CS 551 Spring 2025 Quiz 6 KEY

March 4, 2025

Name:

Email:

Instructions: Put your name and email in the appropriate places. Answer, to the best of your ability the question(s) below. Additionally, sign your name below the academic honesty statement. If you deviate from these instructions in any way, you will receive a zero on the quiz.

Unless otherwise specified, you can assume that all necessary imports have been made and there are no deliberate typos in function or type names.

Consider the following stucts, traits, enums, and functions:

```
File::open(path: &str) -> Result<File, std::io::Error> { }

// assume thiserror is being used
pub enum MyError {
    #[error("Io error: {source}")]
    Io {
        #[from]
        source: MyIoError,
    },
}

#[derive(Debug, Error)]
pub enum ConcurrencyError {
    #[error("Thread join failed")]
    Join,
}

#[derive(Debug, Error)]
pub enum MyIoError {
    #[error("IO error: {source}")]
    BadStuff {
        #[from]
        source: std::io::Error,
    }
}
```

Question 1: Will the following program compile:

```
fn question1() -> Result<(), MyError> {
    let s = "Question 1";
    println!("{s}");
    Ok(())
}
```

(circle your answer)

Yes

Reason: It returns `Ok(())`.

Question 2: Will the following program compile:

```
fn question2() -> Result<(), MyError> {
    let s = "Question 2";
    println!("{s}")
}
```

(circle your answer)

No

Reason: Doesn't return a `Result`

Question 3: Will the following program compile:

```
fn question3() -> Result<(), MyError> {
    let s = "Question 3";
    File::open("this file definitely does not exist")?;
    Ok(())
}
```

(circle your answer)

No

Reason: `question3()` returns a `Result<(), MyError>` but `File::open()` returns a `Result<File, std::io::Error>` and `MyError` doesn't have a mechanism to be automatically created from a `std::io::Error`.

Question 4: Will the following program compile:

```
fn question4() -> Result<(), MyError> {
    let s = "Question 4";
    File::open(s).map_err(|e| MyIoError::from(e))?;
    Ok(())
}
```

(circle your answer)

Yes

Reason: `MyIoError` provides a conversion from a `std::io::Error`, whch is what `File::open()` returns, and `MyIoError` similarly can be converted into a a`MyError`.

Question 5: Will the following program compile:

```
1  fn question5() -> Result<(), MyError> {
2      let s = "Question 5";
3      thread::spawn(move || println!("{s}"))
4          .join()
5          .map_err(|_| ConcurrencyError::Join)?;
6
7      Ok(())
8  }
```

(circle your answer)

No

Reason: `question5()` returns a `Result<(), MyError>`, but`MyError` has no mechanism to create a `MyError` from a `ConcurrencyError`. We could have used either `thiserror`'s `#[from]` mechanism or implemented `From<ConcurrencyError> for MyError`, but we didn't do that either.

Question 6: Will the following program compile:

```
1  // assume the implementation of 'From' is correct
2  impl From<ConcurrencyError> for MyError { ... }
3
4  fn question6() -> Result<(), MyError> {
5      let s = "Question 6";
6      thread::spawn(move || println!("{s}"))
7          .join()
8          .map_err(|_| ConcurrencyError::Join)?;
9
10     Ok(())
11 }
```

(circle your answer)

Yes

Reason: We provided an explcit `From<ConcurrencyError>` implementation.

Academic honesty statement: I have done this quiz completely on my own. I have not copied it from, nor have I given answers to anyone else. I understand that if I am involved in plagiarism or cheating I will have to sign an official form that I have cheated and that this form will be stored in my official university record. I also understand that I will receive a grade of 0 for the quiz involved, my grade in the class will be reduced by at least one level (e.g., from A to B) for my offense, and that I will receive a grade of "F" for the course for any additional offense of any kind.