7 Principles of Testing

1. Testing shows the presence of defects, not their absence

Testing can show that defects are present, but cannot prove that there are no defects.

Testing reduces the probability of undiscovered defects remaining in the software but, even if no defects are found, testing is not a proof of correctness.

2. Exhaustive testing is NOT possible

Testing everything is not feasible except for trivial cases.

Risk analysis, test techniques, and priorities should be used to focus test efforts.

3. Early testing saves time and money

To find defects early, both static and dynamic testing should be started as early as possible in software development lifecycle.

Early testing is sometimes referred as shift left.

It can help to reduce or eliminate costly changes.

4. Defects cluster together

A small number of modules usually contains most of the defects discovered during pre-release testing, or is responsible for most of the operational failures.

Predicted defect cluster are an important input into a risk analysis used to focus the test effort.

5. Beware of pesticide paradox

If the same tests are repeated over and over again, eventually these tests no longer find any new defects.

Exisitng tests and test data may need changing, and new tests may need to be written.

It is just like pesticides that are no longer effective at killing insects after a while.

6. Testing is context depending

Testing is done differently in different context.

For example, safity-critical industry control software is tested differently from an e-commerce mobile app.

Or testing in Agile project is done differently than testing in a sequental software development lifecycle project.

7. Absence of errors is a fallacy

Do not expect that just finding and fixing a large number of defects will ensure the success of a system.

For example, thoroughly testing all specified requirements and fixing all defects found could still produce a system that is difficult to use, that does not fulfill the users needs and expectations, or that is of lower quality compared to other competing systems.