

Parameterised Tests and Coverage



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Summary

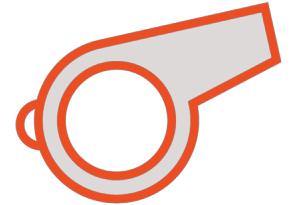
Parameterised Tests

Measuring coverage of tests

Parameterised Testing

Same function or method
Different Parameters
More coverage





Tennis Example



Love-All

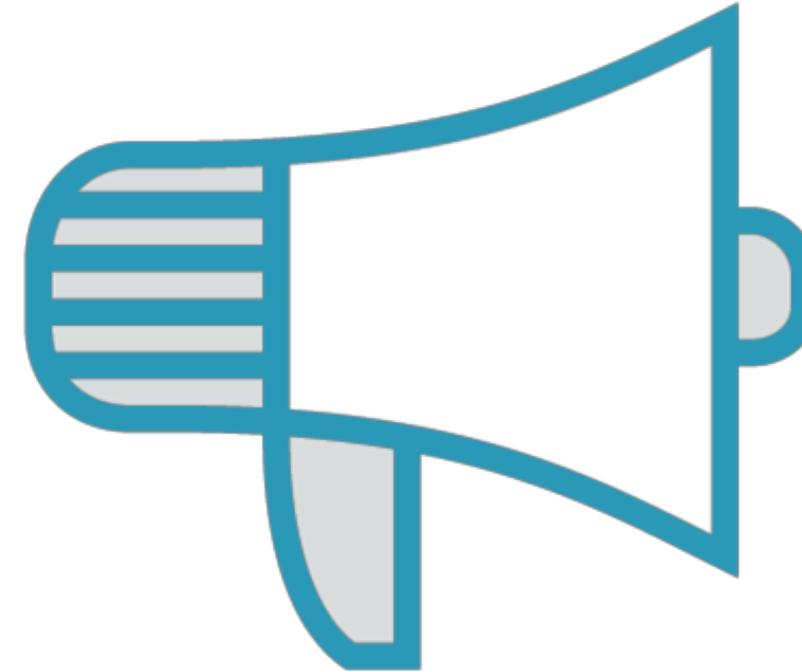
Fifteen-Love

Fifteen-All

Thirty-Fifteen

Forty-Fifteen

Win for Player 1



Measuring Test Coverage

Coverage for **tennis.py** : 62%

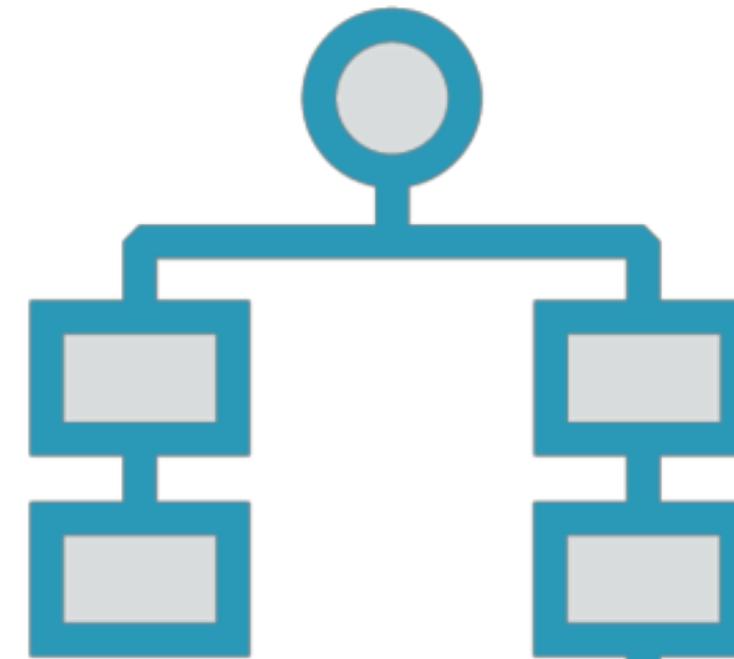
16 statements 10 run 6 missing 2 excluded

```
1
2
3 def score_tennis(player1_points, player2_points):
4     score_names = ["Love", "Fifteen", "Thirty", "Forty"]
5     if _end_game(player1_points, player2_points):
6         leader = "Player 2"
7         if player1_points > player2_points:
8             leader = "Player 1"
9
10        if abs(player2_points - player1_points) == 1:
11            return f"Advantage {leader}"
12        else:
13            return f"Win for {leader}"
14    player1_score = score_names[player1_points]
15    if player1_points == player2_points:
16        return f"{player1_score}-All"
17    else:
```

Install two packages: **coverage** and **pytest-cov**

Branch Coverage

Conditional



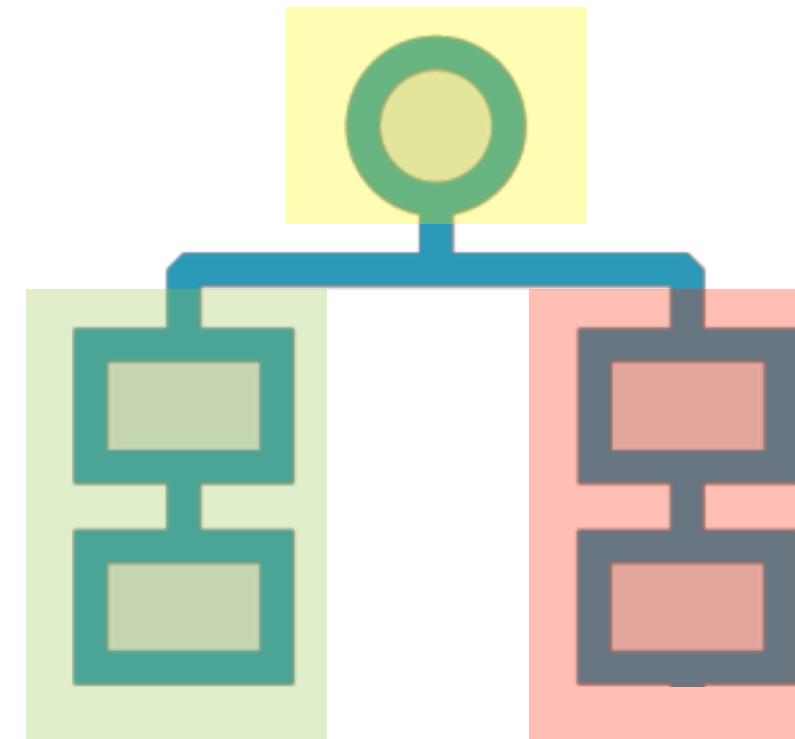
Statements executed
when True

Statements executed
when false

Branch Coverage

Statements executed
when True

Conditional

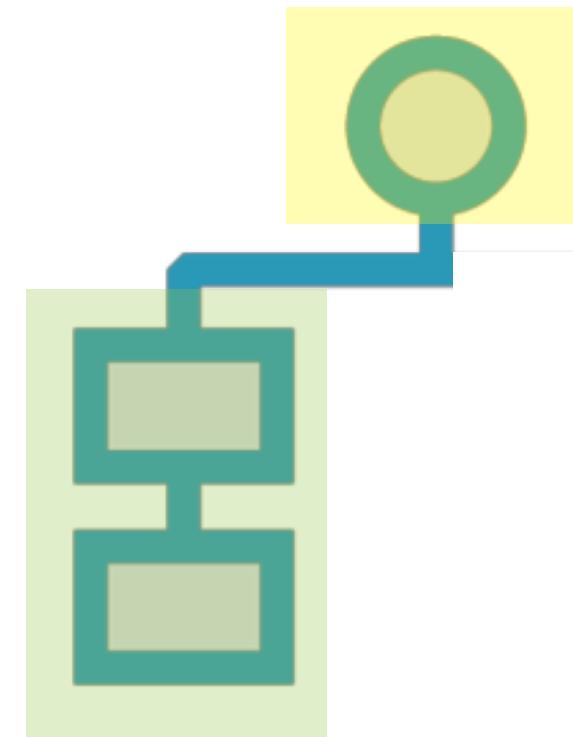


Statements executed
when false

Branch Coverage

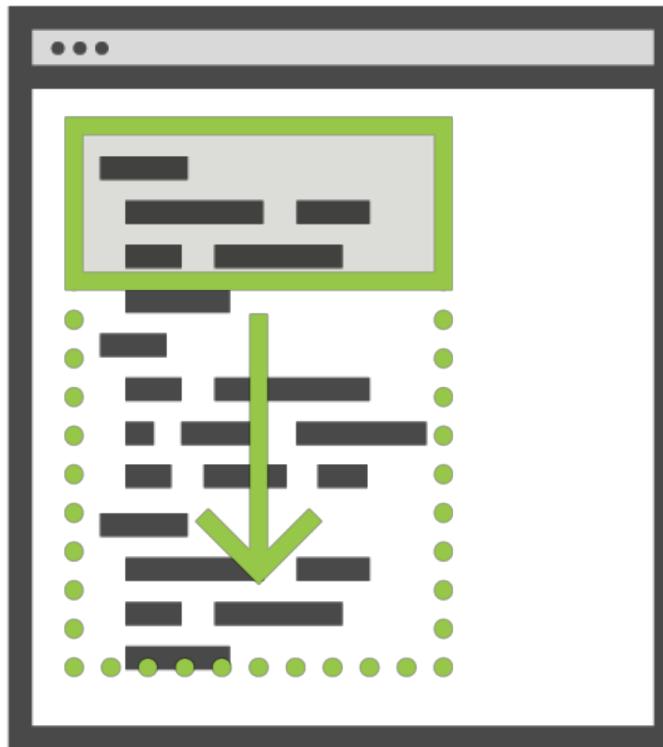
Statements executed
when True

Conditional



No alternative statements

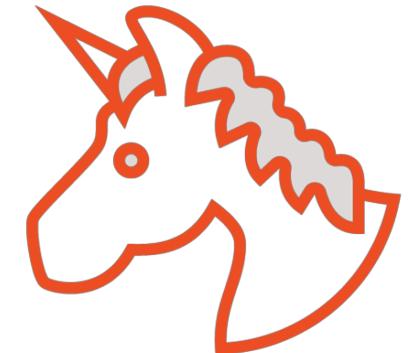
Measuring Coverage



Use branch coverage
100% coverage is no guarantee

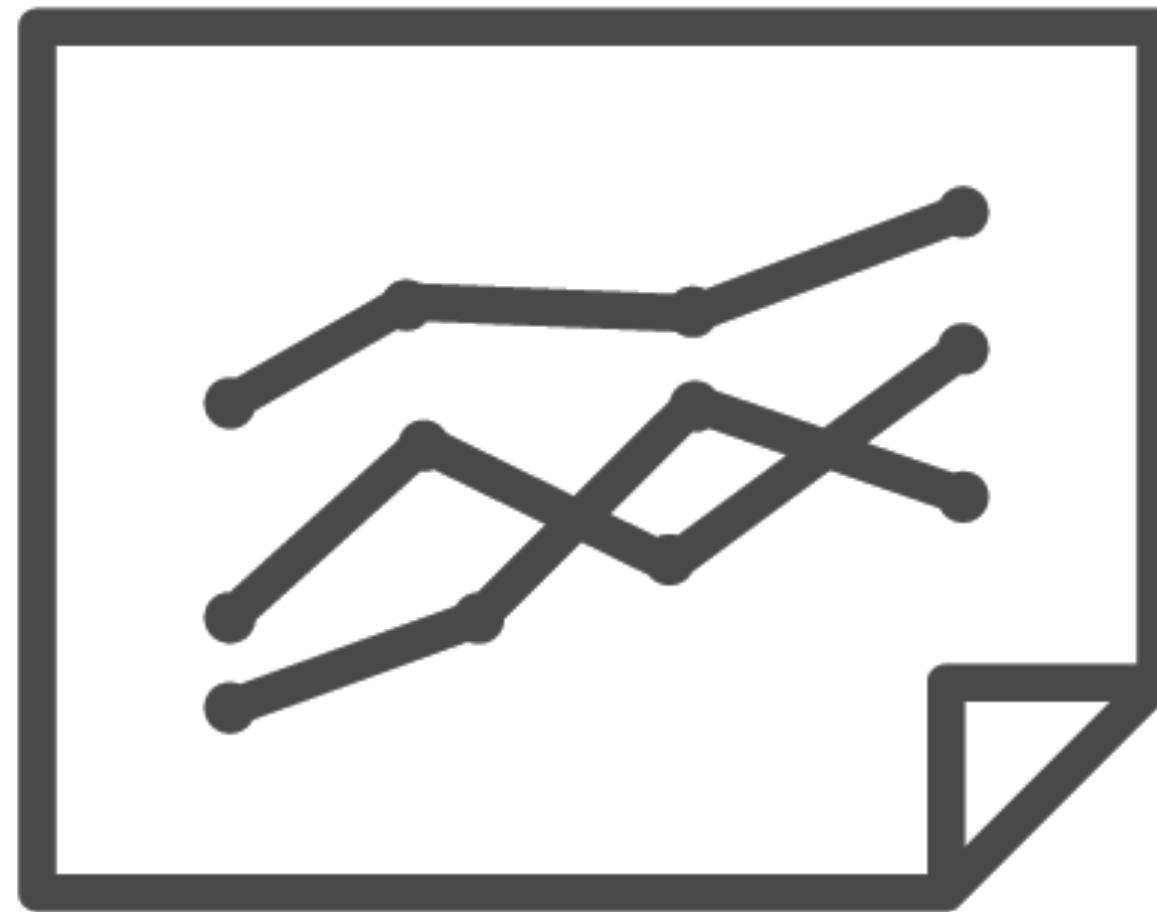


Gilded Rose Example

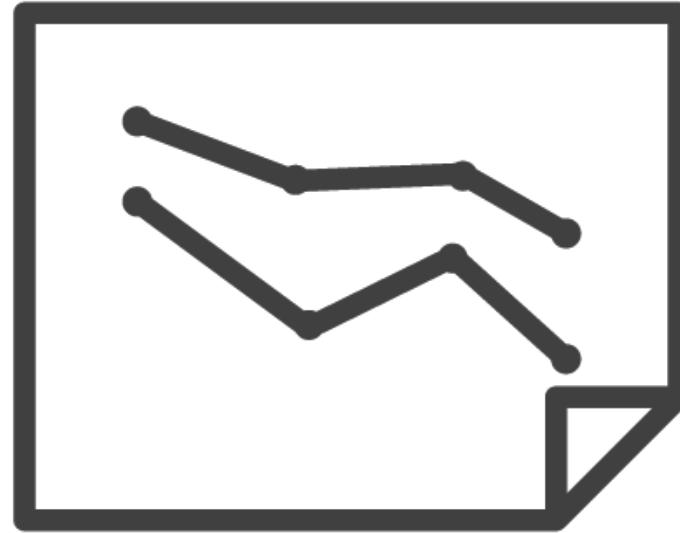


```
def update_quality(self):
    for item in self.items:
        if item.name != "Aged Brie" and item.name != "Backstage
            if item.quality > 0:
                if item.name != "Sulfuras, Hand of Ragnaros":
                    item.quality = item.quality - 1
            else:
                if item.quality < 50:
                    item.quality = item.quality + 1
                if item.name == "Backstage passes to a TAFKAL80E
                    if item.sell_in < 11:
                        if item.quality < 50:
                            item.quality = item.quality + 1
                    if item.sell_in < 6:
                        if item.quality < 50:
                            item.quality = item.quality + 1
                if item.name != "Sulfuras, Hand of Ragnaros":
                    item.sell_in = item.sell_in - 1
            if item.sell_in < 0:
                if item.name != "Aged Brie":
```

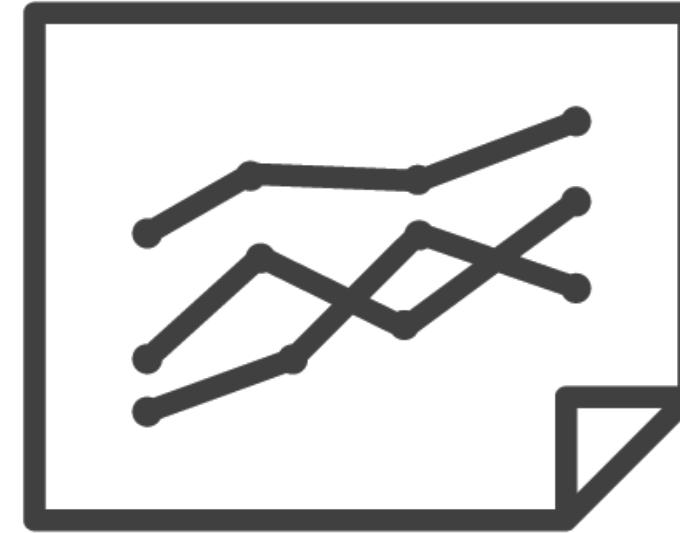
Tracking Trends



Interpreting Trends



Coverage declining



Coverage increasing

Coverage Targets



Situations to use Test Coverage

Situations to use Test Coverage

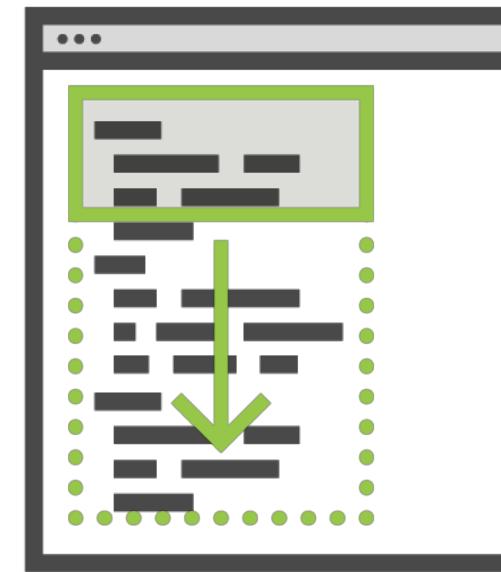


**Spot missing tests for
new code**

Situations to use Test Coverage



**Spot missing tests for
new code**

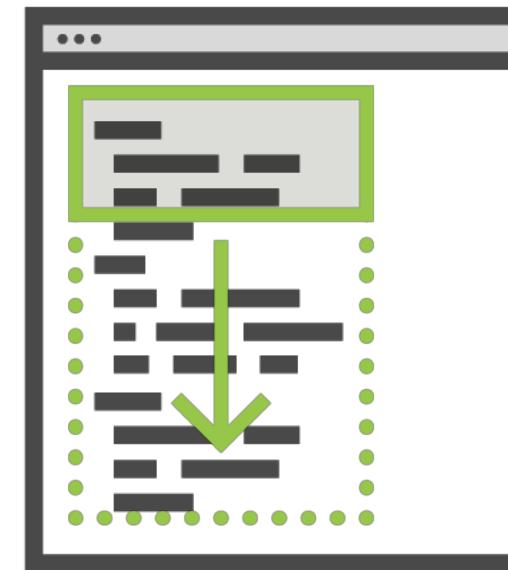


**Adding tests to
existing code**

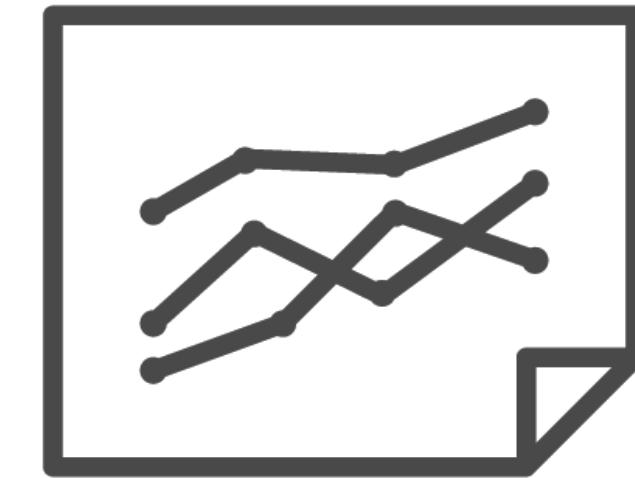
Situations to use Test Coverage



**Spot missing tests for
new code**

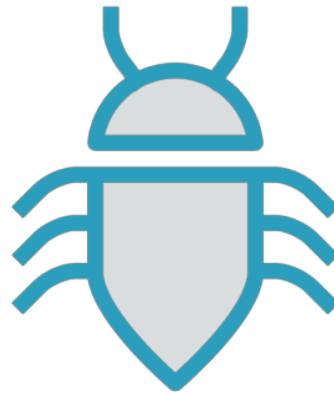


**Adding tests to
existing code**



**Tracking trends over
time**

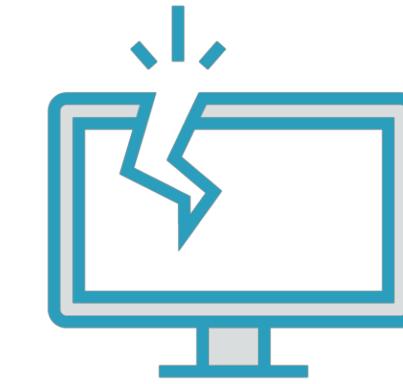
Evaluating Test Quality



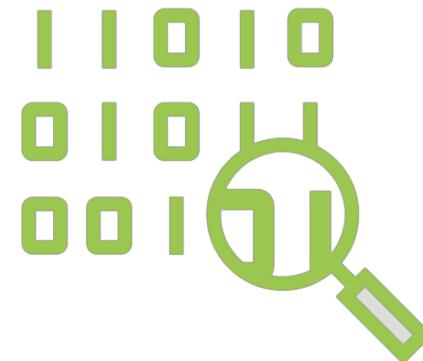
Bugs in production



Confidence to refactor



Unreliable tests



Code Review



Onboarding time



Mutation testing

Summary

Parameterised Tests

Measuring coverage of tests