Hypothesis

SEPTEMBER

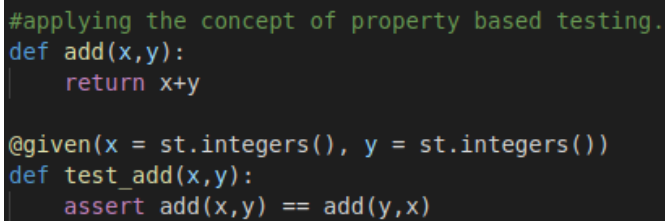December 17, 2019

1   Hypothesis

Hypothesis is a Python library for creating unit tests which are simpler to write and more powerful when run, finding edge cases in your code you wouldnt have thought to look for. Hypothesis lets you write tests which instead look like this:

1. For all data matching some specification.

2. Perform some operations on the data.

3. Assert something about the result.

It generate arbitrary data matching some input specification and checks that some guarantee holds on the output for the generated input, whatever it is. It also saves examples where problems were found to use them for testing again in the future.

2   Getting Started with Hypothesis

The main important feature of hypothesis is using strategies for generating different inputs meeting some input specification.

```python
#applying the concept of property based testing.
def add(x,y):
    return x+y

@given(x = st.integers(), y = st.integers())
def test_add(x,y):
    assert add(x,y) == add(y,x)
```

Figure 1: Property-based testing.

In the previous example, both inputs to the tested functions were generated using hypothesis strategies. Also, there was no assertion on the output value, it only cared about the Add operation having the commutative property.

```
(-1684219848, 4)
(-31, -109)
(-79, -2128)
(30, -117)
(61, -16927)
(-47, -26550)
(-27568, -26550)
(38, 7213242882631685493)
(-16927, -27568)
(-27568, 21022)
(31245, -60)
(-26391, 2116558928)
(-7114, -20814)
(-23699, -60)
(31245, -30059)
(-18573, -27)
(-18331, 116)
(9661, -5723732689512576271)
(-30436, -10082)
(-3046, -4665635225988175244)
(107, 1441)
(23863, -16782)
(-105, -27098)
(8206182688708375197, -25)
(291, 19702)
(43, 110)
(-120, -19663)
(430784773, 22477)
(29971, 22097)
(10488, 11377)
(-19488, -18573)
(1190688556, -13556)
(-84, -17026)
(-35, -31007)
(-49, 3666)
(7094, -126)
(23550, -608530345)
(-69, 5)
(-10447, -5111)
(20101, -1684739011)
(32020, 13562213543060483)
(-126928127358584896186903117507301521814L, 298131671)
```

Figure 2: A sample of the input generated by strategies.

And That's basically it to get started with hypothesis, just knowing the correct strategy and the property that's guaranteed in the output of the tested function.

3   Details and Advanced Features.