

1. How does TDD fit into Agile development? Explain in detail.

TDD (Test-Driven Development) fits very well into Agile because both focus on delivering working software in small, quick cycles. In Agile, developers build features in short sprints, and TDD helps ensure each new feature is built correctly from the start.

In TDD, you write the test cases before writing the actual code. It follows the Red → Green → Refactor cycle:

- Red: Write a failing test for a new feature.
- Green: Write just enough code to pass the test.
- Refactor: Clean and improve the code without changing the behavior.

This approach encourages better design, fewer bugs, and faster feedback. In Agile teams, TDD helps maintain code quality as the project evolves rapidly with frequent changes and deployments.

2. Demonstrate usage of one of the following tools with practical example

Tool Chosen: PyTest

calculator.py

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

```
    return a + b
```

```
def multiply(a, b):
```

```
    return a * b
```

test_calculator.py

```
from calculator import add, multiply
```

```
def test_add():
```

```
    assert add(2, 3) == 5
```

```
    assert add(-1, 1) == 0
```

```
def test_multiply():
```

```
    assert multiply(4, 2) == 8
```

```
    assert multiply(0, 10) == 0
```

Output

```
PS C:\Users\noelm\Downloads\IBM Consulting\TECHADENY\Phase 2\3. Agile software Development-Test Driven Development\Assignment 1> pytest test_calculator.py
===== test session starts =====
platform win32 -- Python 3.13.3, pytest-8.4.0, pluggy-1.6.0
rootdir: C:\Users\noelm\Downloads\IBM Consulting\TECHADENY\Phase 2\3. Agile software Development-Test Driven Development\Assignment 1
plugins: anyio-4.9.0
collected 2 items

test_calculator.py .. [100%]

===== 2 passed in 0.05s =====
```