Unit Testing Basics

@Agileworks.ro Bucharest

based on ...

"the art of Unit Testing"

with examples in .NET
by Roy Osherove

... and  python™

Outline

Getting started

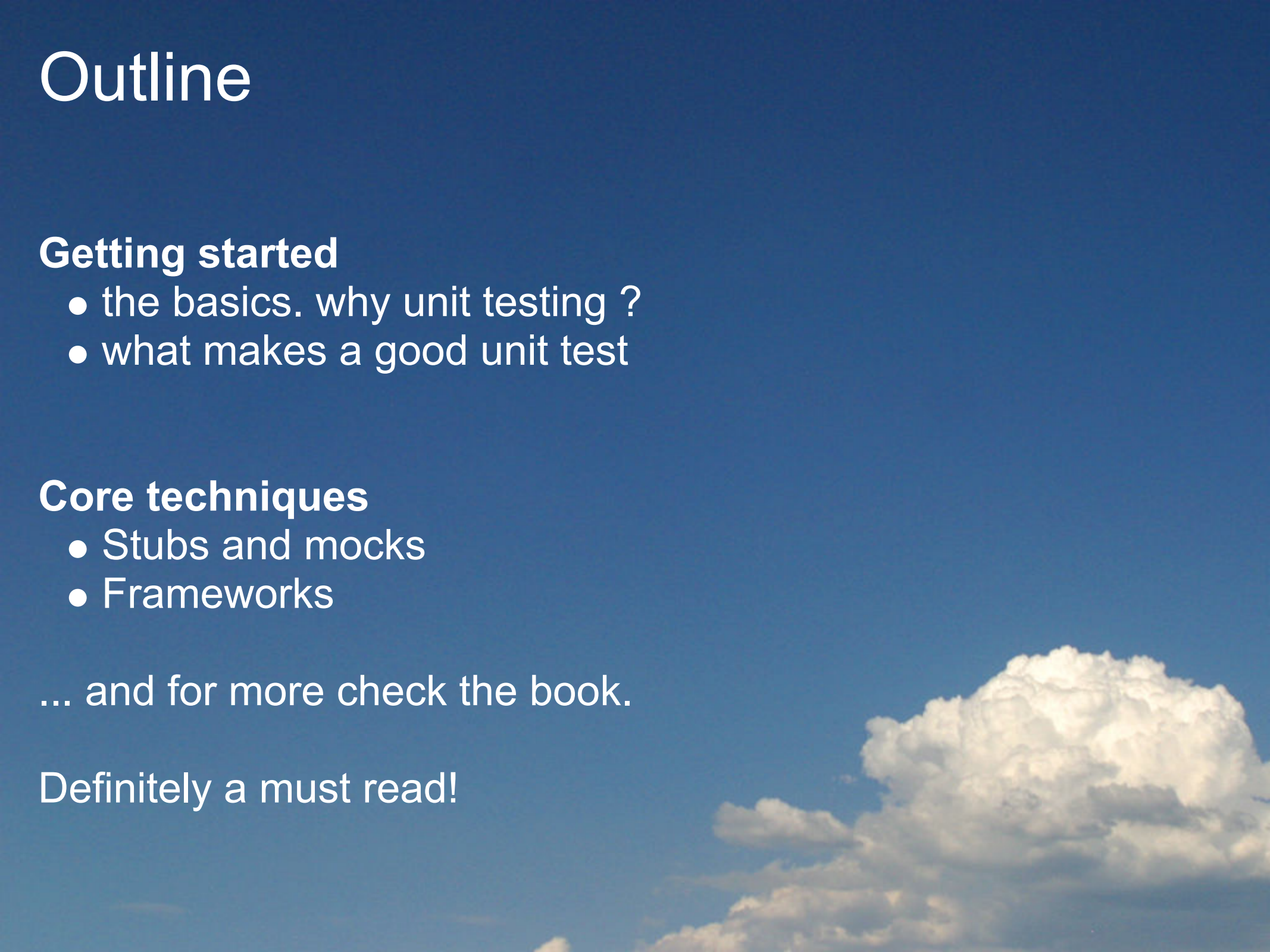
- the basics. why unit testing ?
- what makes a good unit test

Core techniques

- Stubs and mocks
- Frameworks

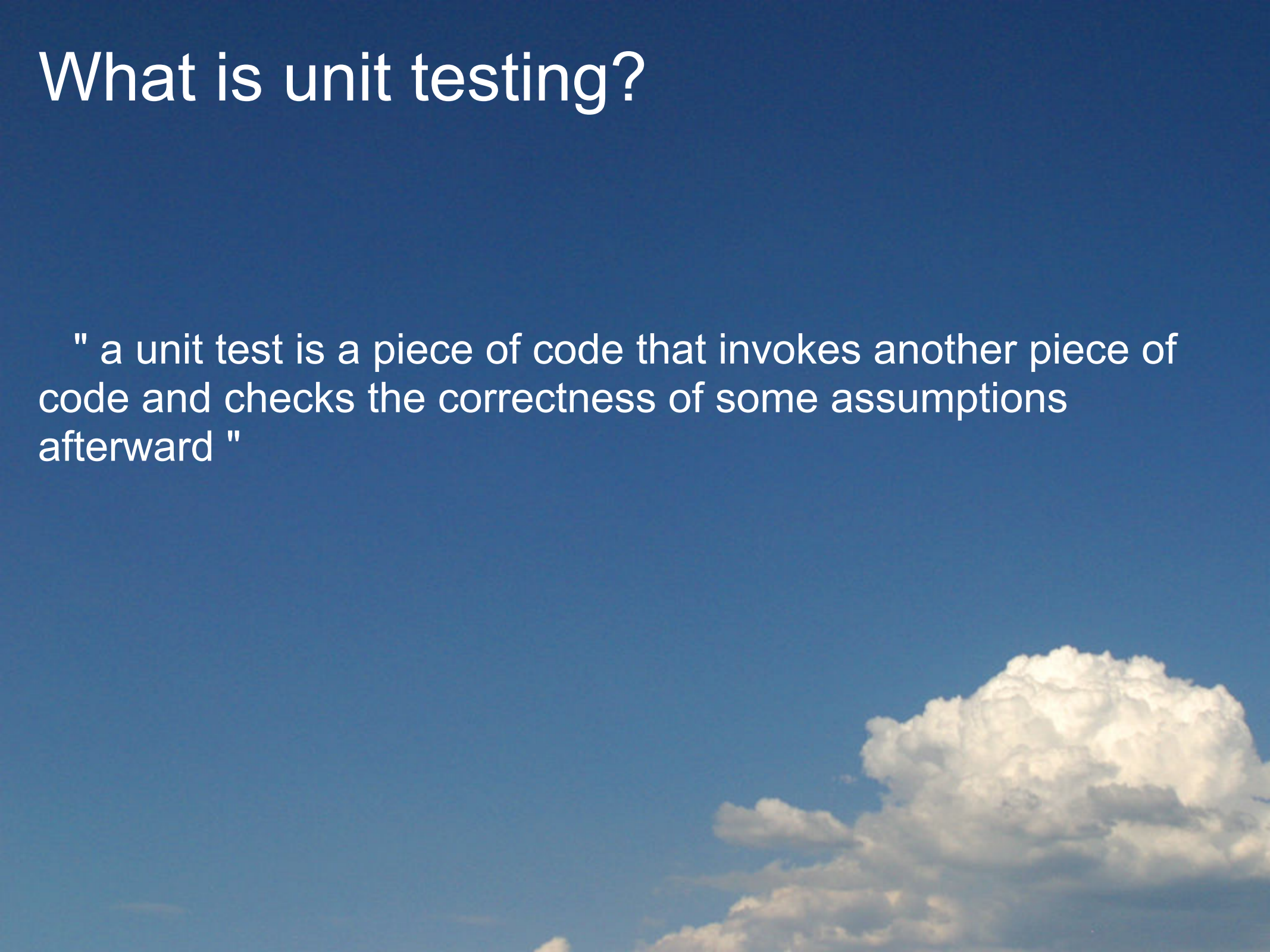
... and for more check the book.

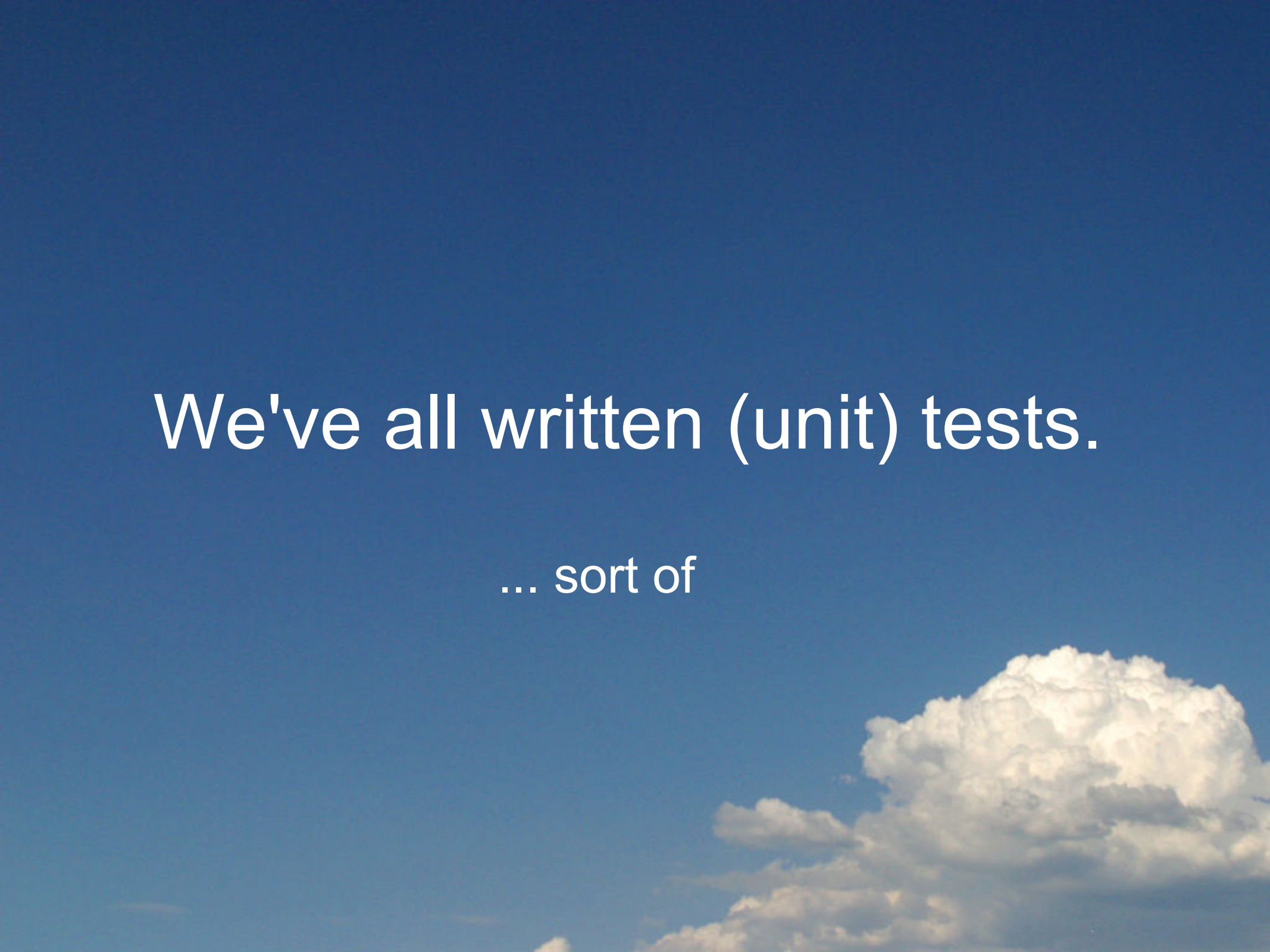
Definitely a must read!



What is unit testing?

" a unit test is a piece of code that invokes another piece of code and checks the correctness of some assumptions afterward "

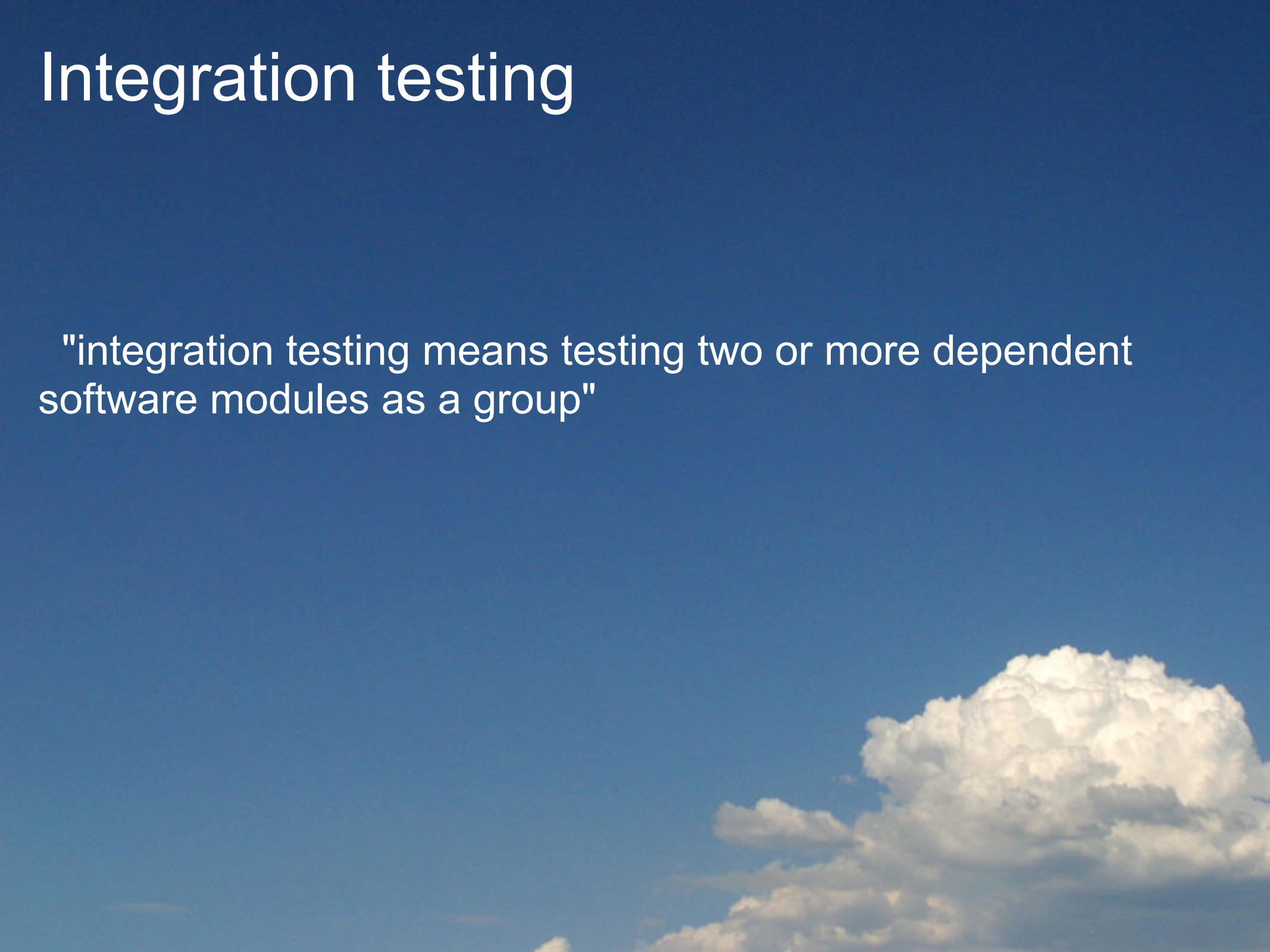



We've all written (unit) tests.
... sort of


Integration Testing != Unit Testing
trying to test too much

Integration testing

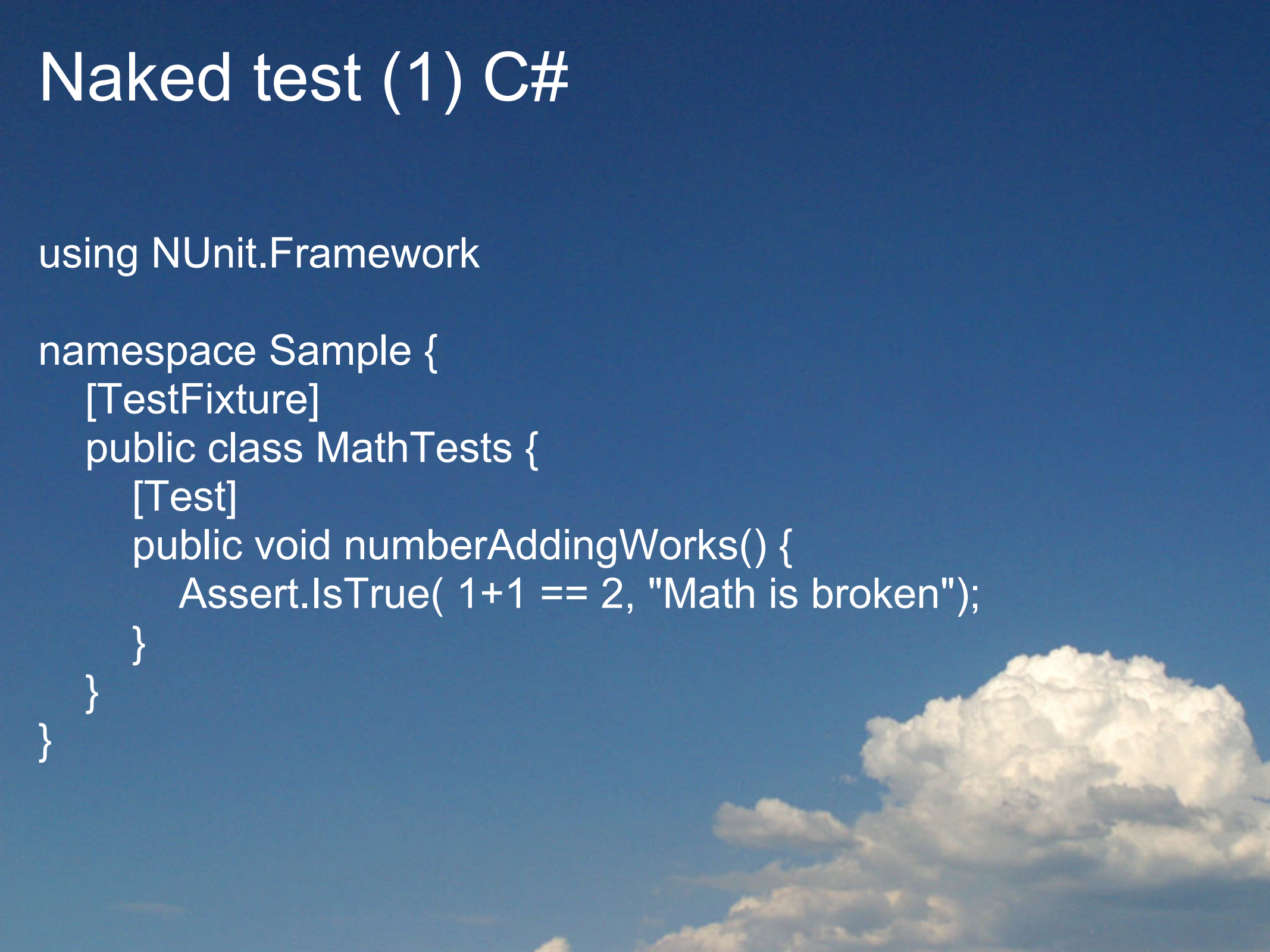
"integration testing means testing two or more dependent software modules as a group"



Naked test (1) C#

```
using NUnit.Framework

namespace Sample {
    [TestFixture]
    public class MathTests {
        [Test]
        public void numberAddingWorks() {
            Assert.IsTrue( 1+1 == 2, "Math is broken");
        }
    }
}
```



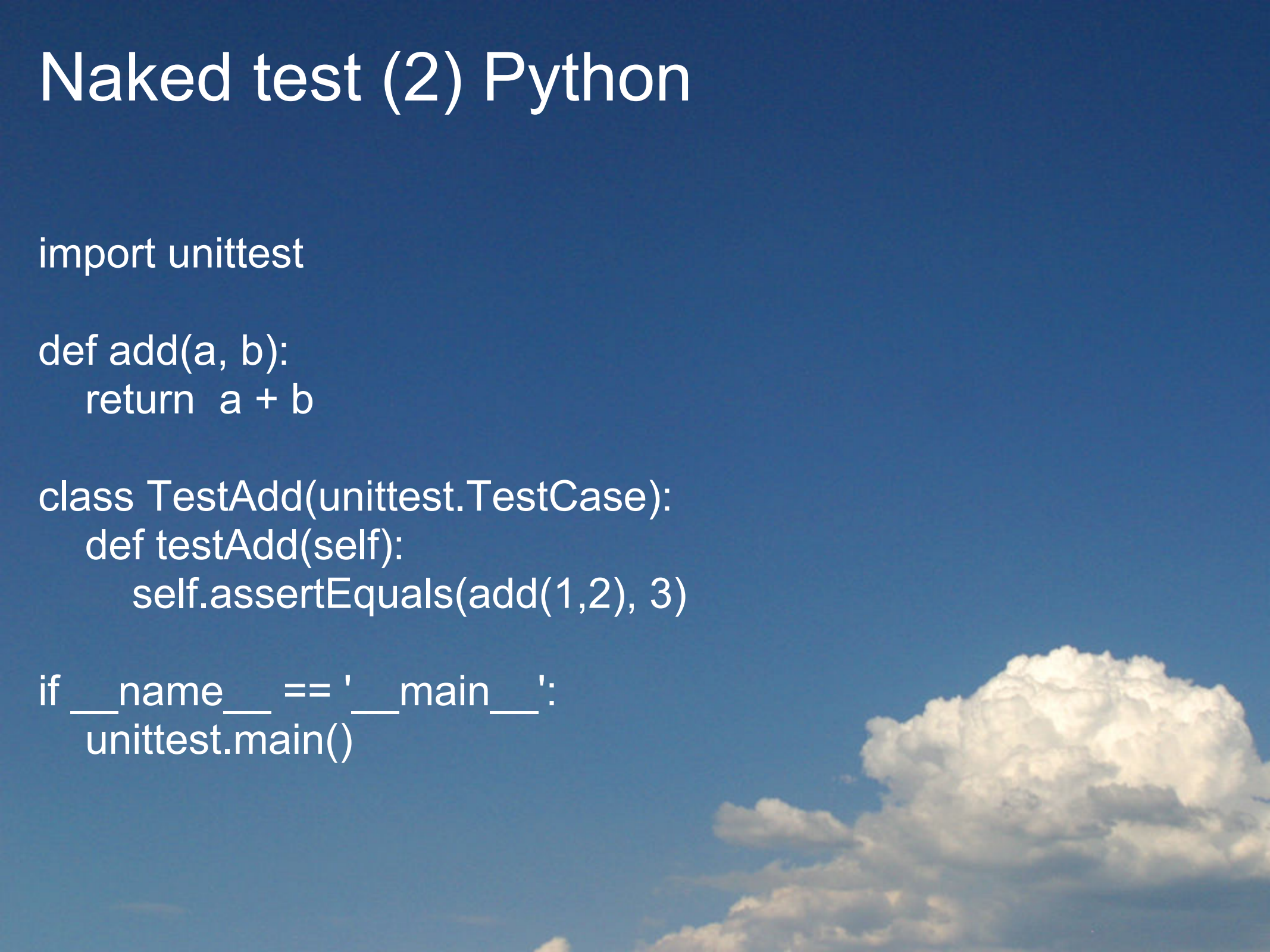
Naked test (2) Python

```
import unittest

def add(a, b):
    return  a + b

class TestAdd(unittest.TestCase):
    def testAdd(self):
        self.assertEquals(add(1,2), 3)

if __name__ == '__main__':
    unittest.main()
```

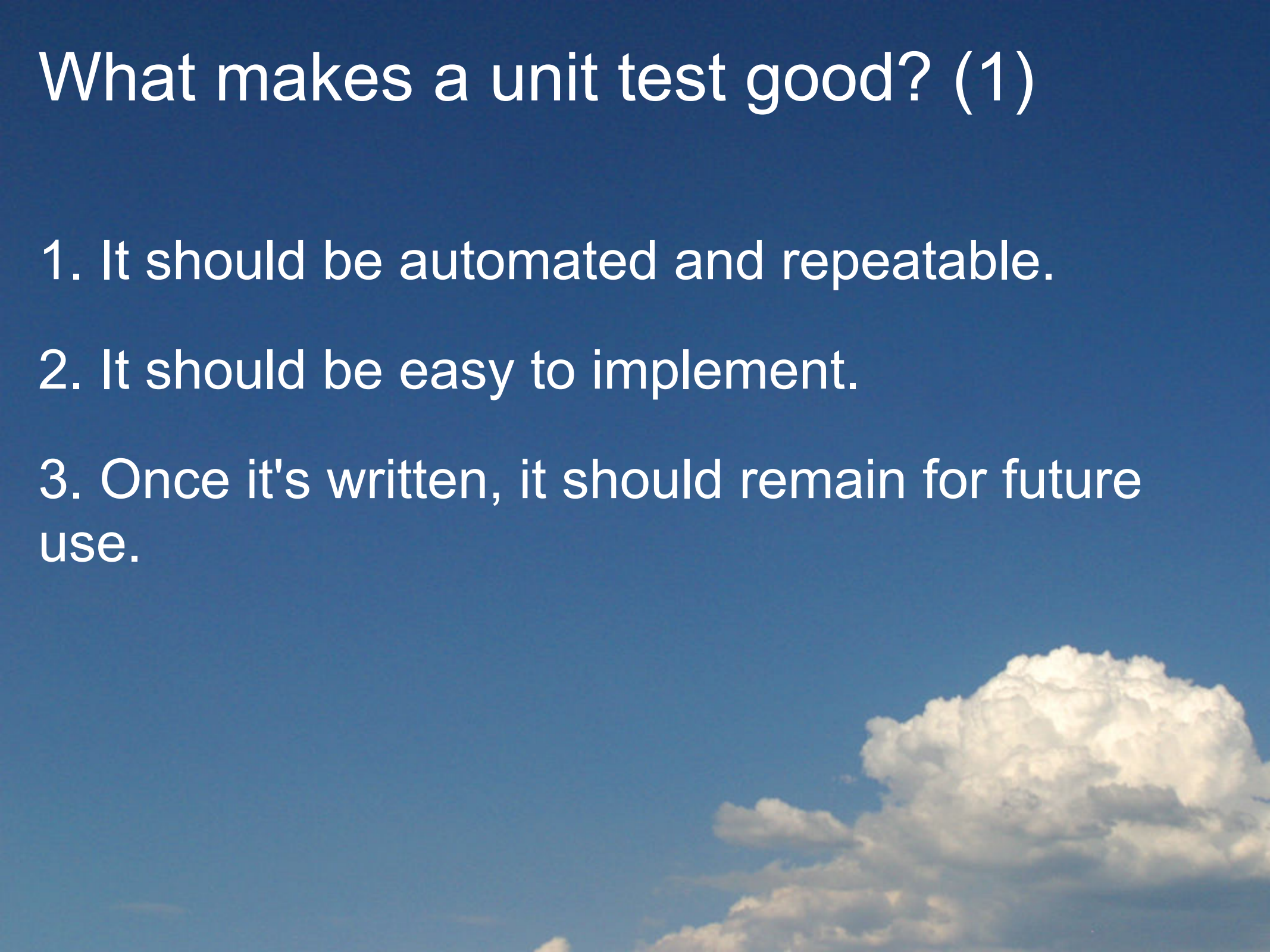


What makes a unit test good? (1)

1. It should be automated and repeatable.

2. It should be easy to implement.

3. Once it's written, it should remain for future use.

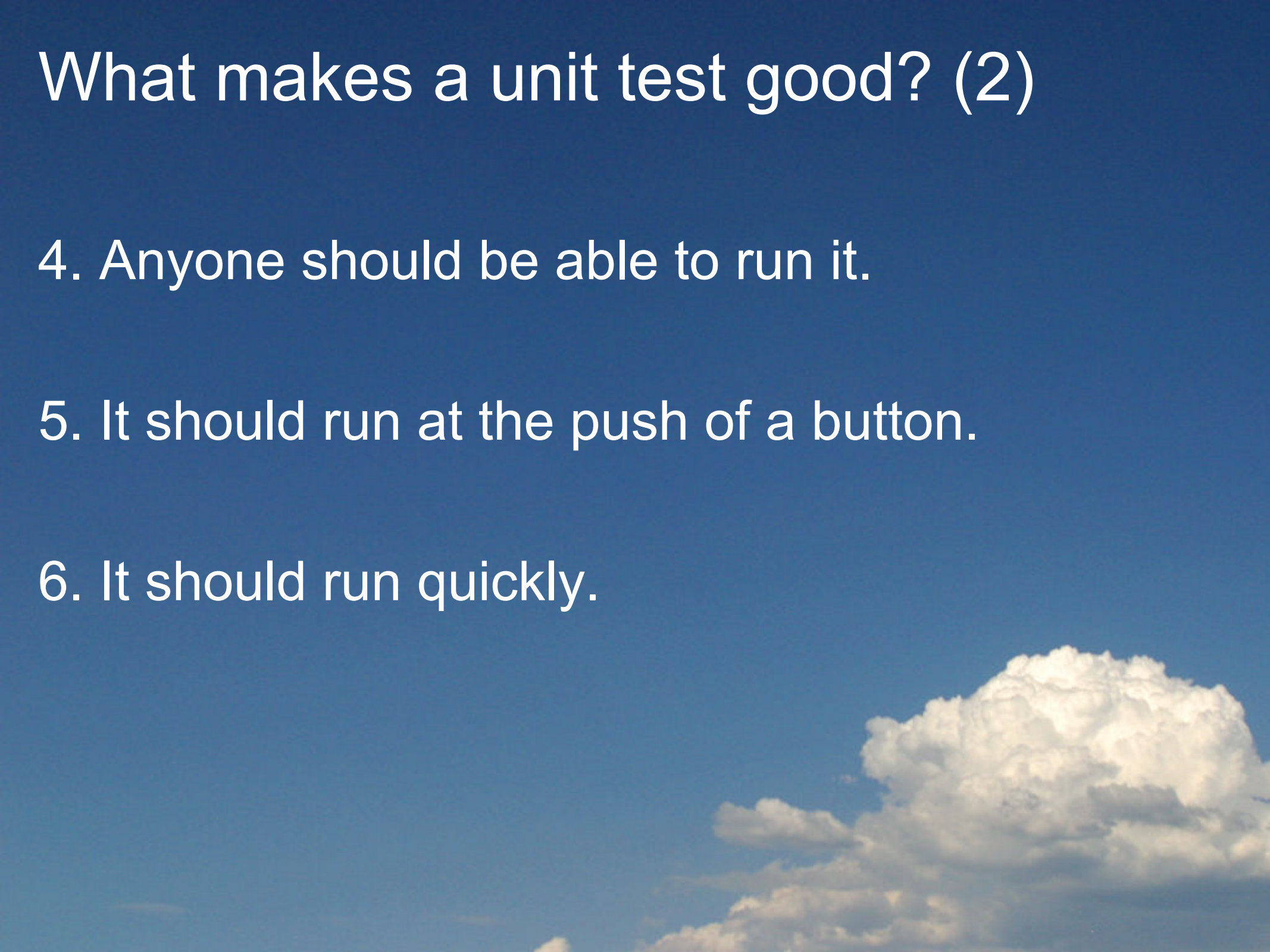


What makes a unit test good? (2)

4. Anyone should be able to run it.

5. It should run at the push of a button.

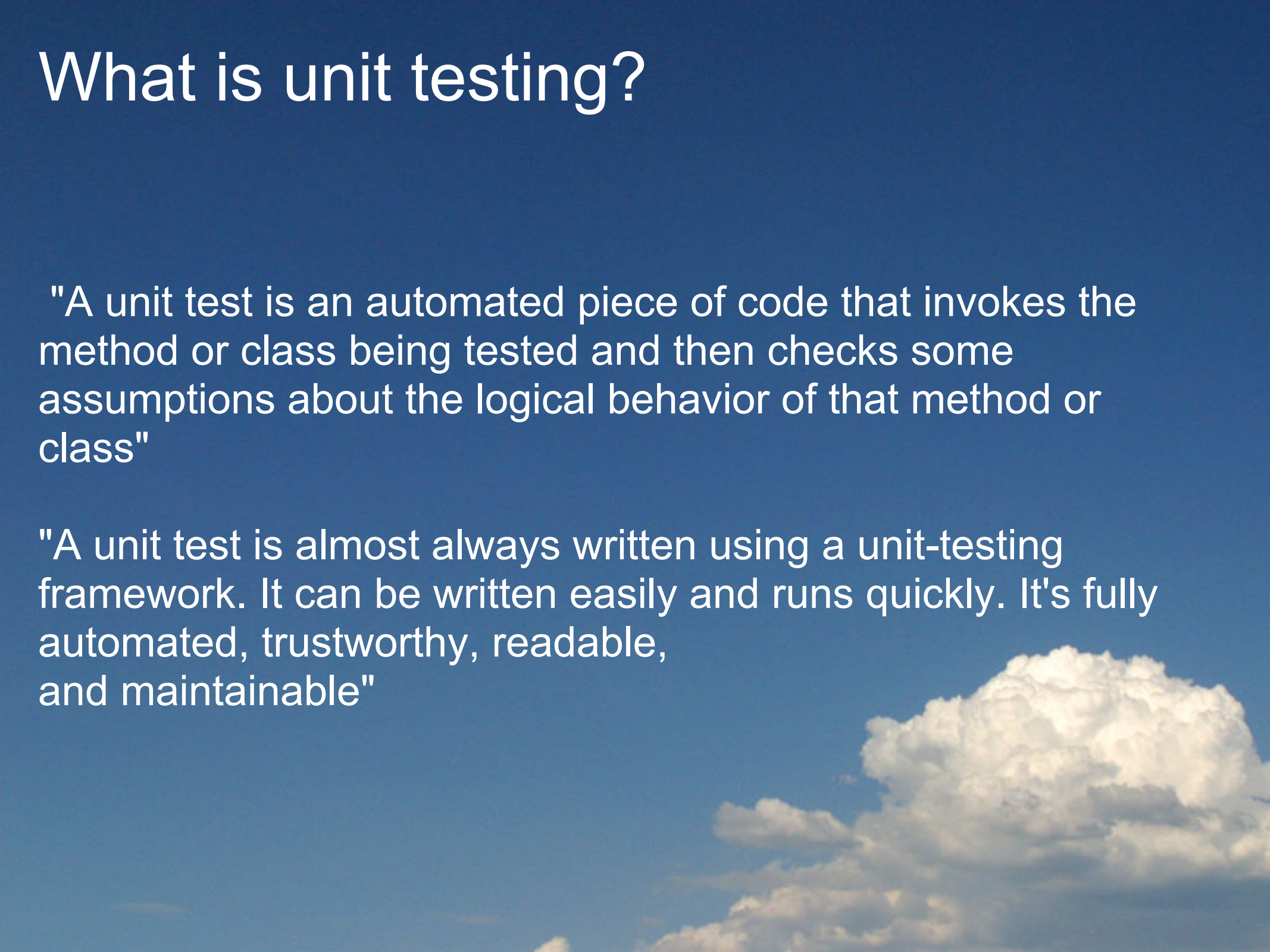
6. It should run quickly.

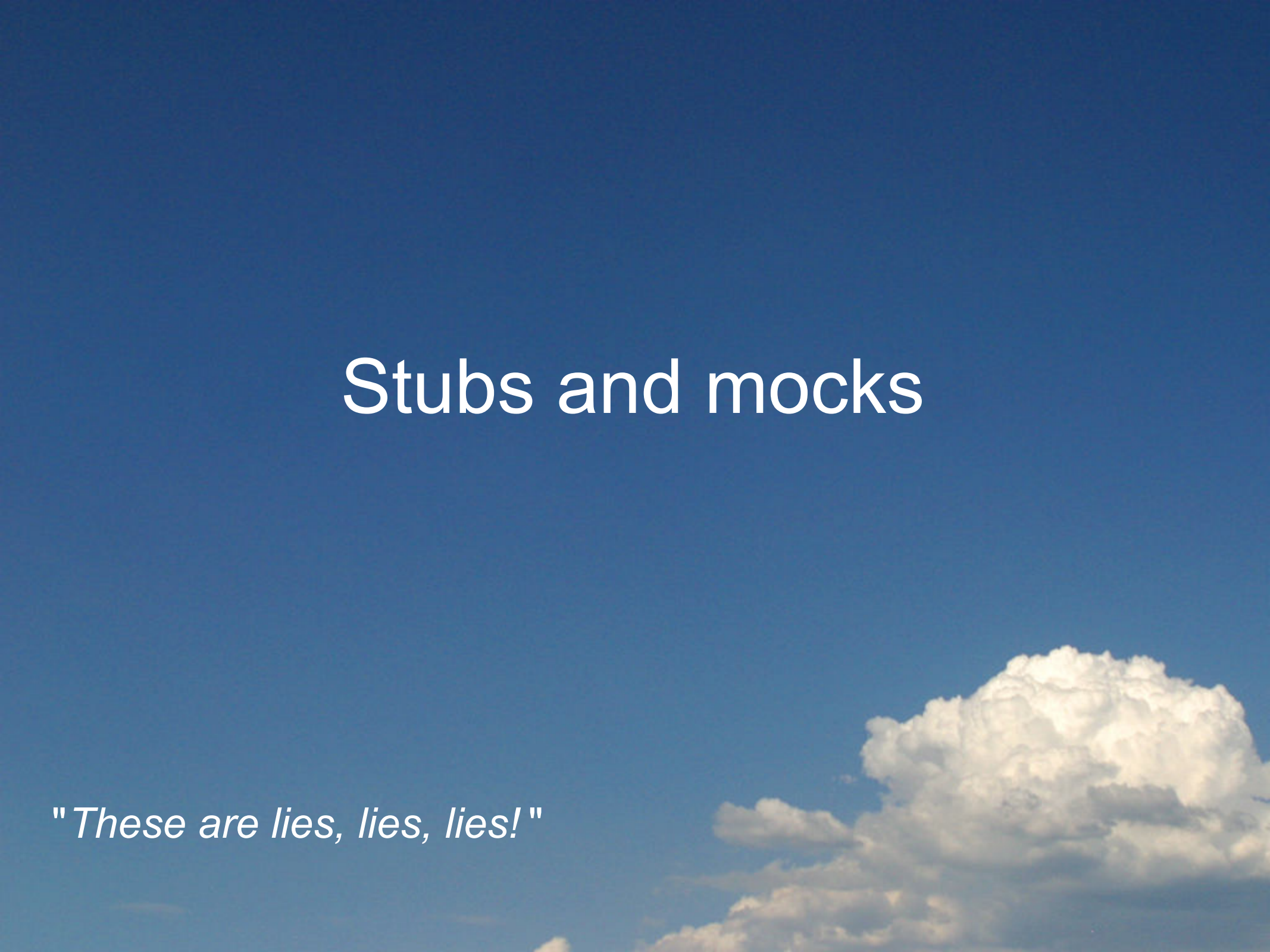


What is unit testing?

"A unit test is an automated piece of code that invokes the method or class being tested and then checks some assumptions about the logical behavior of that method or class"

"A unit test is almost always written using a unit-testing framework. It can be written easily and runs quickly. It's fully automated, trustworthy, readable,
and maintainable"




Stubs and mocks
"These are lies, lies, lies!"

What are stubs?

"Stubs provide canned answers to calls made during the test, usually not responding at all to anything outside what's programmed in for the test."

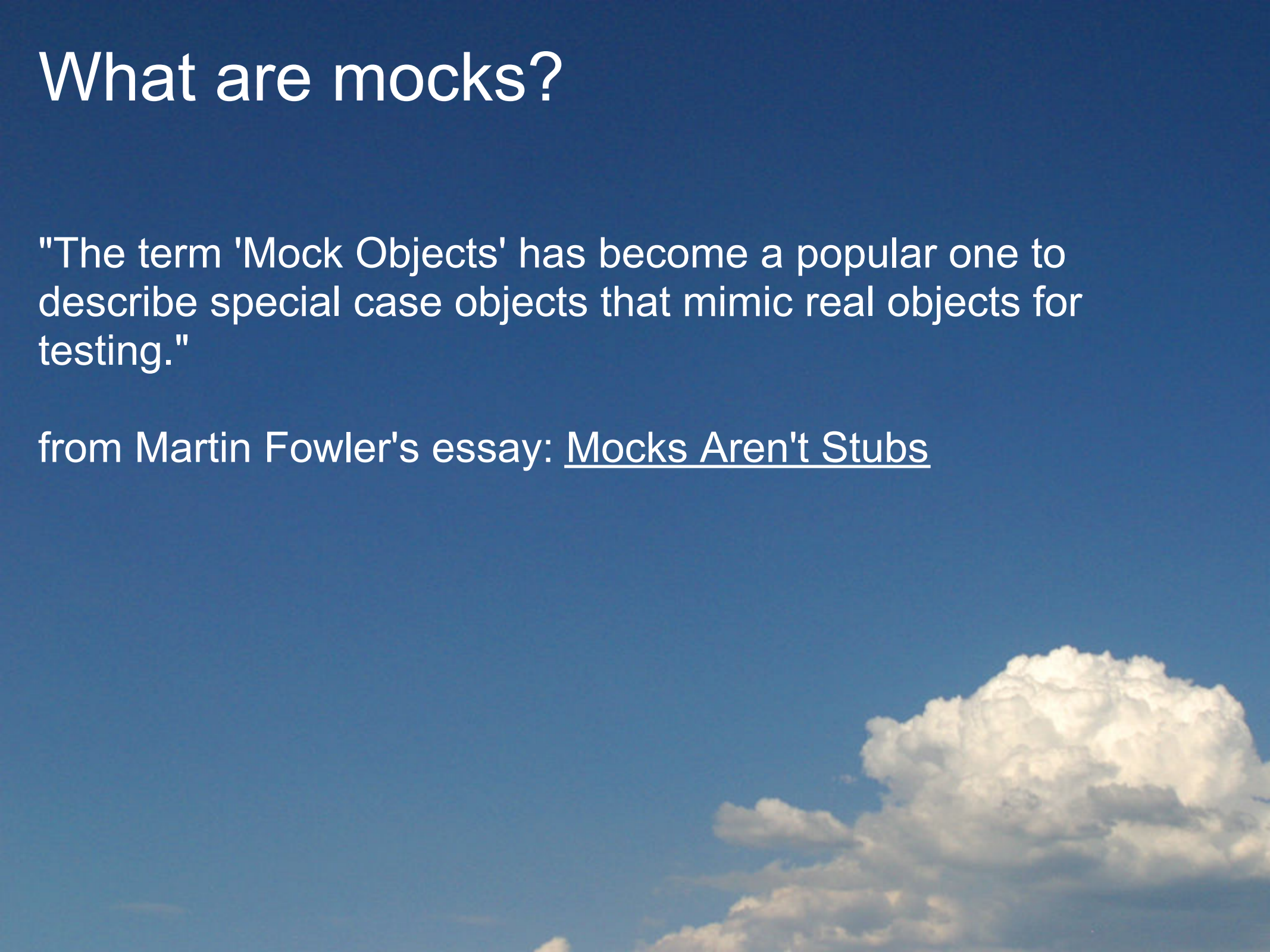
"Stubs may also record information about calls, such as an email gateway stub that remembers the messages it 'sent', or maybe only how many messages it 'sent'."

from Martin Fowler's essay: Mocks Aren't Stubs

What are mocks?

"The term 'Mock Objects' has become a popular one to describe special case objects that mimic real objects for testing."

from Martin Fowler's essay: Mocks Aren't Stubs



Sample code

Official book website:

http://www.artofunittesting.com/

Direct source code download link:

http://www.manning.com/osherove/ARtOfUniTestingCode.zip

Python version (still work in progress):

http://github.com/andreisavu/log-analyzer

Read the book ...

... for more informations about:

- what makes unit tests good
- how to write maintainable tests
- how to use stubs and mocks
- how to organize tests
- how to integrate tests into the organization
- and how to work with legacy code

"the art of Unit Testing" by **Roy Osherove**

Available in the agileworks.ro library :)

C# Resources

NUnit : http://www.nunit.org/index.php

Rhino Mocks: http://ayende.com/projects/rhino-mocks.aspx

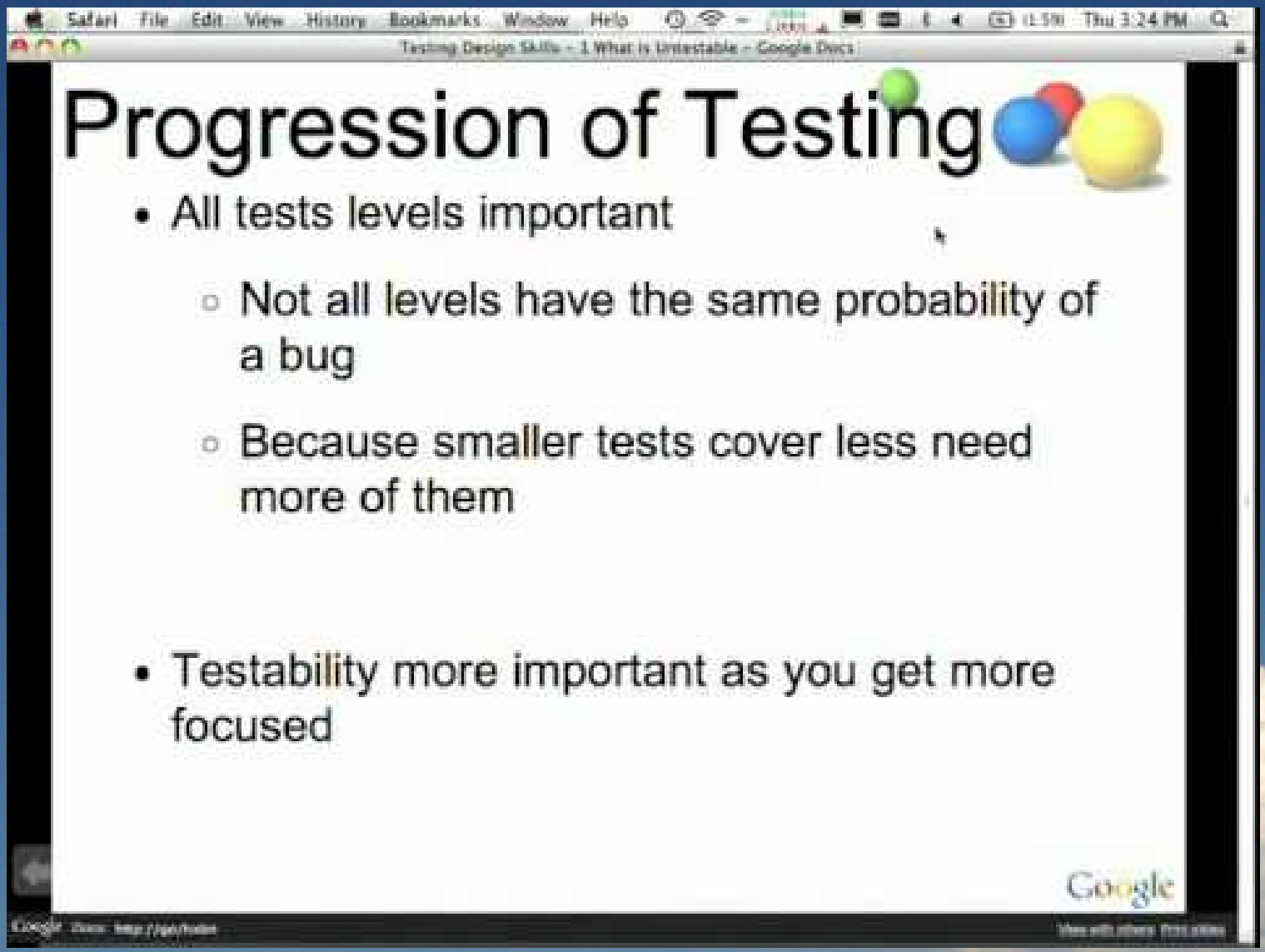
The art of unit testing: http://www.artofunittesting.com/

Python Resources

unittest: http://docs.python.org/library/unittest.html

pymox: http://code.google.com/p/pymox/

The clean code Talks - Unit Testing




Thanks. Questions?
http://www.agileworks.ro/agile-scrum-more/
http://www.andreisavu.ro
contact@andreisavu.ro