

Running Tokio async applications in WASM

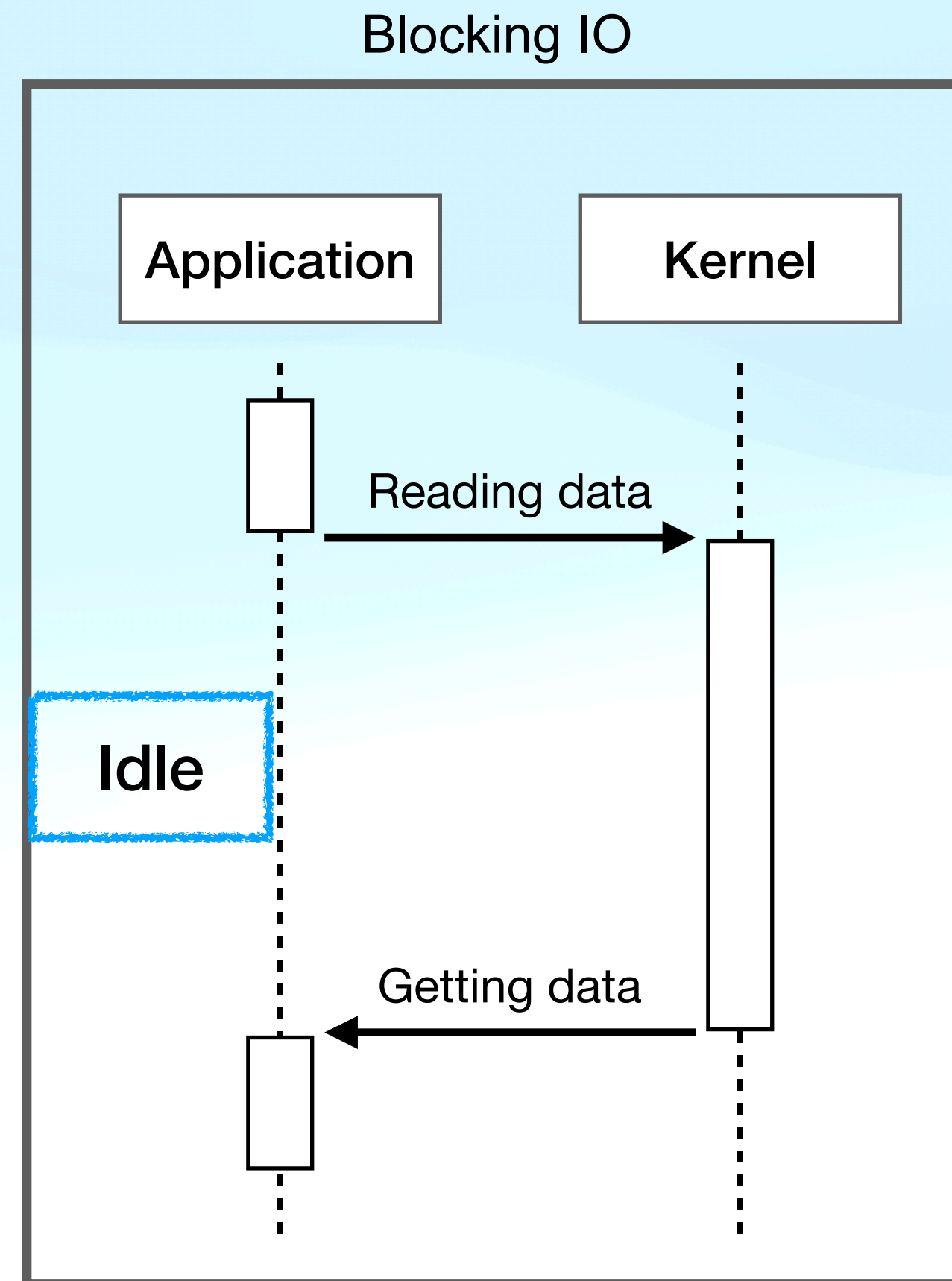
Heng 19/07/22



WasmEdgeRuntime

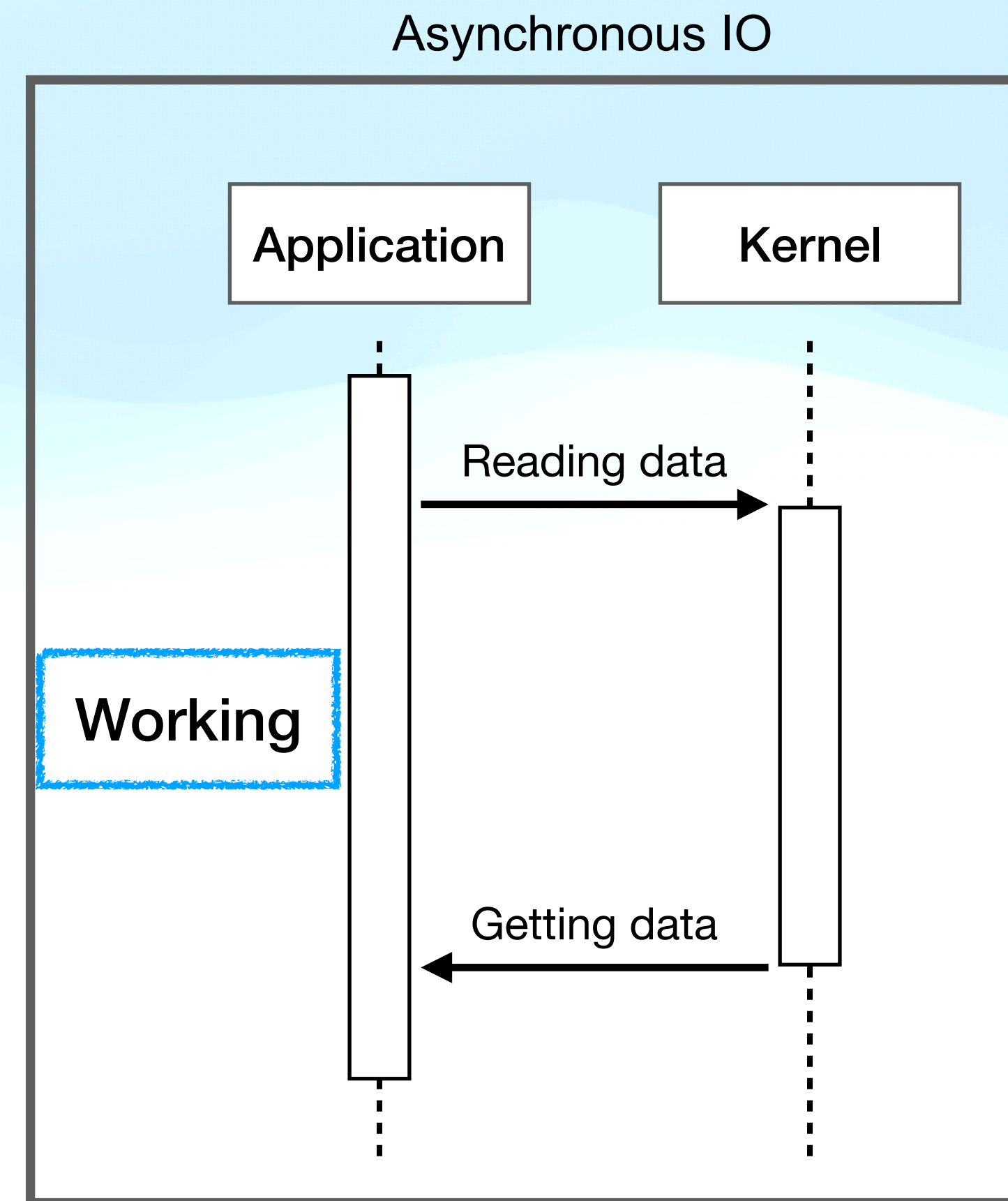
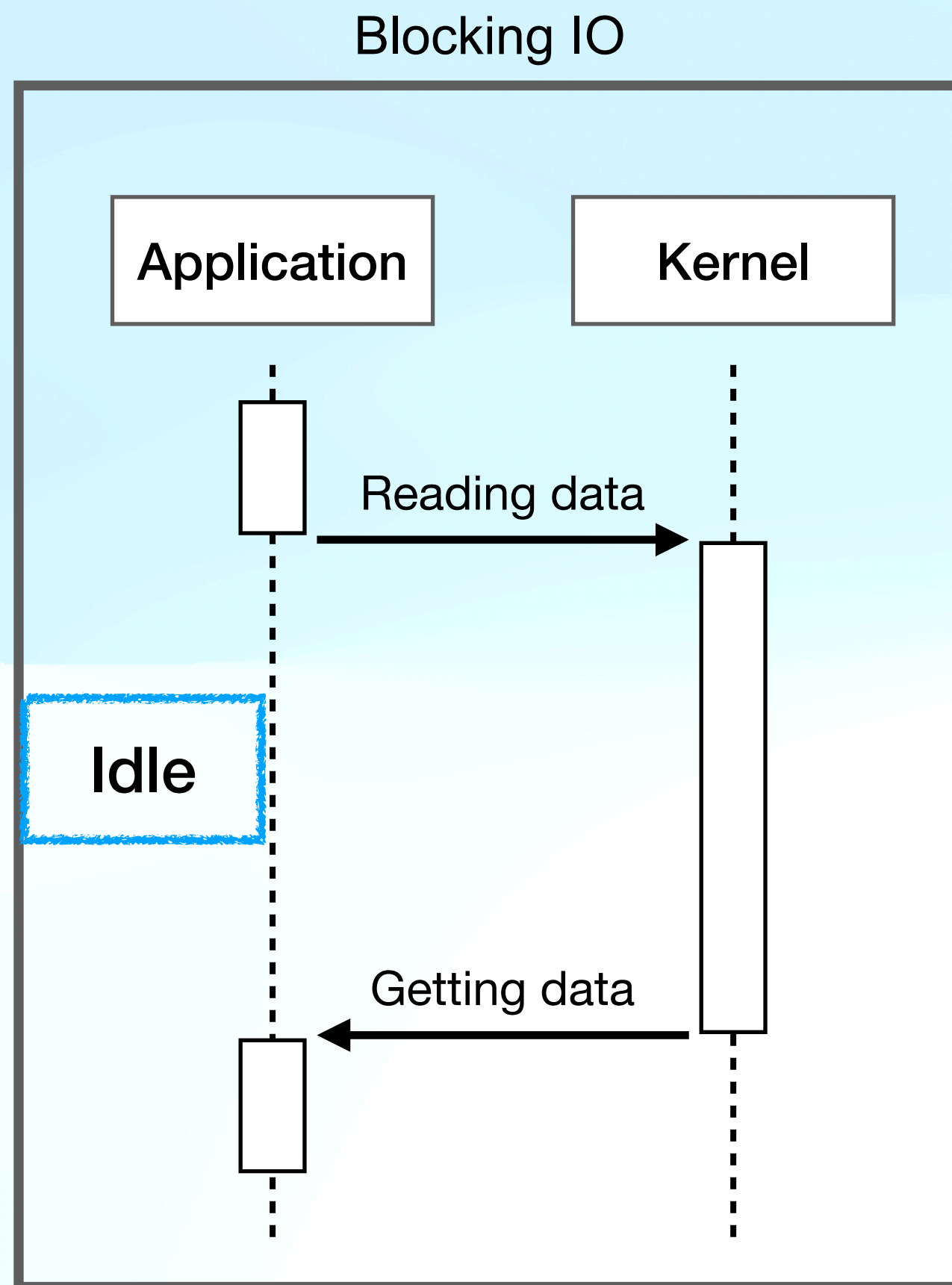
Running Tokio async applications in WASM

Why do we need Async?



Running Tokio async applications in WASM

Why do we need Async?



Running Tokio async applications in WASM

Why do we need Async?

```
trait Future {  
    type Output;  
    fn poll(  
        self: Pin<&mut Self>,  
        cx: &mut Context<'_>,  
    ) -> Poll<Self::Output>;  
}
```



Running Tokio async applications in WASM

Why do we need Async?

```
trait Future {  
    type Output;  
    fn poll(  
        self: Pin<&mut Self>,  
        cx: &mut Context<'_>,  
    ) -> Poll<Self::Output>;  
}
```

```
let timer: Timer = Timer{};  
Pin::new(pointer: &mut timer).poll(cx);
```



Running Tokio async applications in WASM

What is an Async runtime?

Tokio main entry

```
#[tokio::main]
async fn main() {
    ...
}
```



Running Tokio async applications in WASM

What is an Async runtime?

Tokio main entry

```
#[tokio::main]
async fn main() {
    ...
}
```



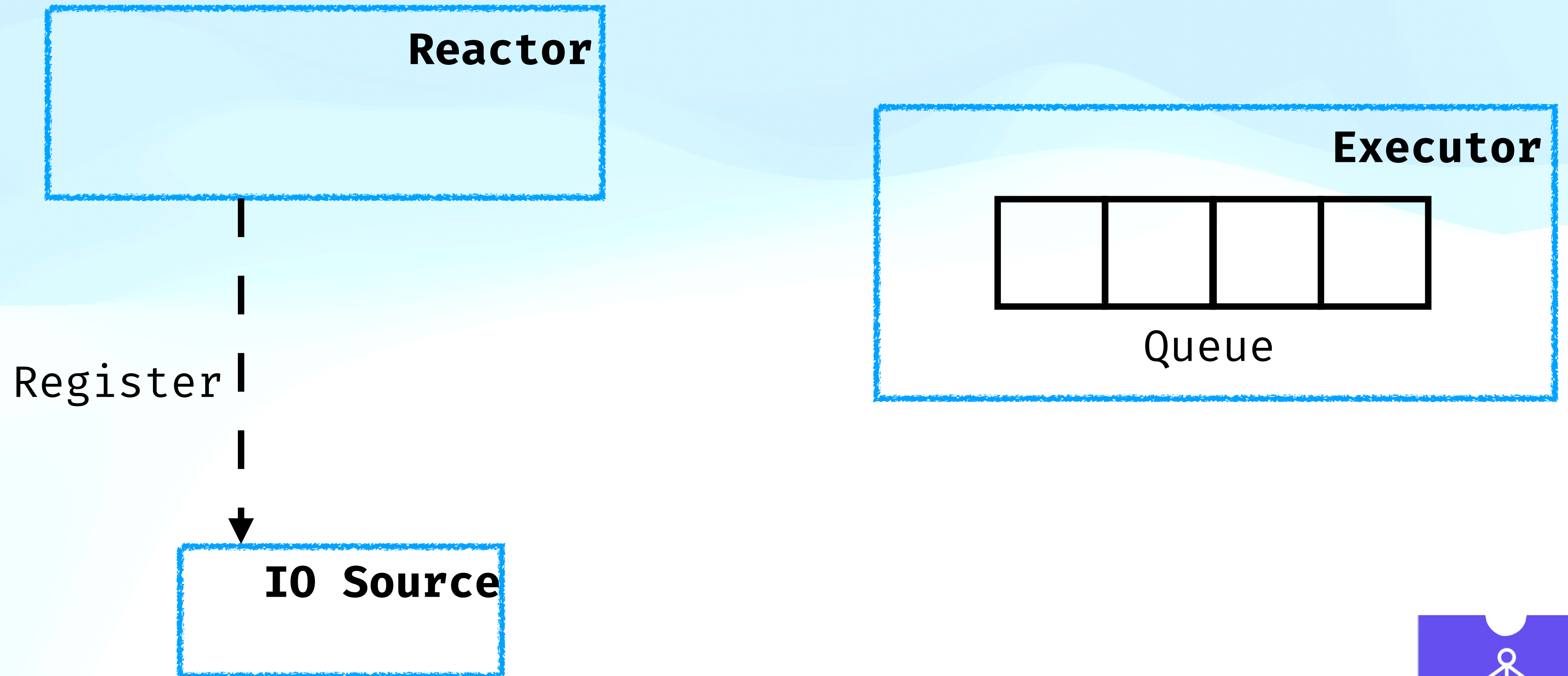
Actual main function

```
fn main(){
    let runtime = tokio::runtime::Builder::new()
        .build()
        .expect("Failed to create tokio runtime");
    runtime.block_on(async {
        ...
    });
}
```



Running Tokio async applications in WASM

What is an Async runtime?



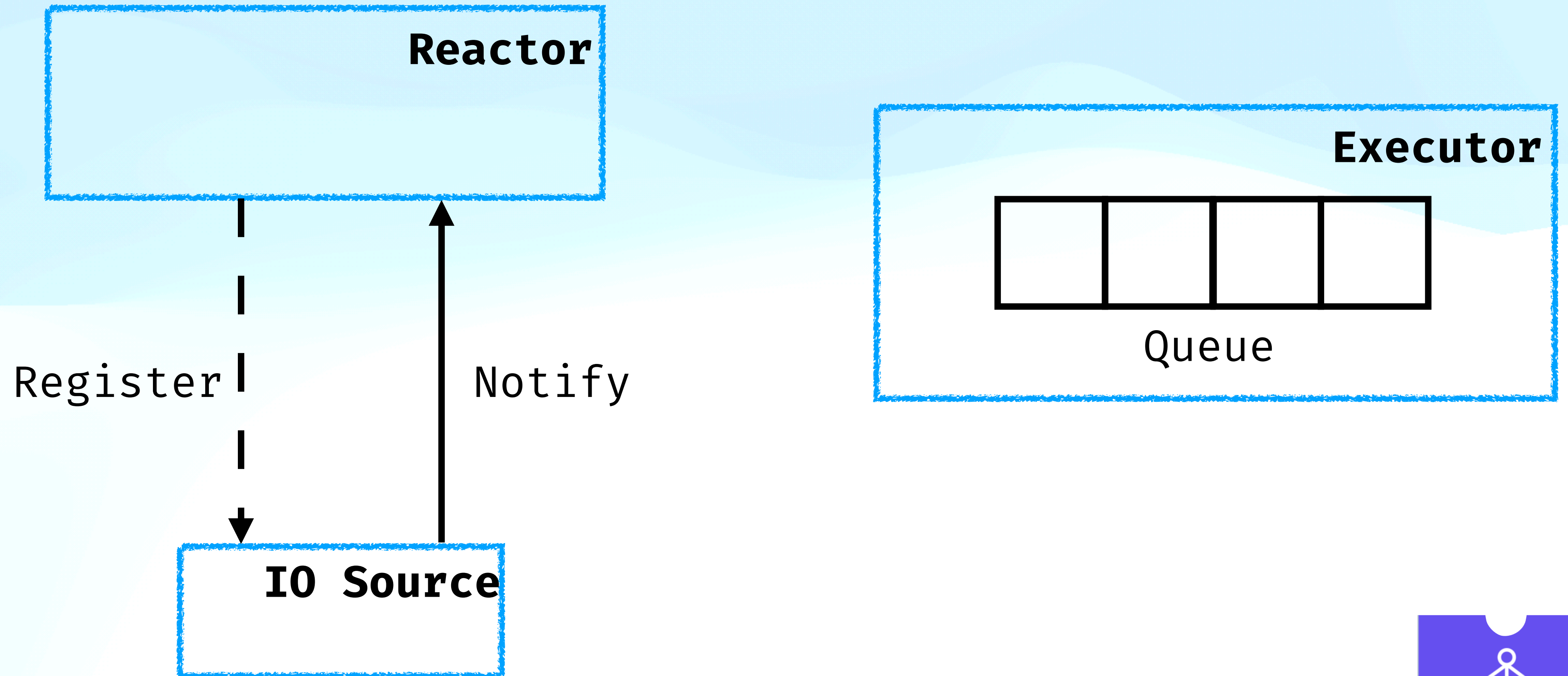
Heng 19/07/22

Image Source: <https://www.ihcblog.com/rust-runtime-design-1/>



Running Tokio async applications in WASM

What is an Async runtime?



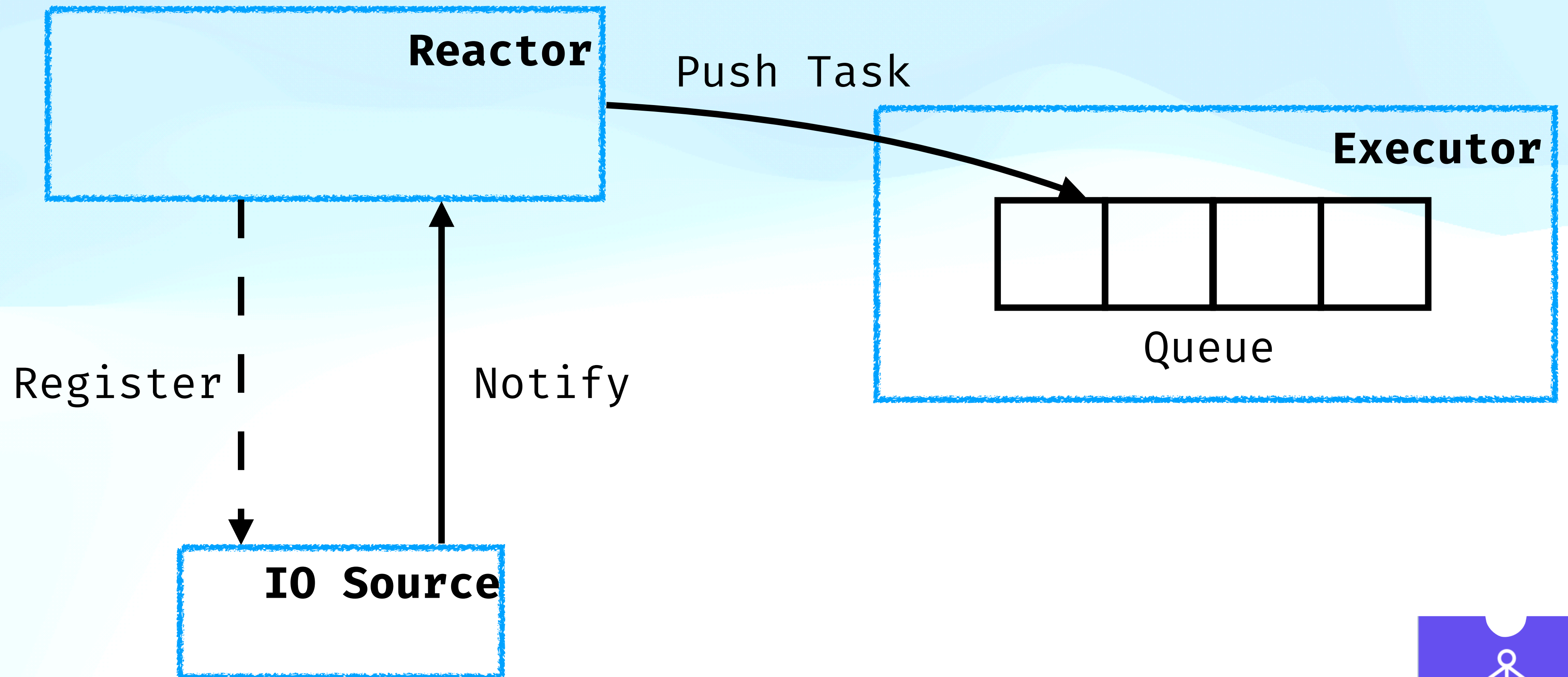
Heng 19/07/22

Image Source: <https://www.ihcblog.com/rust-runtime-design-1/>



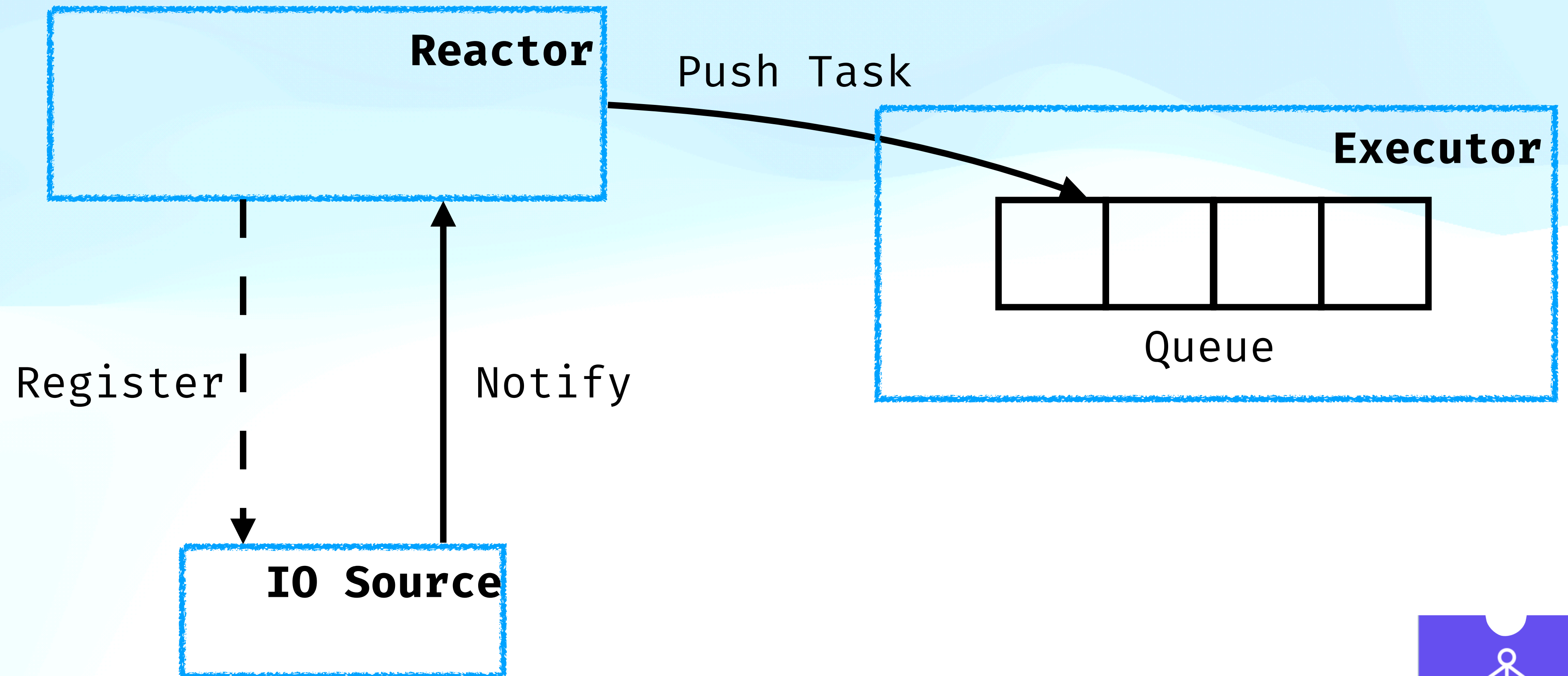
Running Tokio async applications in WASM

What is an Async runtime?



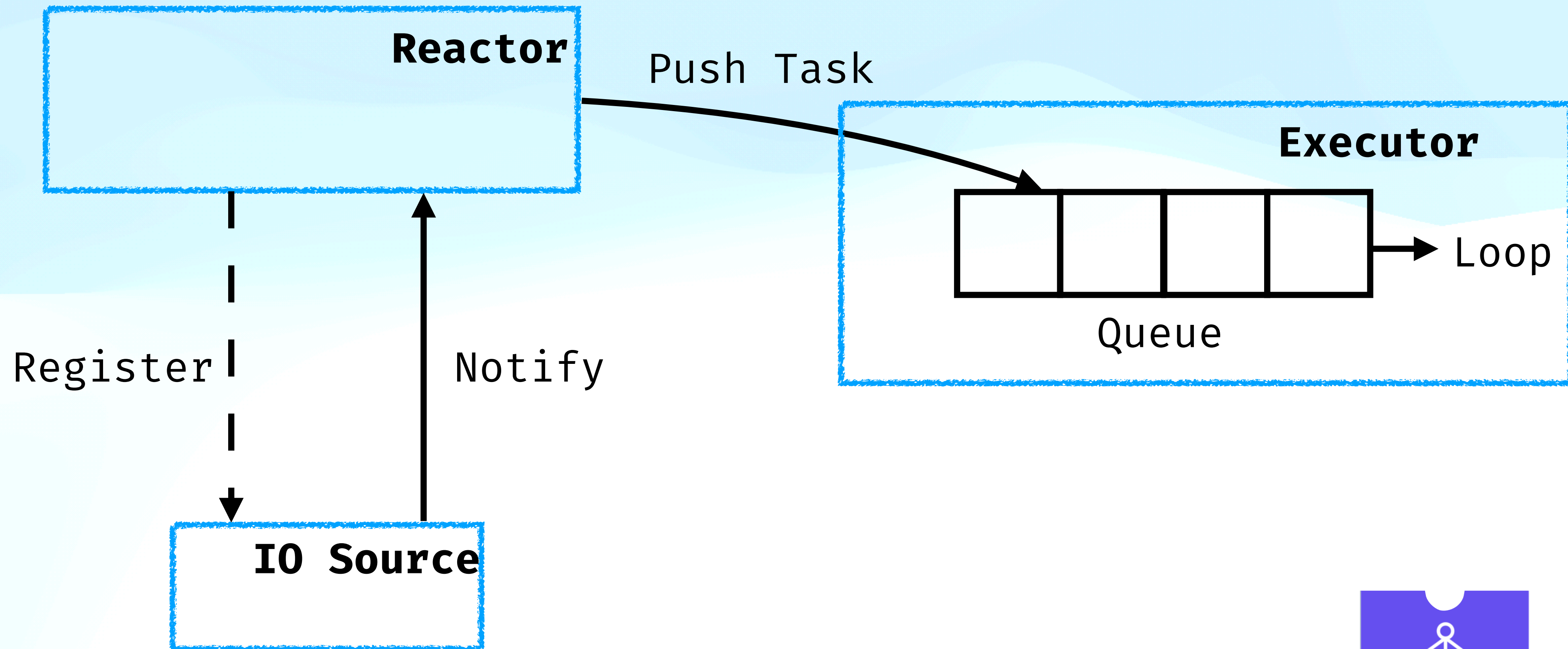
Running Tokio async applications in WASM

How to implement an async runtime for WASM?



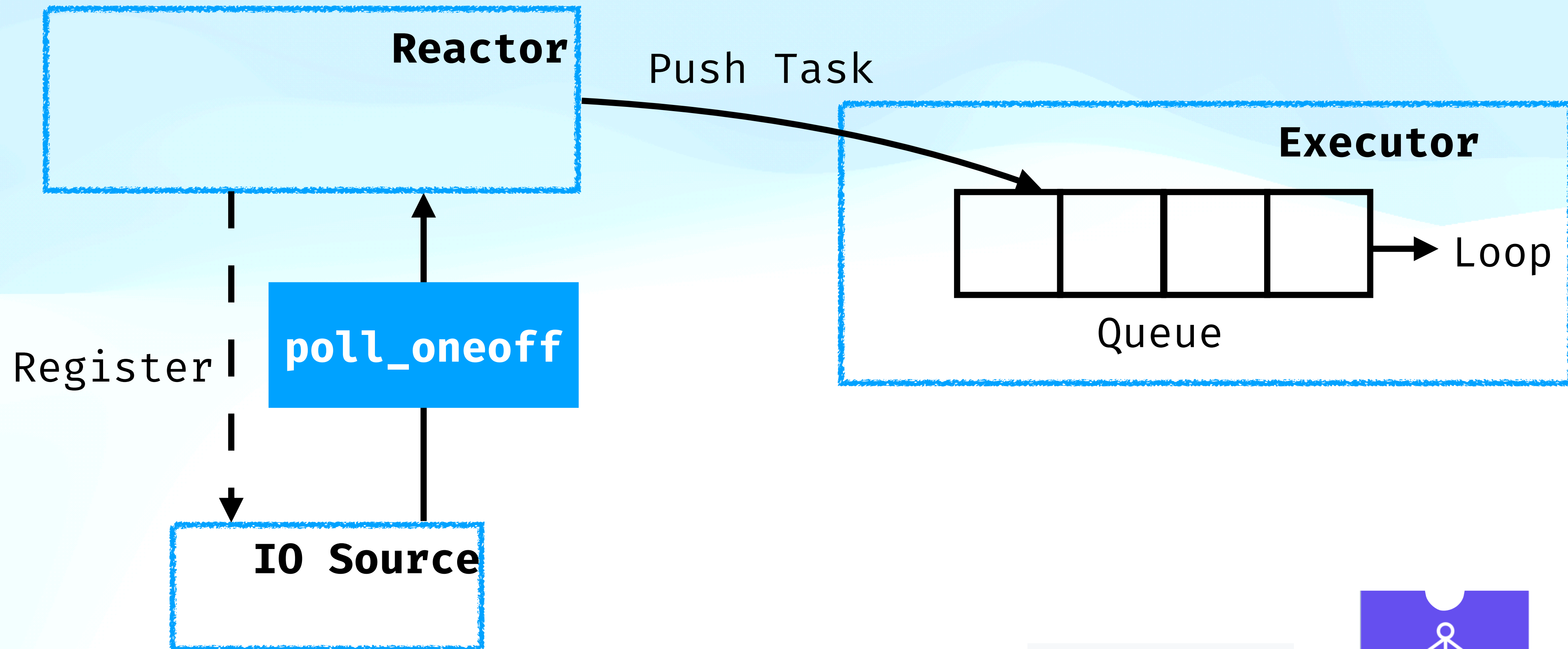
Running Tokio async applications in WASM

How to implement an async runtime for WASM?



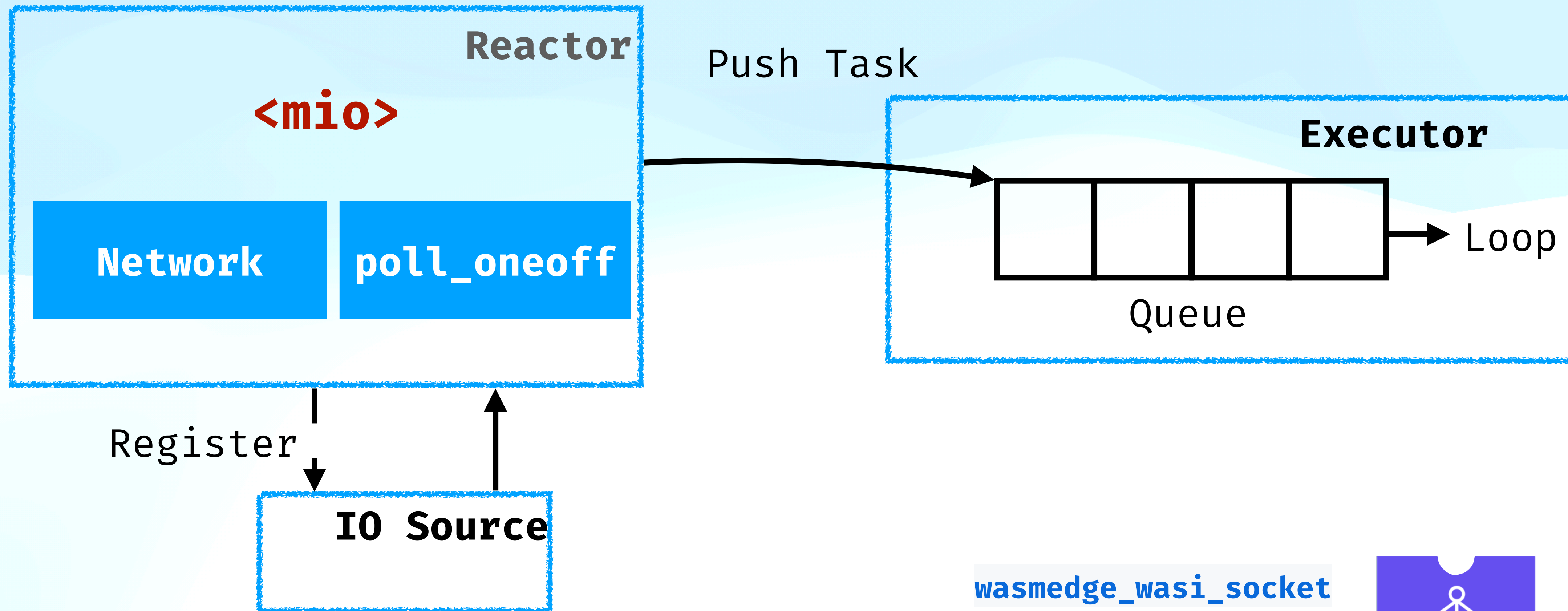
Running Tokio async applications in WASM

How to implement an async runtime for WASM?



Running Tokio async applications in WASM

How to implement an async runtime for WASM?

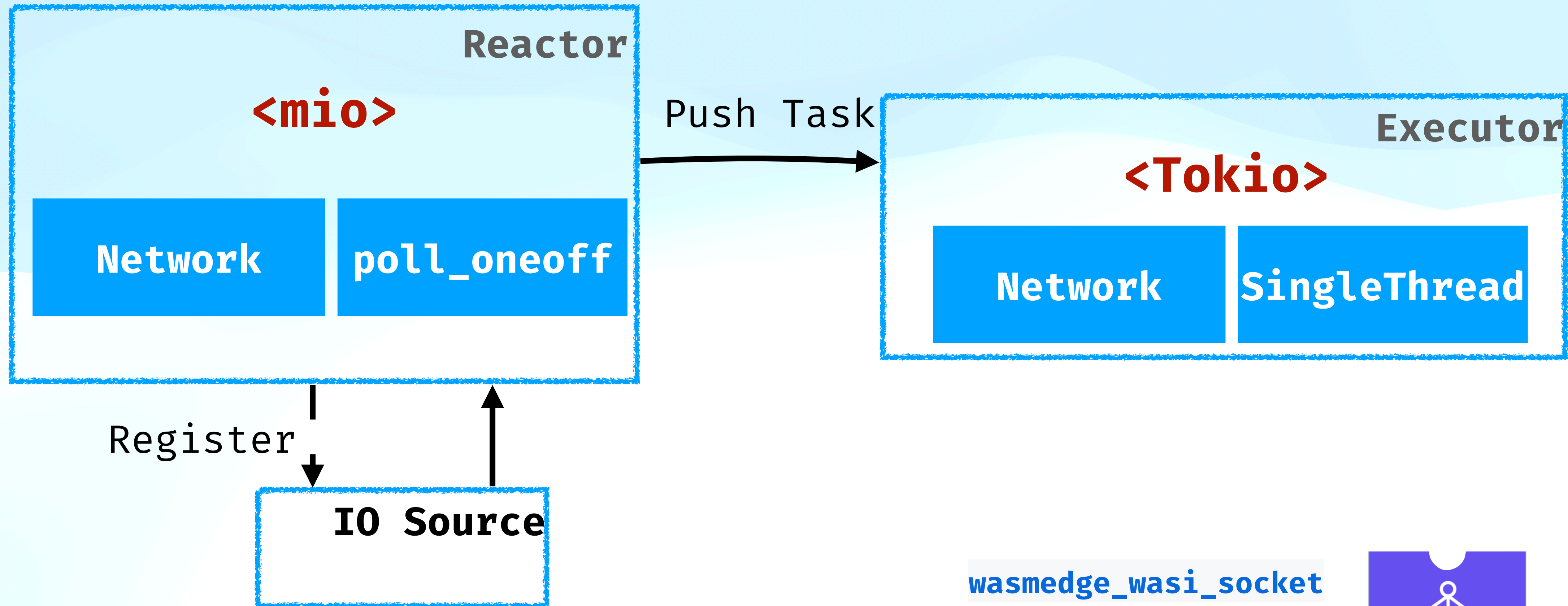


`wasmedge_wasi_socket`



Running Tokio async applications in WASM

How to implement an async runtime for WASM?



wasmedge_wasi_socket



Running Tokio async applications in WASM

Demos !

mini-redis

hyper

```
> hyper git:(master) cargo r --example client http://baidu.com
Finished dev [unoptimized + debuginfo] target(s) in 0.34s
Running `wasmedge target/wasm32-wasi/debug/examples/client.wasm 'http://baidu.com'`
create client
Response: 200 OK
Headers: {
  "date": "Tue, 19 Jul 2022 02:44:31 GMT",
  "server": "Apache",
  "last-modified": "Tue, 12 Jan 2010 13:48:00 GMT",
  "etag": "\"51-47cf7e6ee8400\"",
  "accept-ranges": "bytes",
  "content-length": "81",
  "cache-control": "max-age=86400",
  "expires": "Wed, 20 Jul 2022 02:44:31 GMT",
  "connection": "Keep-Alive",
  "content-type": "text/html",
}
b"<html>\n<meta http-equiv=\"refresh\" content=\"0;url=http://www.baidu.com/\">\n</html>\n"
```



Running Tokio async applications in WASM

The future of the async WASM.

Thread proposal

Async WASM



Running Tokio async applications in WASM

Email: mediosrity@gmail.com

Github: <https://github.com/MediosZ>

Discord: @Tricster

