

FileMonitor

Create a command-line program that accepts an optional argument: `"-d path"`. If the path is not supplied, it defaults to `"~/inbox/"`. If the path does not exist, it should be created. We refer to this path as `"INBOX"` in the rest of the document.

Program workflow:

1. Scan the folder recursively and print to `stdout` all the files found and their last modification date in the following format: `"[Date Time] PATH"`, where `PATH` is a relative path to `INBOX`.
2. Start monitoring `INBOX` for file changes. When an event occurs, print it to `stdout` in the following format: `"[EVENT] PATH"`, where `EVENT` is one of the following `[NEW, MOD, DEL]`.
3. Continue monitoring until the user inputs `Ctrl-C`.
4. Once `Ctrl-C` is detected, print to `stdout` the contents of `INBOX` again in the same format, without rescanning or any other FS operations.

Bonus points for:

1. Using `tokio`
2. Using structured error handling
3. Not using `mutexes`
4. Having separation of concerns