

Unit Testing with Python

Module 4: doctest

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<http://coding-is-like-cooking.info>

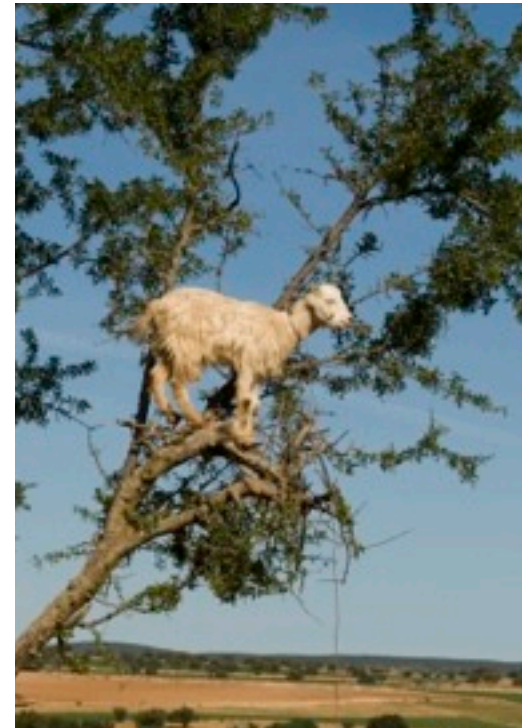
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Module Outline

- Situations when you'd use **doctest**
- Making documentation comments more truthful
- Handling output that changes
- using doctest for regression testing



doctest

 docs.python.org/3.3/library/doctest.html

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26.2. `doctest` — Test interactive Python examples

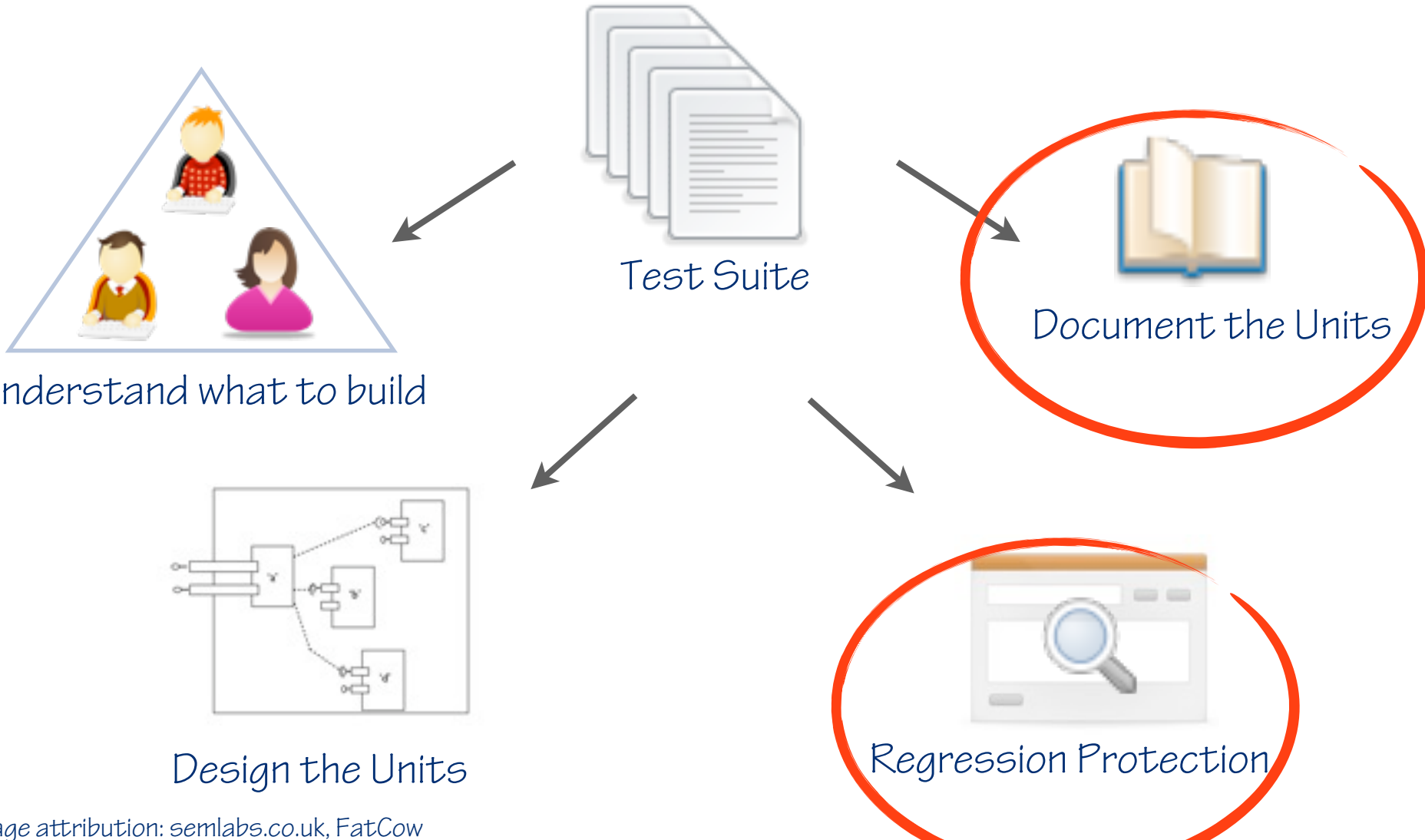
- Checking examples in docstrings.
- Regression testing.
- Tutorial documentation.

Making documentation comments more truthful

```
def factorial(n):  
    """Return the factorial of n, an exact integer >= 0.  
  
    >>> [factorial(n) for n in range(6)]  
    [1, 1, 2, 6, 24, 120]  
    >>> factorial(30)  
    2652528598121910586363084800000000  
    >>> factorial(-1)  
    Traceback (most recent call last):  
        ...  
    ValueError: n must be >= 0  
  
    Factorials of floats are OK, but the float must be an exact integer:  
    >>> factorial(30.1)  
    Traceback (most recent call last):  
        ...
```

- Docstrings can get out of date
- Doctest helps you keep them updated

What is Unit Testing For?





Yatzy

- Roll 5 dice (and re-roll some)
- choose a category to score the roll in
- Each category is only used once
- The final score is the sum of the score in each category





Yatzy example



- **“Two Pairs”**
 - Score: $2 + 2 + 3 + 3 = 10$
- **“Threes”**
 - Score: $3 + 3 = 6$
- **“Small Straight”**
 - Score: 0



Handling output that changes

It also handles unsorted input

```
>>> small_straight([5,4,3,2,1])
```

0

File "./yatzy.py", line 19, in yatzy.small_straight

Failed example:

```
small_straight([5,4,3,2,1])
```

Expected:

0

Got:

15



Handling output that changes

- Dictionaries
- Floating point numbers
- Object ids
- Tracebacks?



Doctest Directives

```
#doctest: +ELLIPSIS
```

- Directives control how doctest matches output
- Use wildcard matching with care

<http://docs.python.org/3.3/library/doctest.html#doctest-directives>

doctest

docs.python.org/3.3/library/doctest.html

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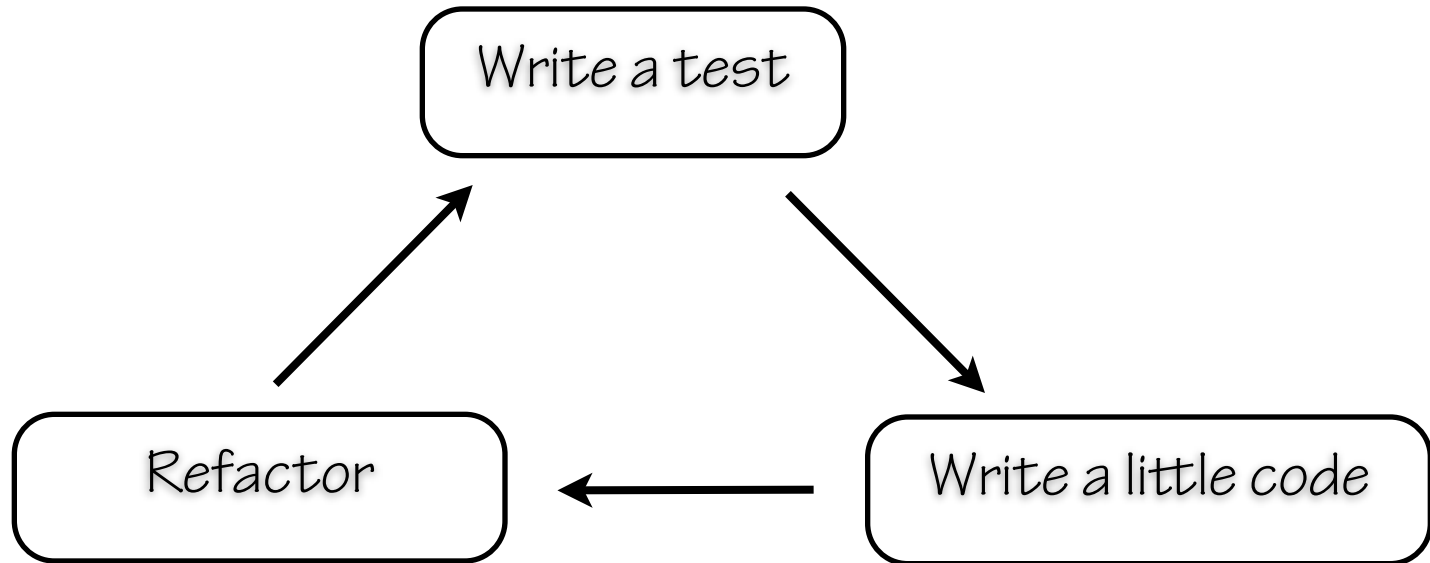
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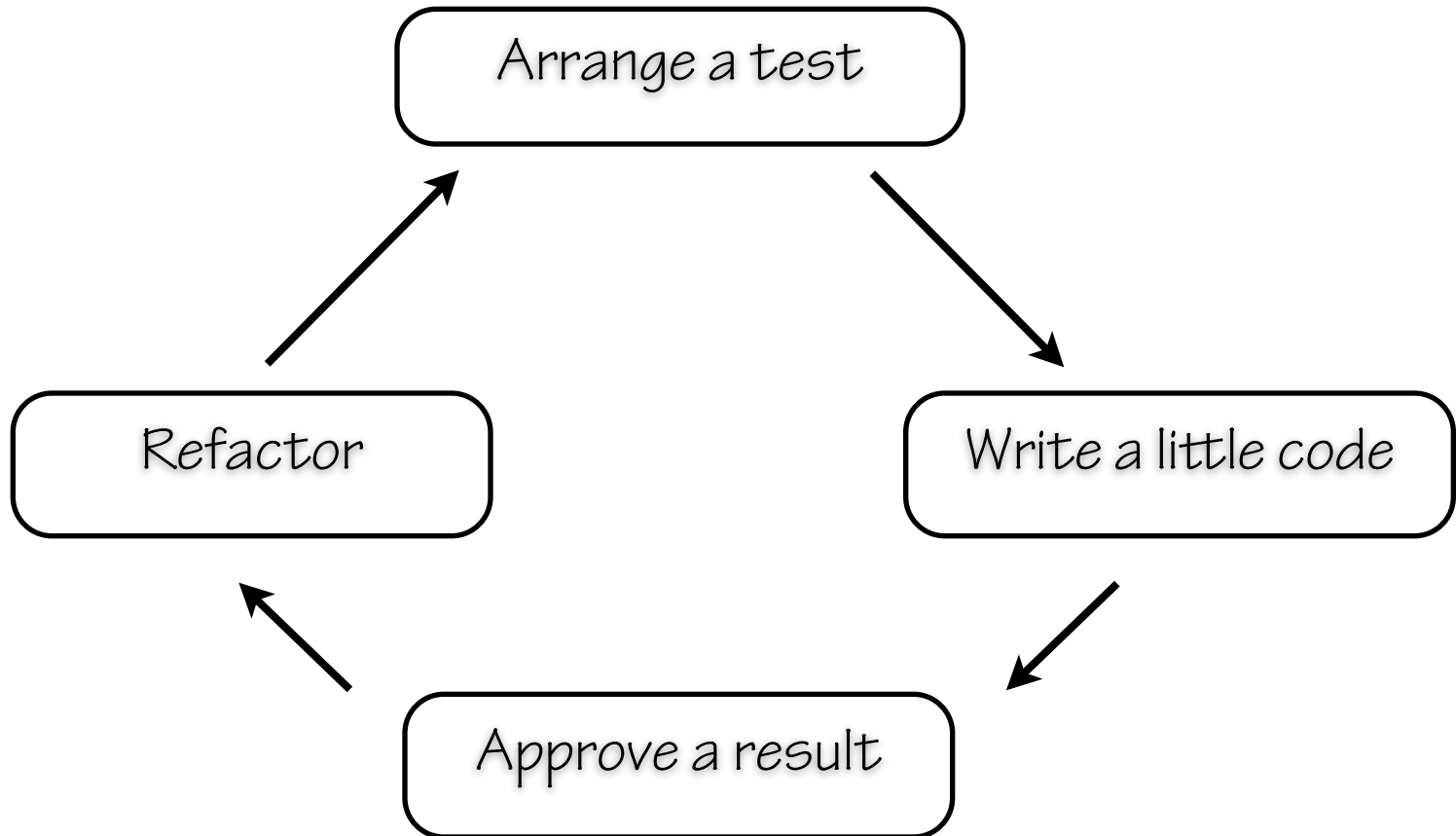
Approval Testing

- “I’ll know it when I see it”

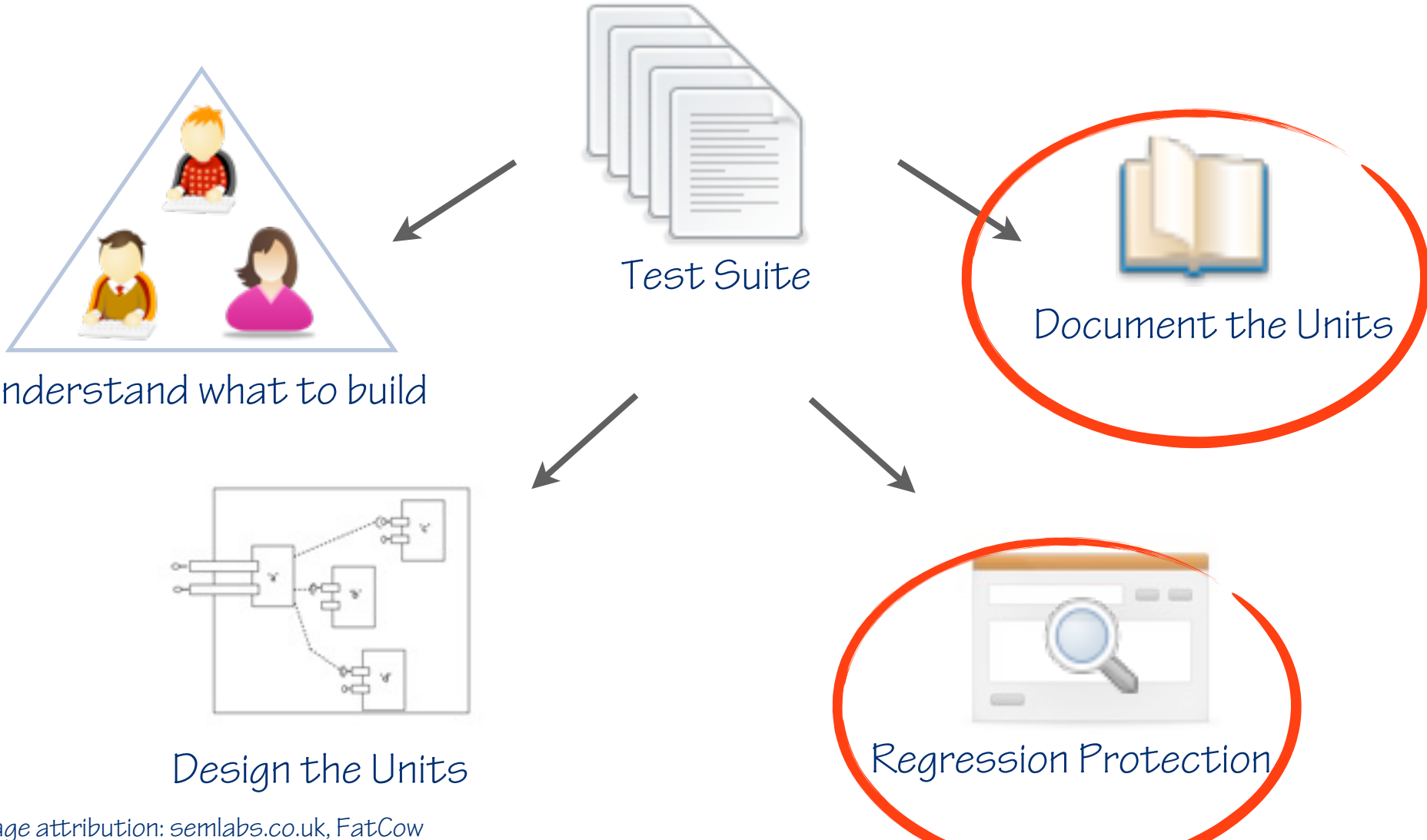


Approval Testing

- “I’ll know it when I see it”



What is Unit Testing For?



What role is your doctest playing?

Write it in a docstring



Document the Units

Put it in a separate file
& consider moving to unittest or pytest



Regression Protection

doctest

docs.python.org/3.3/library/doctest.html

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Module Review

- Situations when you'd use **doctest**
 - Checking examples in docstrings
 - Regression Testing
 - Tutorial documentation
- Handling output that changes
- using **pytest** as a test runner for doctests

