

# Creating Automated Tests for File Access Code

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# Overview



The problems with testing file access code

An overview of `System.IO.Abstractions`

Refactor processors for testability

Add a `TextFileProcessor` test

Add a `BinaryFileProcessor` test

Add a `CsvFileProcessor` test

Asserting mock file output with  
`ApprovalTests`



# The Problems with Testing File Access Code

Physical  
path(s)

Test execution  
speed

Setup  
complexity

Additional  
cleanup code

Read/write?  
Security?  
Every PC?  
CI server?

IO overhead  
Slow to run  
Later feedback  
Run as often?

Files/dirs exist?  
Existing files?  
Overwrite?

Test files  
Test directories



# An Overview of System.IO.Abstractions

Abstraction layer for the file system

Provides testable file IO access

IFileSystem interface

FileSystem class



# An Overview of System.IO.Abstractions



Aims to have same API as:  
`System.IO.File`  
`System.IO.Directory`  
Etc.



`System.IO.File.ReadAllText(...)`



`IFileSystem.File.ReadAllText(...)`



# An Overview of System.IO.Abstractions

Production

**FileSystem instance**

Test

**Mock IFileSystem**  
**System.IO.Abstractions.TestingHelpers**  
**MockFileSystem**  
**MockFileData**



# Summary



## The problems with testing file access code

- Test execution speed
- Setup/cleanup code

## An overview of System.IO.Abstractions

### Refactored processors for testability

- IFileSystem constructor parameter
- new FileSystem()

### Added tests

- new MockFileData(...)
- new MockFileSystem()
- mockFileSystem.AddFile(...)
- mockFileSystem.GetFile(...)

### Approvals.Verify(...)



# Resources and Further Learning

## Pluralsight courses:

- Testing .NET Core Code with xUnit.net: Getting Started
- Dynamic C# Fundamentals
- Approval Tests for .NET

## Documentation:

- System.IO [<http://bit.ly/pssystemio>]
- CsvHelper [<http://bit.ly/pscsvhelper>]

## Code:

- System.IO.Abstractions [<http://bit.ly/pssysio>]
- CsvHelper [<http://bit.ly/csvhelpercode>]

