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Take ownership of closure argument for rust future in and_then

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I am trying to read all content from a file into a vector using the async rust api:

```
let mut content : Vec<u8> = vec![];
let f = tokio::fs::File::open("myfilecontent")
    .and_then(|mut myfile| {
        myfile.read_buf(&mut content)
    });
f.await;
```

But I keep getting this error: `error[E0515]: cannot return value referencing function parameter `myfile``

Which sounds reasonable, because the future returned by the closure must keep a reference to the file, but as this closure is the only user of the file it could take ownership. How can I convince rust to do the right thing?

rust future lifetime rust-tokio

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asked Apr 12 '20 at 8:43

weary
105 ● 1 ● 4

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You can use an `async move` block like so:

```
use futures::TryFutureExt;
use tokio::io::AsyncReadExt;

#[tokio::main]
async fn main() -> Result<(), Box<dyn std::error::Error>> {
    let mut content: Vec<u8> = vec![];

    let f = tokio::fs::File::open("myfilecontent").and_then(
        |mut myfile| async move { myfile.read_buf(&mut content).await },
    );

    f.await?;

    Ok(())
}
```

or skip `and_then` and go straight for `.await`:

```
use tokio::io::AsyncReadExt;

#[tokio::main]
async fn main() -> Result<(), Box<dyn std::error::Error>> {
    let mut content: Vec<u8> = vec![];

    let mut myfile = tokio::fs::File::open("myfilecontent").await?;
    myfile.read_buf(&mut content).await?;

    Ok(())
}
```

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answered Apr 12 '20 at 22:59

David Pedersen
293 ● 3 ● 9

Thanks, that seems to work. Still learning about how futures work in rust ;)
– weary
Apr 13 '20 at 7:37

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