

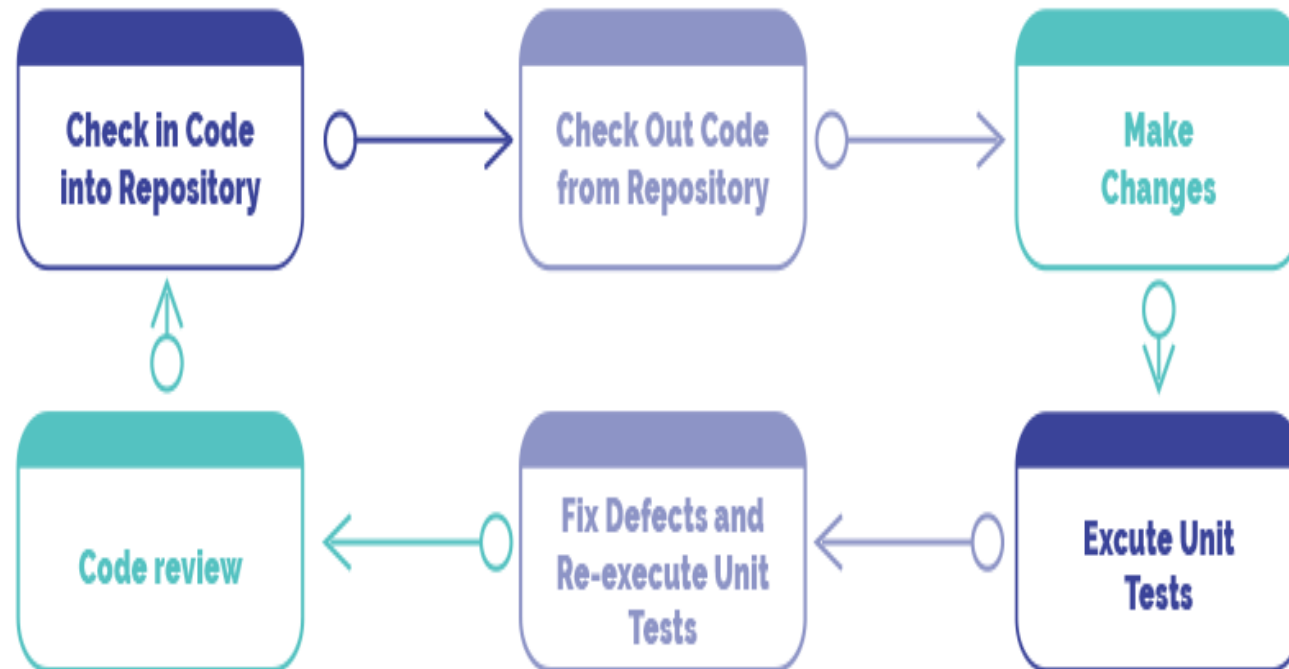
Unit Testing :



Unit Testing is a practice in software development for validating that a unit of code will behave as intended and the tested code will produce the same result every time the test is executed.

Unit Testing is also called Module Testing or Component Testing. It is done to check whether the individual unit or module of the source code is working properly. It is done by the developers in the developer's environment.

UNIT TEST LIFE CYCLE





Advantage and disadvantage of unit testing:

Unit testing provides numerous benefits:

- ☐ Speed Up Development
- ☐ Prevent Regressions
- ☐ Test in Isolation
- ☐ Code Modification and Maintenance
- ☐ Reduce the Cost of Fixing Bugs
- ☐ Execute Tests Faster
- ☐ Automate Unit Tests



Disadvantages and Limitations of Unit Testing

While the advantages of unit testing are manifold, there are some drawbacks-

- ❑ Skipping Execution
- ❑ It's Time-Consuming
- ❑ Integration Errors
- ❑ Hard to Isolate



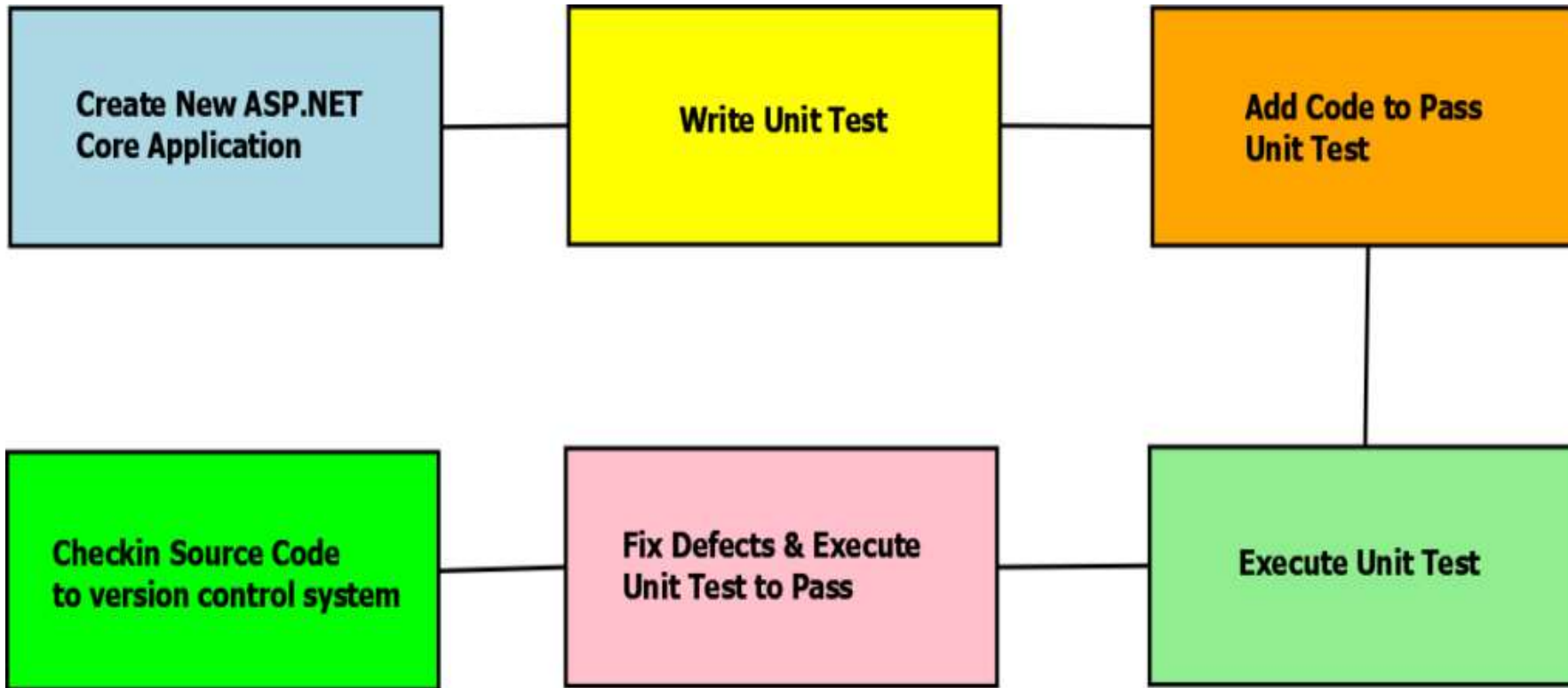
Automated Unit Tests:

- Automated unit tests are the automation of these unit test i.e. instead of performing unit test manually it is executed by some testing tool or framework.
- This automation initially requires time for the development of these tests but at a later stage when code size grows it can considerably save time in performing unit testing over manual testing.



TestDriven Development (TDD):

- Test-driven development is the way how we develop our projects. This process follows the principle that we first write the test and let it fail, then we write our code to make the test pass.
- This approach believes in thinking about quality at the beginning of the project rather than bringing in quality at a later stage.



Functional Testing: Verifies end-to-end functionality by driving the UI and verifying (from the UI layer) that the system functions correctly.

Non-Functional Testing:

Non-functional testing is a type of testing to check non-functional aspects (performance, usability, reliability, etc.) of a software application.

XUnit



xUnit.Net is an open-source testing framework based on the .NET framework.

xUnit.net is the newest unit testing framework for .NET projects and Microsoft started using it **for ASP.NET Core**.

XUnit.net is a testing framework that provides a set of attributes or decorators, for testing methods, using which we can **write test case** to test software components or units.



Attributes in xUnit.net :

[Fact] – If we want a method to be part of unit testing and to be executed during the test run then it should be decorated with this attribute. We cannot specify parameters with this attribute.

[Theory] – If we want to send some **parameters** to the test method then we need to specify this attribute to the method.

[InlineData] – This attribute is a way to provide parameters to the test method. This is used along with Theory attribute.



Change Test Display Name in Test Explorer

To change name , use the **property DisplayName in the attribute**

```
[Theory(DisplayName ="Divide with Parametres")]  
[InlineData(20,10,2)]
```

Skip test method in the test run

use the **property skip in the attribute-**

```
[Fact(Skip ="Skip this Test Cases")]
```