Queue

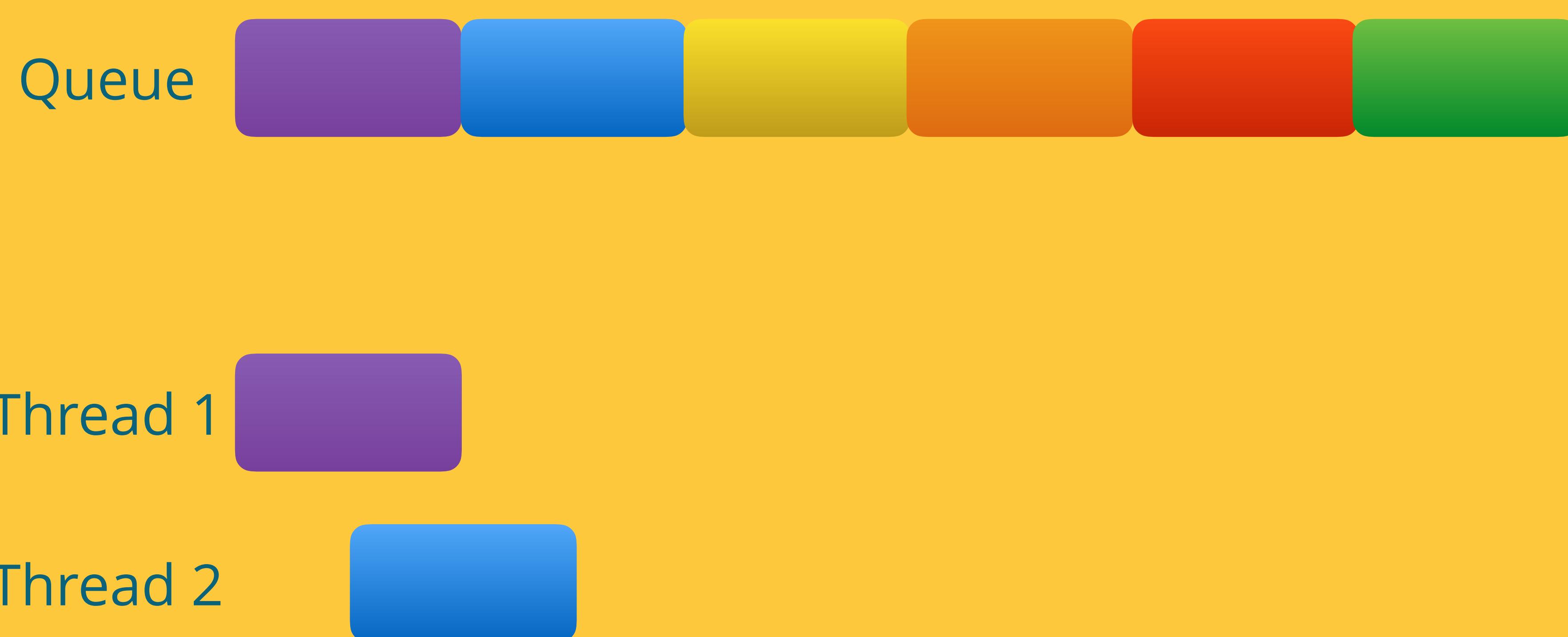


Thread 1



Thread 2

Tasks & Queues



Tasks & Queues

Queue



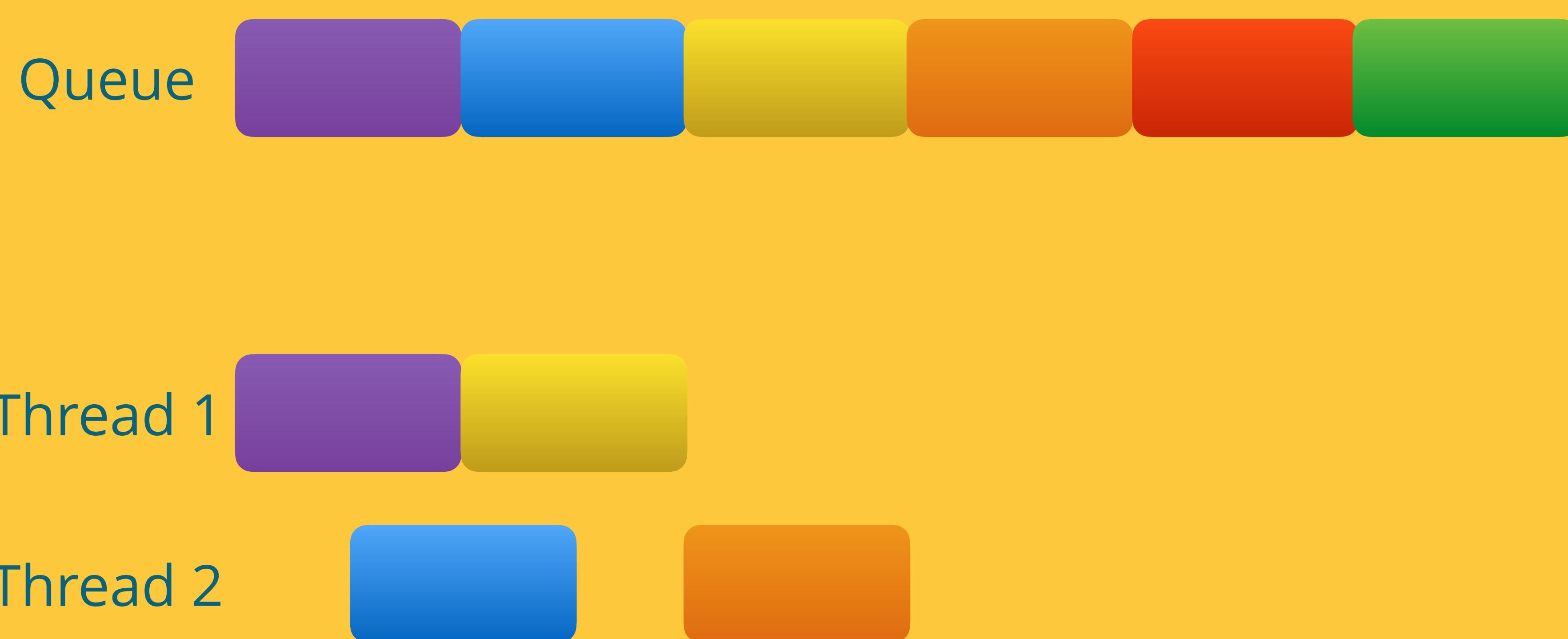
Thread 1



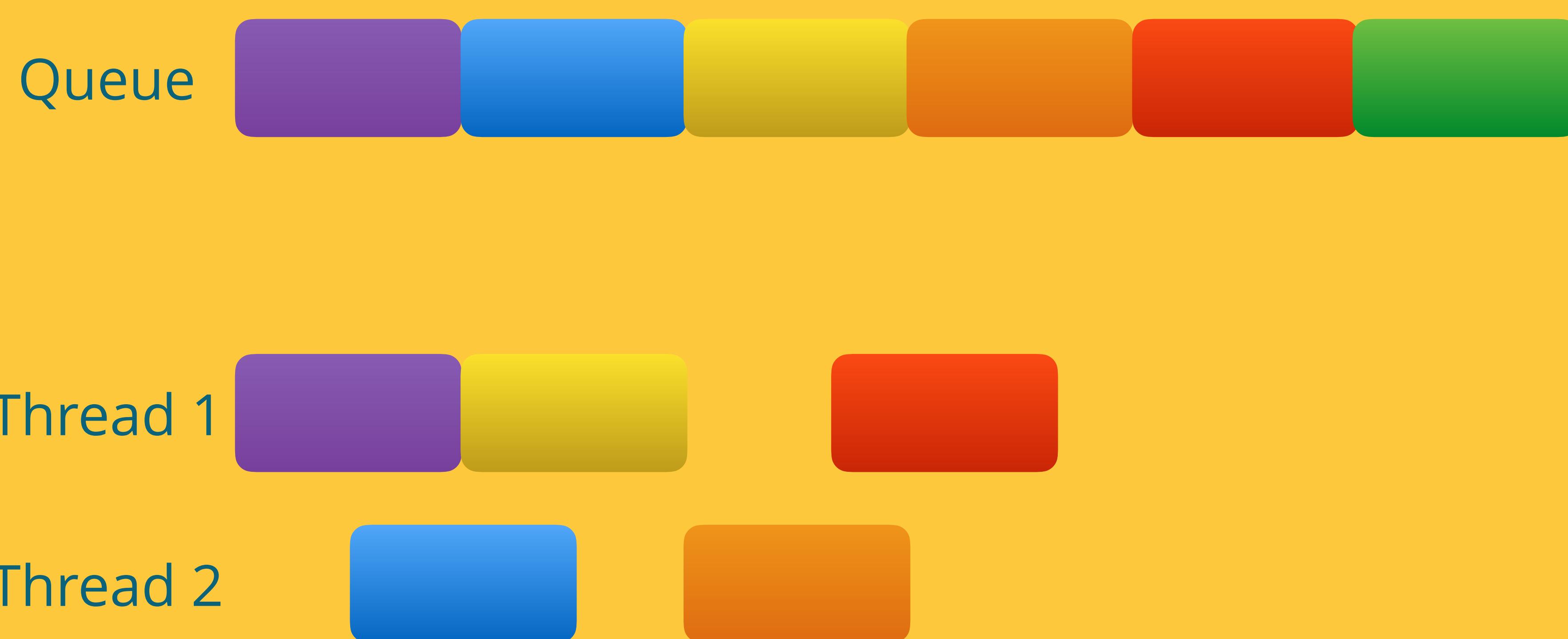
Thread 2



Tasks & Queues



Tasks & Queues



Tasks & Queues

Queue



Thread 1

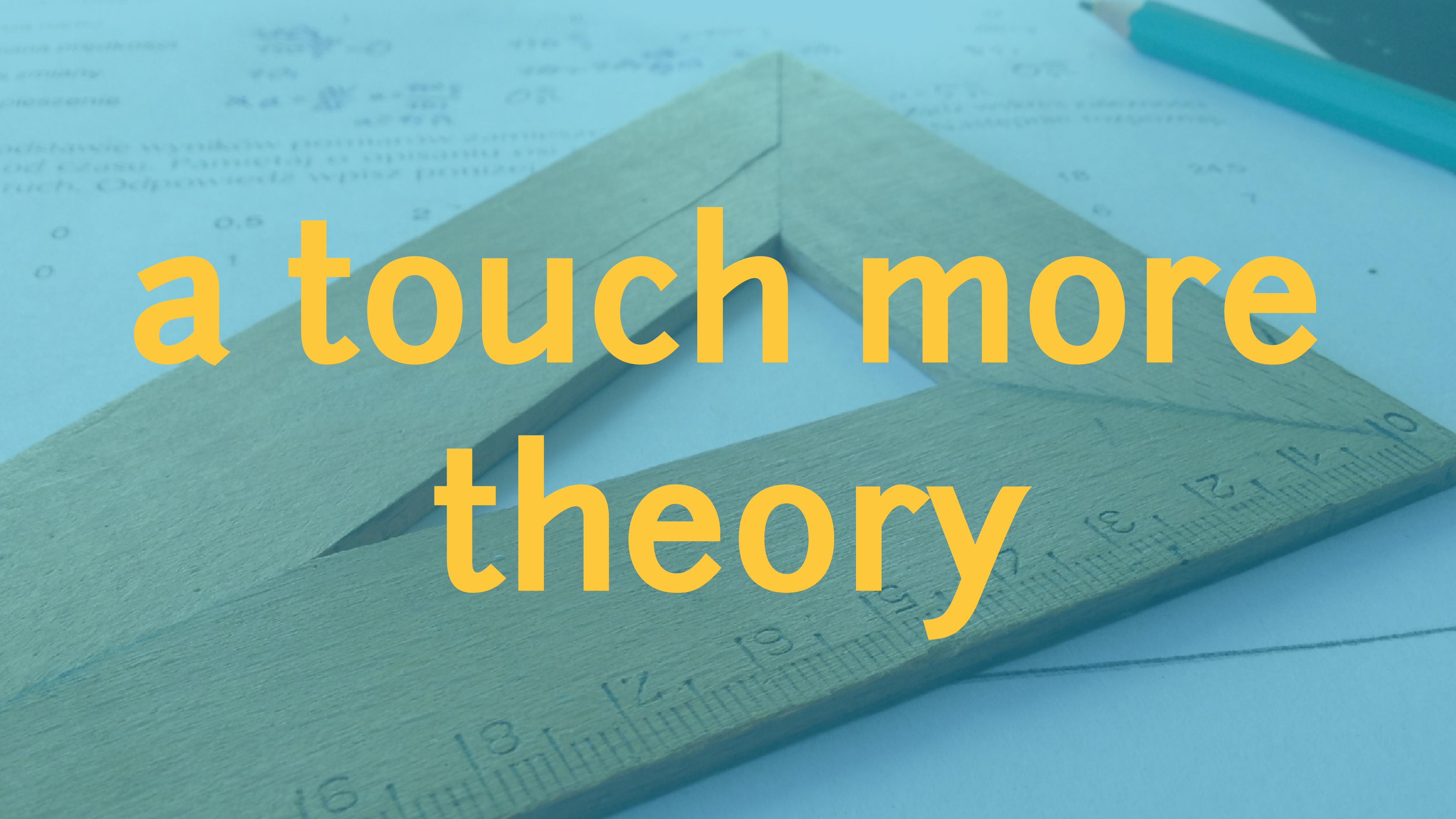


Thread 2



feelings
brave?



A photograph of a wooden ruler and a pencil resting on a blue notebook page. The ruler is marked in centimeters, with major markings at 10, 12, and 14, and minor markings every millimeter. The pencil is dark wood with a light-colored lead. A large, semi-transparent yellow text overlay reads "a touch more theory".

a touch more
theory

Thread Safety



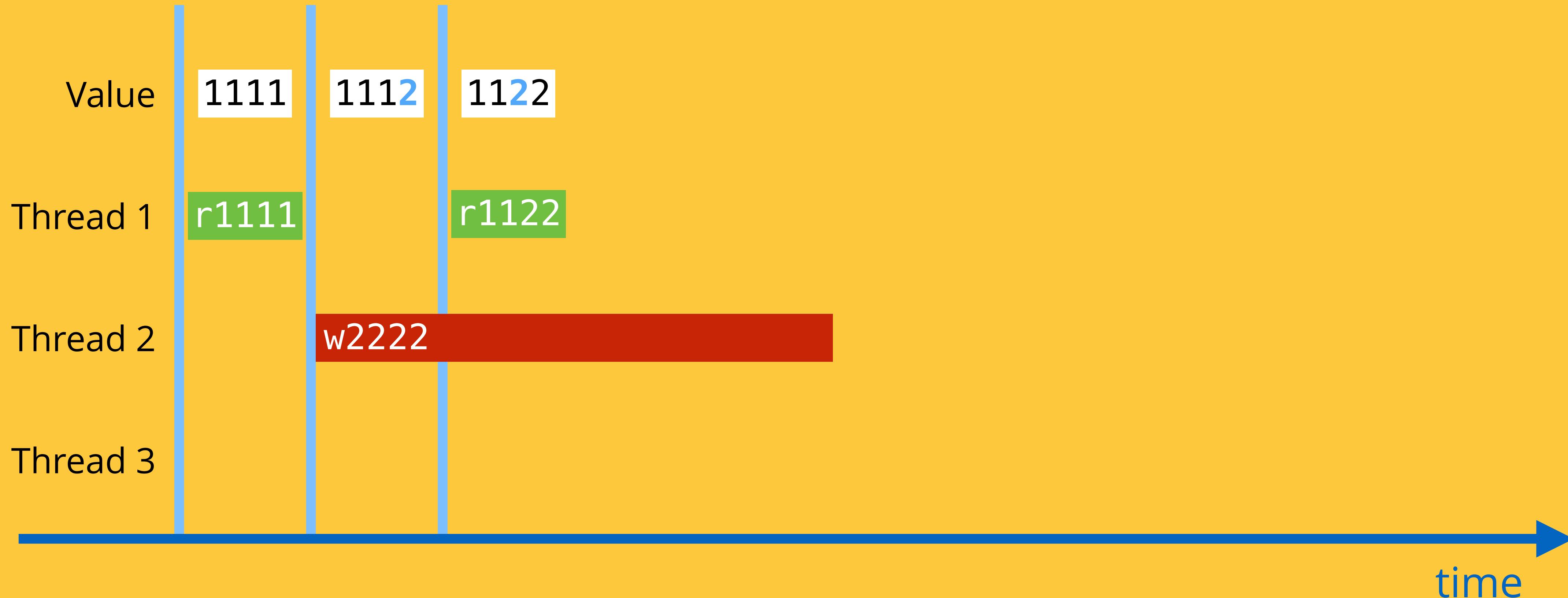
Thread Safety



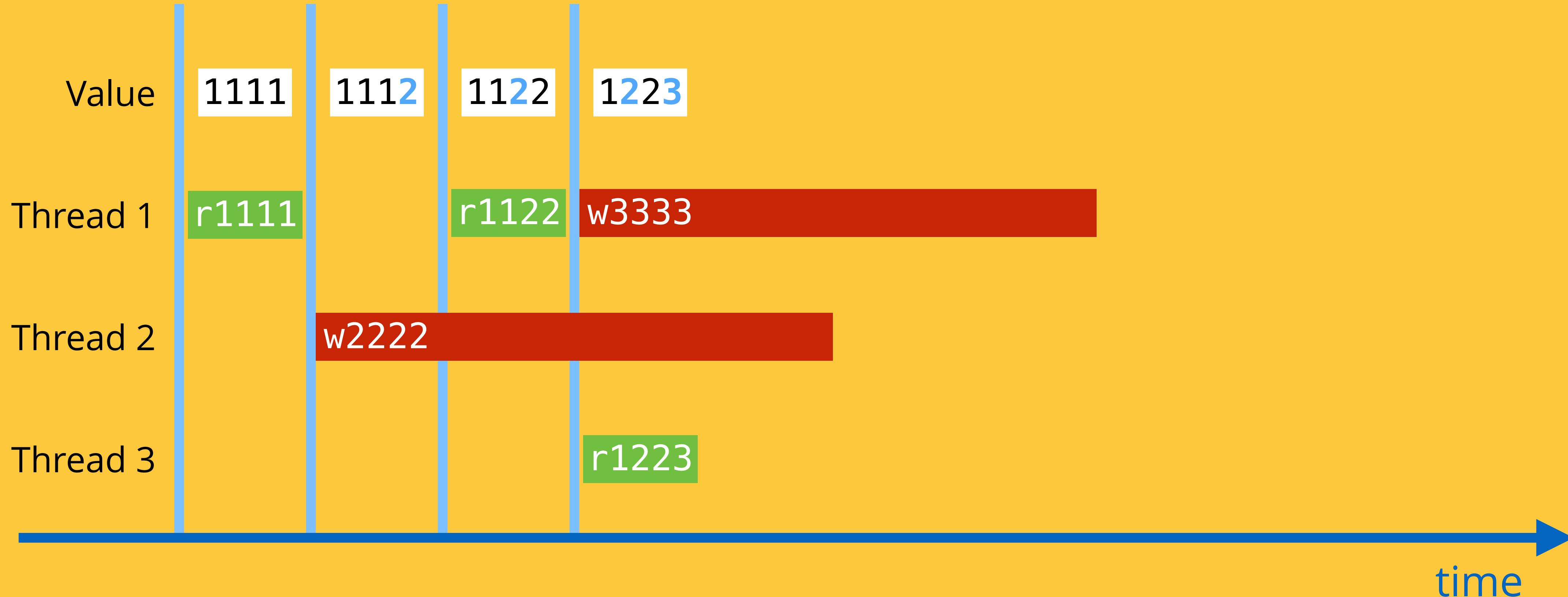
Thread Safety



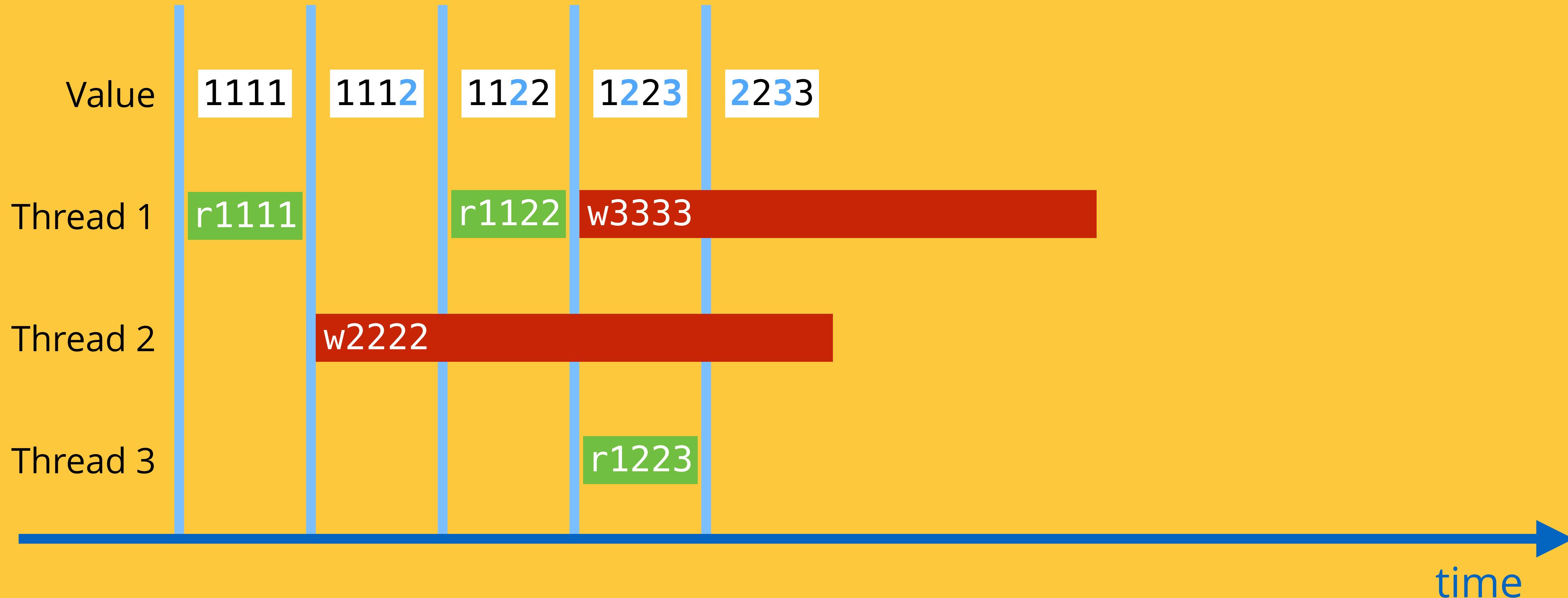
Thread Safety



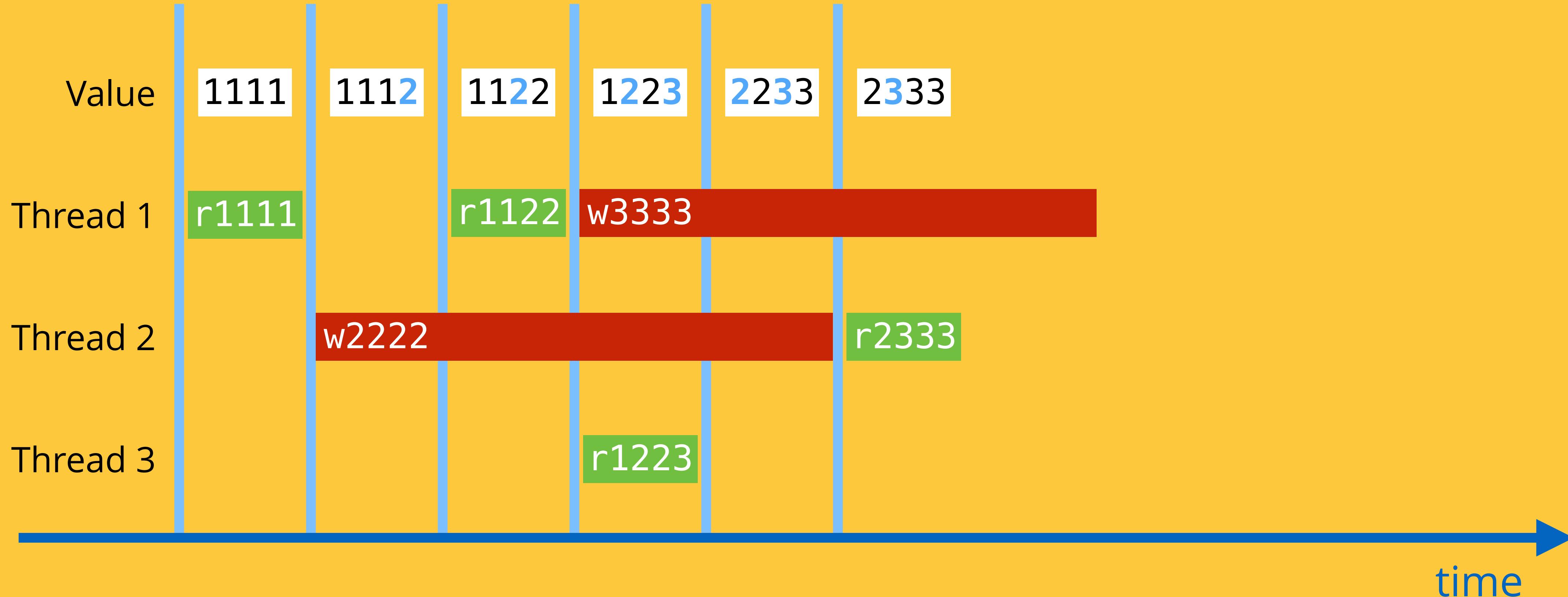
Thread Safety



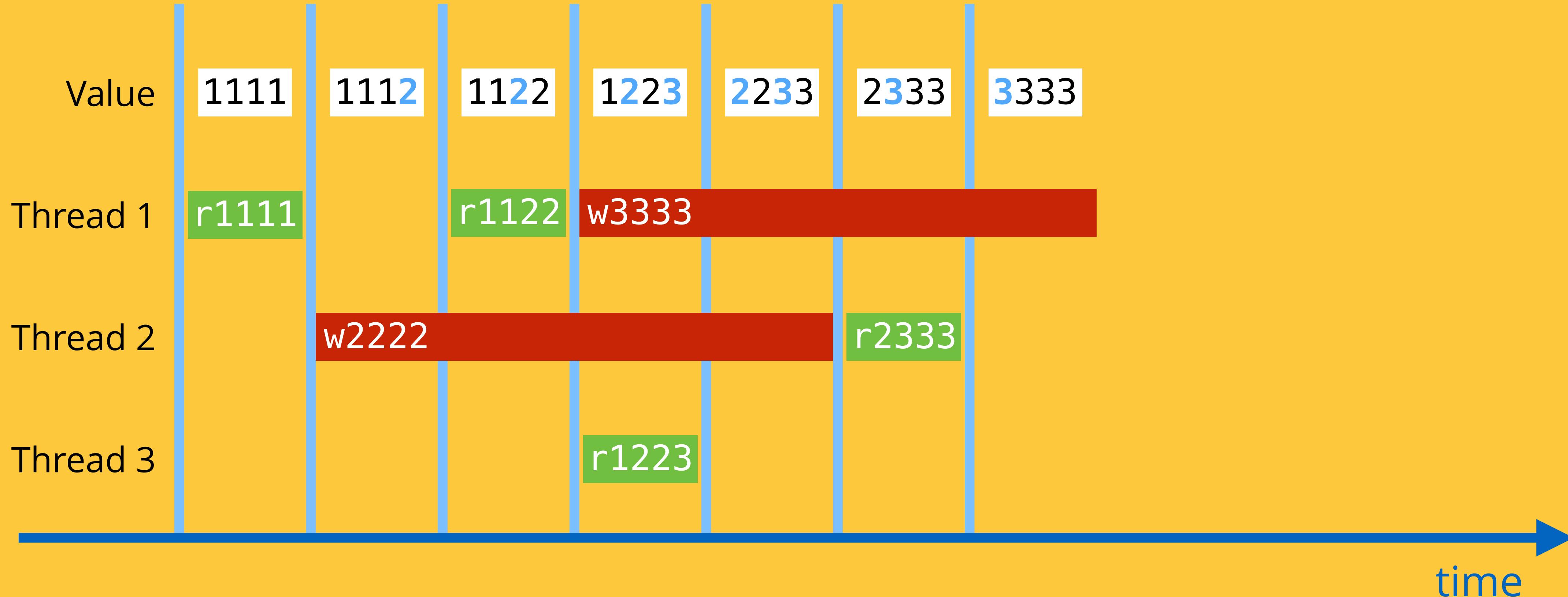
Thread Safety



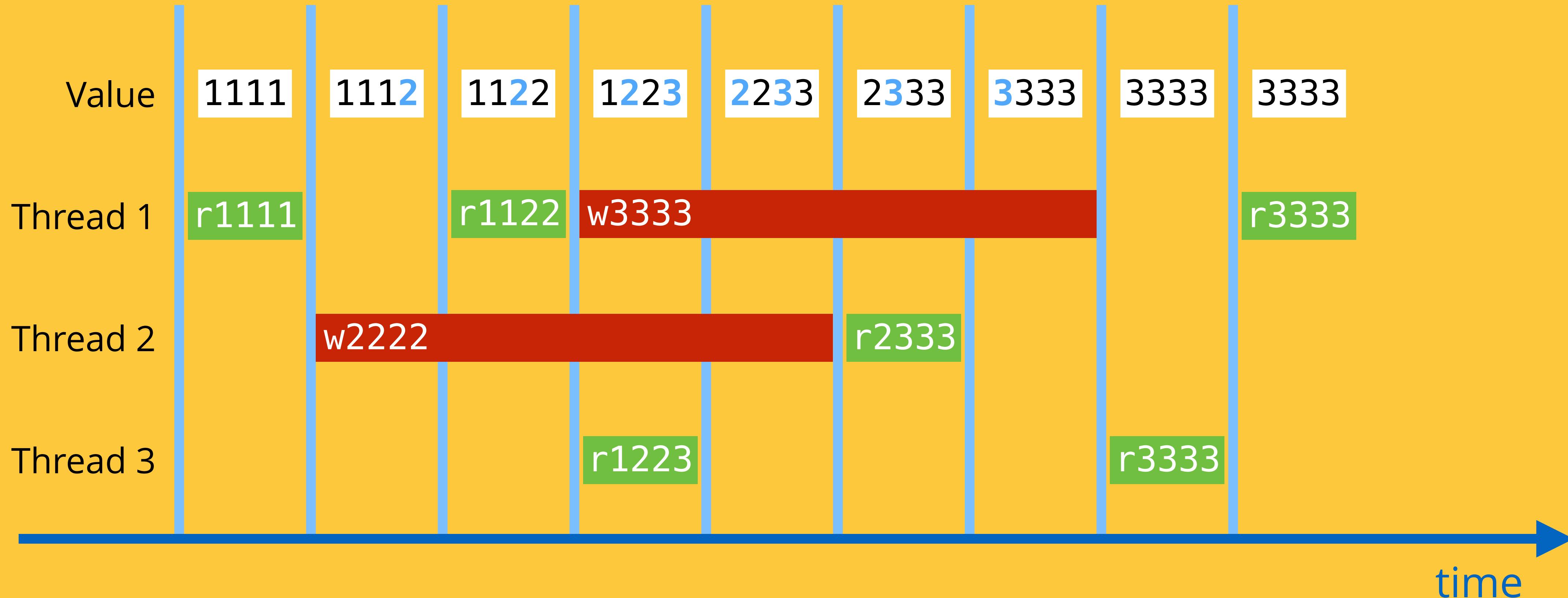
Thread Safety



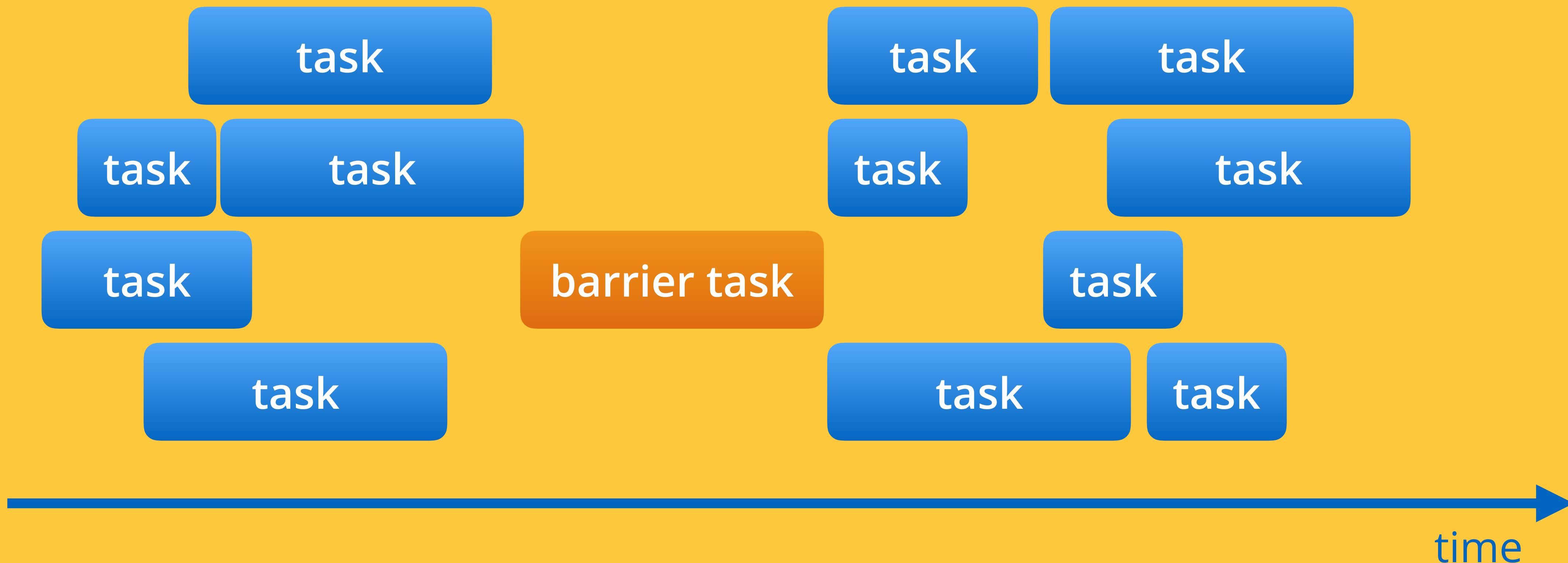
Thread Safety



Thread Safety



Dispatch Barrier



Dispatch Barrier



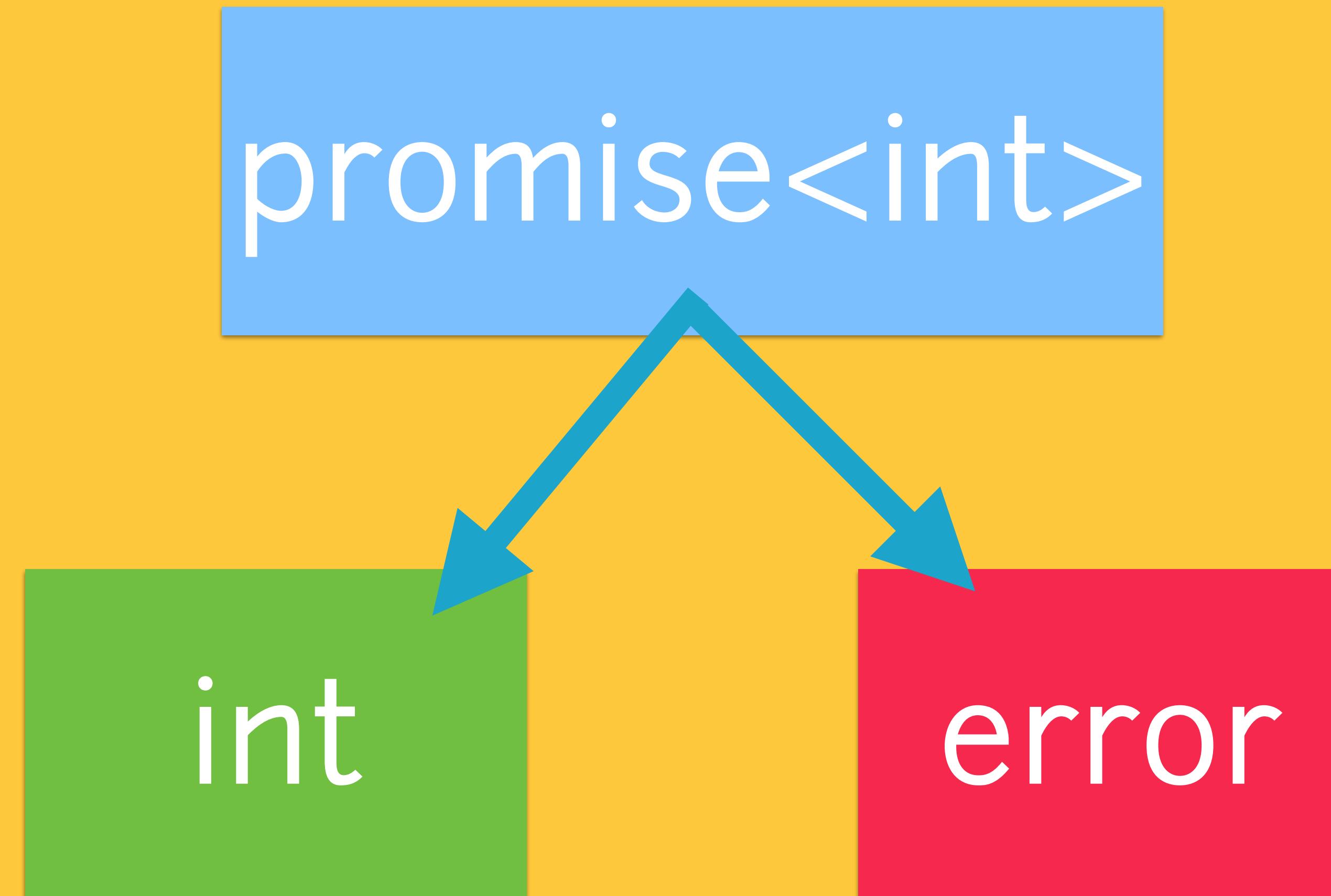


alternatives
to 

promises

```
networkRequest(url, callback: { data in
    decompressor(data, callback: { image in
        imageResizer(image, callback: { small in
            filterImage(small, callback: { filtered in
                displayImage(filtered)
            })
        })
    })
})
})
```

promises



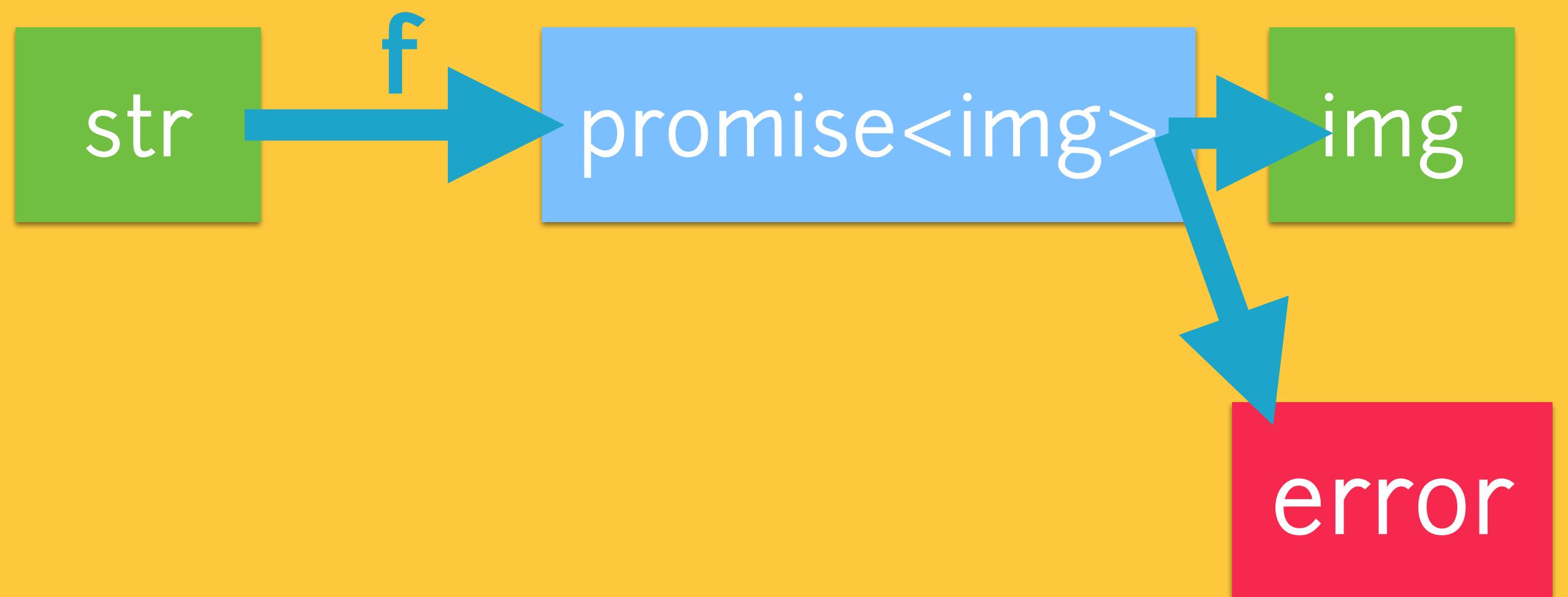
promises

str

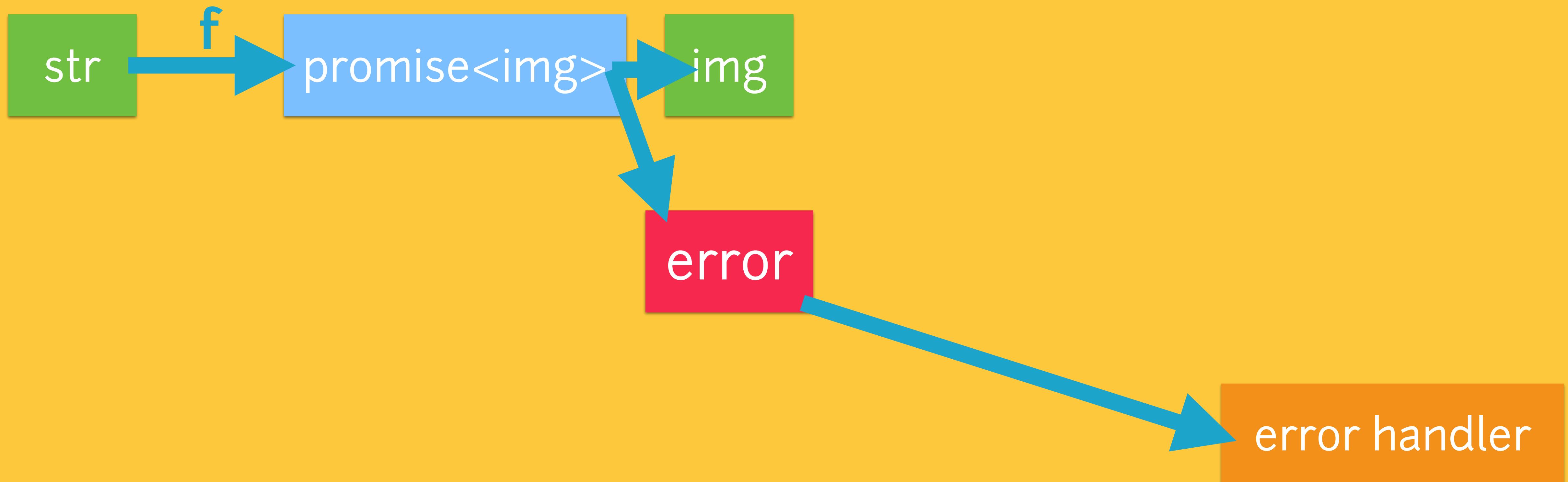
promises



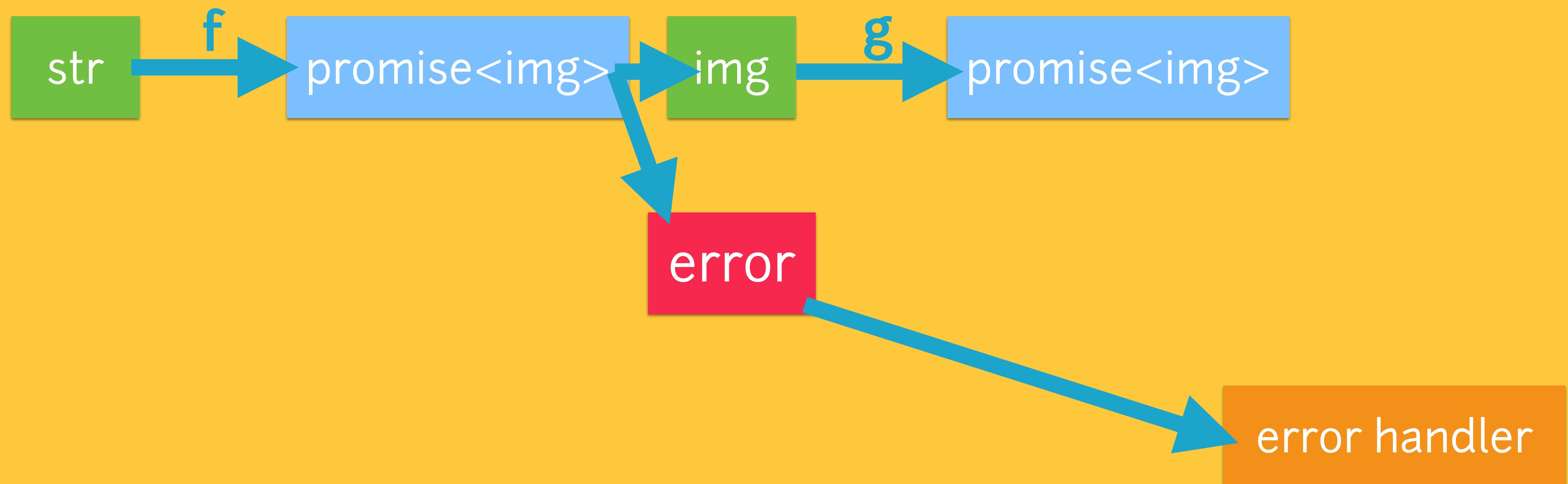
promises



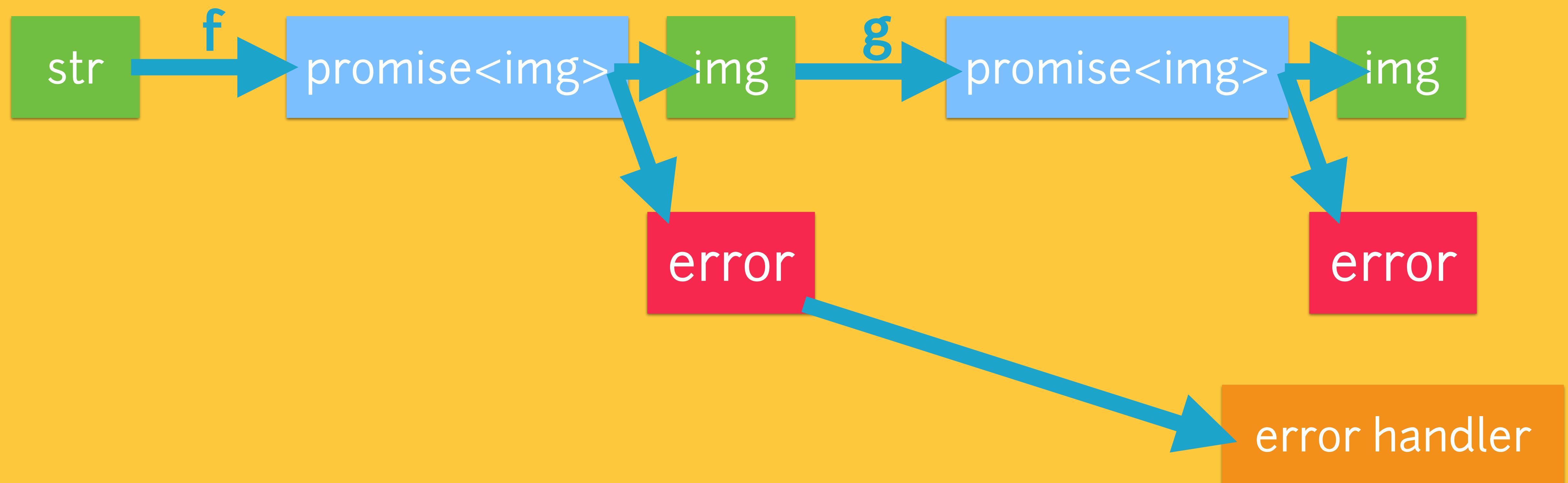
promises



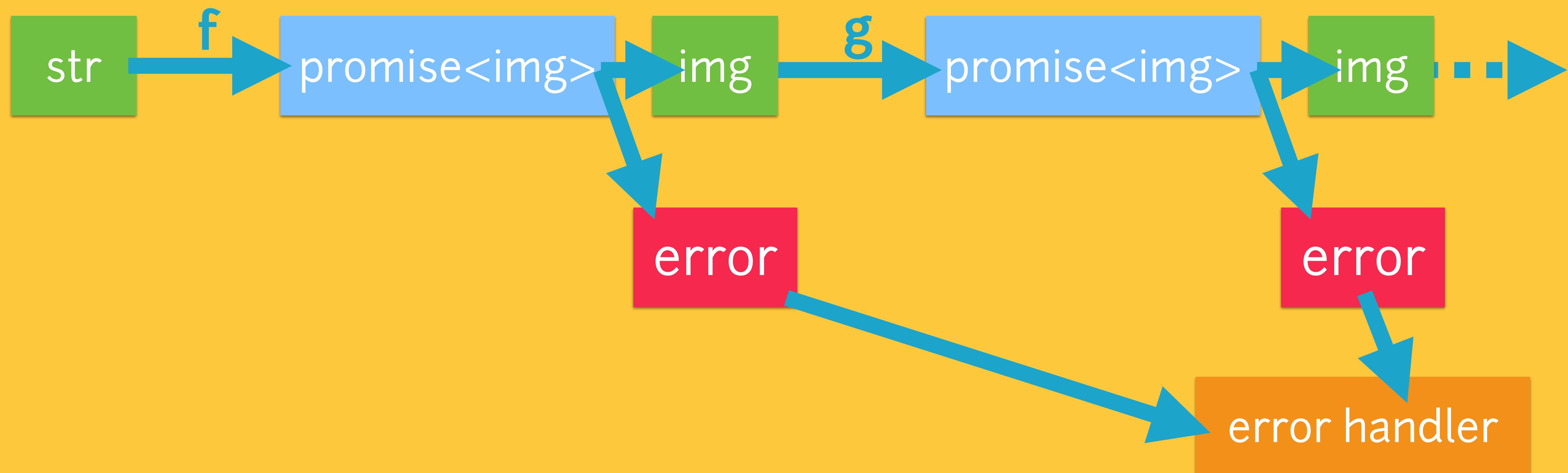
promises



promises



promises



promises

```
networkRequest(url)
  .then(decompressor)
  .then(imageResizer)
  .then({ image) in
    return filterImage(image)
  }).then(displayImage)
  .catch({ error) in print(error) })
```

imagine the
“promise pipeline”

accepted a

sequence of values...

that's reactive
programming

conclusion



A photograph of a person's hand reaching upwards from a sandy beach. The hand is positioned in the upper left corner, with fingers pointing towards the top right. The background shows a bright, sandy surface and a clear blue sky.

Concurrency
is shared



you will get
it wrong

- videos.raywenderlich.com
- git.io/v9Q3S
- [@iwantmyrealname](https://twitter.com/iwantmyrealname)