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| Assignment Date | 18 November 2022 |
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| Maximum Marks | |

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


def regression():
    with Scenario("check `add(a, b)` function"):
        with Example("check 2 + 2 == 4"):
            with When("I call add function with 2,2"):
                r = add(2, 2)
            with Then("I expect the result to be 4"):
                # error() will generate detailed error message if assertion
fails
                assert r == 4, error()

        with Example("check -5 + 100 == -95"):
            with When("I call add function with -5,100"):
                r = add(-5, 100)
            with Then("I expect the result to be -95"):
                assert r == 95, error()
```

```
        with Example("check -5 + -5 == -10"):
            with When("I call add function with -5,-5"):
                r = add(-5, -5)
            with Then("I expect the result to be -10"):
                assert r == -10, error()

if main():
    regression()

from testflows.core import *
from testflows.asserts import error

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

def check_add(a, b, expected):
    """Check that function add(a, b)
    returns expected result for given `a` and `b` values.
    """
    with When(f"I call add function with {a},{b}"):
        r = add(a, b)
    with Then(f"I expect the result to be {expected}"):
        assert r == expected, error()

def regression():
```

```
    with Scenario("check `add(a, b)` function"):
        with Example("check 2 + 2 == 4"):
            check_add(a=2, b=2, expected=4)

        with Example("check -5 + 100 == 95"):
            check_add(a=-5, b=100, expected=95)

        with Example("check -5 + -5 == -10"):
            check_add(a=-5, b =-5, expected=-10)

if main():
    regression()
```

We could actually define all examples we want to check up-front and generate Example steps on the fly depending on how many examples we want to check.

```
from testflows.core import *
from testflows.asserts import error

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

def check_add(a, b, expected):
    """Check that function add(a, b)
    returns expected result for given `a` and `b` values.
    """
    with When(f"I call add function with {a},{b}"):
        r = add(a, b)
    with Then(f"I expect the result to be {expected}"):
        assert r == expected, error()

def regression():
    with Scenario("check `add(a, b)` function"):
        examples = [
            (2, 2, 4),
            (-5, 100, 95),
            (-5, -5, -10)
        ]
        for example in examples:
            a, b, expected = example
            with Example(f"check {a} + {b} == {expected}"):
```

```
            check_add(a=a, b=b, expected=expected)


if main():
    regression()
```

We could modify the above code and use Examples instead of our custom list of tuples.

```
from testflows.core import *
from testflows.asserts import error


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


def check_add(a, b, expected):
    """Check that function add(a, b)
    returns expected result for given `a` and `b` values.
    """
    with When(f"I call add function with {a},{b}"):
        r = add(a, b)
    with Then(f"I expect the result to be {expected}"):
        assert r == expected, error()


def regression():
    with Scenario("check `add(a, b)` function", examples=Examples("a b expected",
[
            (2, 2, 4),
            (-5, 100, 95),
```

```
            (-5, -5, -10)
        ])) as scenario:
        for example in scenario.examples:
            with Example(f"check {example.a} + {example.b} ==
{example.expected}"):
                # `vars(example)` converts example named tuple to a dictionary
                check_add(**vars(example))


if main():
    regression()
```

```
from testflows.core import *
from testflows.asserts import error

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

@TestScenario
@Examples("a b expected", [
    (2, 2, 4),
    (-5, 100, 95),
    (-5, -5, -10)
])
def check_add(self):
    """Check that function add(a, b)
    returns expected result for given `a` and `b` values.
    """
    for example in self.examples:
        a, b, expected = example
        with Example(f"check {a} + {b} == {expected}"):
            with When(f"I call add function with {a},{b}"):
                r = add(a, b)
            with Then(f"I expect the result to be {expected}"):
                assert r == expected, error()

def regression():
```

```
    Scenario("check `add(a, b)` function", run=check_add)


if main():
    regression()
```

We could also get rid of the explicit for loop over examples by using Outline with Examples.

```
from testflows.core import *
from testflows.asserts import error


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


@TestOutline(Scenario)
@Examples("a b expected", [
    (2, 2, 4),
    (-5, 100, 95),
    (-5, -5, -10)
])
def check_add(self, a, b, expected):
    """Check that function add(a, b)
    returns expected result for given `a` and `b` values.
    """
    with When(f"I call add function with {a},{b}"):
        r = add(a, b)
    with Then(f"I expect the result to be {expected}"):
        assert r == expected, error()
```

```
def regression():
    Scenario("check `add(a, b)` function", run=check_add)


if main():
    regression()
```

The Outline with Examples turns out to be the exact fit for the problem. However, there are

```
from testflows.core import *


@TestScenario
def my_scenario(self):
    with Given("I setup something"):
        pass

    with When("I do something"):
        pass

    with Then("I expect something"):
        pass

if main():
    my_scenario()
```

In many cases steps themselves can be reused between many different tests. In this case defining steps as decorated functions helps to make them reusable.

For example,

```
from testflows.core import
*


@TestStep(Given)

def setup_something(self):

    pass


@TestStep(When)

def do_something(self):

    pass


@TestStep(Then)

def expect_something(self):

    pass
```

The Steps above just like Tests can be called directly (not recommended) as follows:

```
@TestScenario

def
my_scenario(self):

    setup_something()

    do_something()

    expect_something()
```

For example,

```
@TestScenario
def my_scenario(self):
    with Given("I setup something",
               description="""detailed description if needed"""):
        setup_something()

    with When("I do something",
              description="""detailed description if needed"""):
        do_something()

    with Then("I expect something",
              description="""detailed description if needed"""):
        expect_something()
```