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Ćwiczenia testowe z instrukcji:

```
def test_hello():
    got = hello("Aleksandra")
    want = "Hello Aleksandra"
    assert got == want
```

Uruchomienie testów dla nienapisanej funkcji:

```
D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak>pytest -rA --disable-warnings
===== test session starts =====
platform win32 -- Python 3.8.3, pytest-6.2.4, py-1.10.0, pluggy-0.13.1
rootdir: D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak
plugins: anyio-2.2.0
collected 1 item

myapp\test\test_app.py F [100%]

===== FAILURES =====
test_hello

  def test_hello():
>     got = hello("Aleksandra")
E       NameError: name 'hello' is not defined

myapp\test\test_app.py:5: NameError
===== short test summary info =====
FAILED myapp/test/test_app.py::test_hello - NameError: name 'hello' is not defined
===== 1 failed, 1 warning in 0.20s =====
```

Uruchomienie testów po umieszczeniu funkcji w kodzie:

```
D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak>pytest -rA -p no:warnings
===== test session starts =====
platform win32 -- Python 3.8.3, pytest-6.2.4, py-1.10.0, pluggy-0.13.1
rootdir: D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak
plugins: anyio-2.2.0
collected 1 item

myapp\test\test_app.py . [100%]

===== PASSES =====
===== short test summary info =====
PASSED myapp/test/test_app.py::test_hello
===== 1 passed in 0.05s =====
```

Wynik zbiorczego uruchomienia testów dla wszystkich przykładowych zadań z konspektu:

```
D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak>pytest -rA -p no:warnings
===== test session starts =====
platform win32 -- Python 3.8.3, pytest-6.2.4, py-1.10.0, pluggy-0.13.1
rootdir: D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak
plugins: anyio-2.2.0
collected 8 items

myapp\test\test_app.py ...F.F.. [100%]

===== FAILURES =====
_____ test_extract_sentiment_negative _____

    def test_extract_sentiment_negative():
        text = "I do not think this will turn out well"

        sentiment = extract_sentiment(text)

>       assert sentiment < 0
E       assert 0.0 < 0

myapp\test\test_app.py:35: AssertionError
_____ test_extract_sentiment_param[I do not think this will turn out well] _____

sample = 'I do not think this will turn out well'

@pytest.mark.parametrize('sample', testdata)
def test_extract_sentiment_param(sample):

    sentiment = extract_sentiment(sample)

>       assert sentiment > 0
E       assert 0.0 > 0

myapp\test\test_app.py:46: AssertionError
===== PASSES =====
===== short test summary info =====
PASSED myapp/test/test_app.py::test_hello
PASSED myapp/test/test_app.py::test_extract_sentiment
PASSED myapp/test/test_app.py::test_extract_sentiment_positive
PASSED myapp/test/test_app.py::test_extract_sentiment_param[I think today will be a great day]
PASSED myapp/test/test_app.py::test_text_contain_word[There is a duck in this text-duck-True]
PASSED myapp/test/test_app.py::test_text_contain_word[There is nothing here-duck-False]
FAILED myapp/test/test_app.py::test_extract_sentiment_negative - assert 0.0 < 0
FAILED myapp/test/test_app.py::test_extract_sentiment_param[I do not think this will turn out well] - assert 0.0 > 0
===== 2 failed, 6 passed in 1.59s =====
```

Zadanie do samodzielnego wykonania

Na potrzeby czystości zwracanego wyniku, poprzednie testy zostały zakomentowane.

Test sortowania bąbelkowego wygląda następująco:

```
testdata_bubble = [
    ([1, 5, 4, 2, 6, 41, 11, 67, 12, 22, 45], [1, 2, 4, 5, 6, 11, 12, 22, 41, 45, 67]),
    ([9, 5, 3, 2, 1, 0, 11, 34, 55, 16, 80], [0, 1, 2, 3, 5, 9, 11, 16, 34, 55, 80]),
    ([9, 8, 7, 6, 5, 4, 3, 2, 1, 0], [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]),
    ([1, 2, 3, 4], [1, 2, 3, 4]),
    ([0, 0, 0, 6, 9, 6, 3, 3, 3], [0, 0, 0, 3, 3, 3, 6, 9])
]
```

```
@pytest.mark.parametrize('tab, expected_output', testdata_bubble)
def test_bubble(tab, expected_output):
```

```
    assert bubble(tab) == expected_output
```

Efekt uruchomienia testów dla nieistniejącej funkcji (faza RED):

```
===== short test summary info =====
FAILED myapp/test/test_app.py::test_bubble[tab0-expected_output0] - NameError: name 'bubble' is not defined
FAILED myapp/test/test_app.py::test_bubble[tab1-expected_output1] - NameError: name 'bubble' is not defined
FAILED myapp/test/test_app.py::test_bubble[tab2-expected_output2] - NameError: name 'bubble' is not defined
FAILED myapp/test/test_app.py::test_bubble[tab3-expected_output3] - NameError: name 'bubble' is not defined
FAILED myapp/test/test_app.py::test_bubble[tab4-expected_output4] - NameError: name 'bubble' is not defined
===== 5 failed in 1.61s =====
```

Napisana funkcja:

```
def bubble(tab):
    for i in range(len(tab) - 1):
        for j in range(len(tab) - i - 1):
            if tab[j] > tab[j + 1]:
                tab[j], tab[j + 1] = tab[j + 1], tab[j]
    return tab
```

Wynik uruchomienia testów dla napisanej funkcji (faza GREEN):

```
D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak>pytest -rA -p no:warnings
===== test session starts =====
platform win32 -- Python 3.8.3, pytest-6.2.4, py-1.10.0, pluggy-0.13.1
rootdir: D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak
plugins: anyio-2.2.0
collected 5 items

myapp\test\test_app.py ..... [100%]

===== PASSES =====
===== short test summary info =====
PASSED myapp/test/test_app.py::test_bubble[tab0-expected_output0]
PASSED myapp/test/test_app.py::test_bubble[tab1-expected_output1]
PASSED myapp/test/test_app.py::test_bubble[tab2-expected_output2]
PASSED myapp/test/test_app.py::test_bubble[tab3-expected_output3]
PASSED myapp/test/test_app.py::test_bubble[tab4-expected_output4]
===== 5 passed in 1.13s =====
```

Ulepszona funkcja *bubble()* (faza REFACTOR):

```
def bubble(tab):
    n = len(tab)
    tab1 = tab[:]
    for i in range(n - 1):
        for j in range(n - i - 1):
            if tab1[j] > tab1[j + 1]:
                tab1[j], tab1[j + 1] = tab1[j + 1], tab1[j]
    return tab1
```

Wynik ponownego uruchomienia testów dla ulepszonej funkcji:

```
D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak>pytest -rA -p no:warnings
===== test session starts =====
platform win32 -- Python 3.8.3, pytest-6.2.4, py-1.10.0, pluggy-0.13.1
rootdir: D:\studia\analiza_I_bazy_danych\laboratorium-14-asemerjak
plugins: anyio-2.2.0
collected 5 items

myapp\test\test_app.py ..... [100%]

===== PASSES =====
===== short test summary info =====
PASSED myapp/test/test_app.py::test_bubble[tab0-expected_output0]
PASSED myapp/test/test_app.py::test_bubble[tab1-expected_output1]
PASSED myapp/test/test_app.py::test_bubble[tab2-expected_output2]
PASSED myapp/test/test_app.py::test_bubble[tab3-expected_output3]
PASSED myapp/test/test_app.py::test_bubble[tab4-expected_output4]
===== 5 passed in 1.12s =====
```