

# 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/pssystemio2>]
- CsvHelper [<http://bit.ly/pscsvhelper>]

## Code:

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

