

Component Testing/Unit Testing

Component testing is typically done by developers

Needs access to the code & done with the support of the development environment

Defects are typically fixed as soon as they are found

No formal defect logging process is followed.

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Integration Testing

Integration testing tests interfaces between components

In integration testing testers concentrate only on the integration

Testers should build integration tests in the order required for most efficient integration testing

Integration testing tests interactions to different parts of a system like, system, System Hardware, Operating system, Interfaces between other

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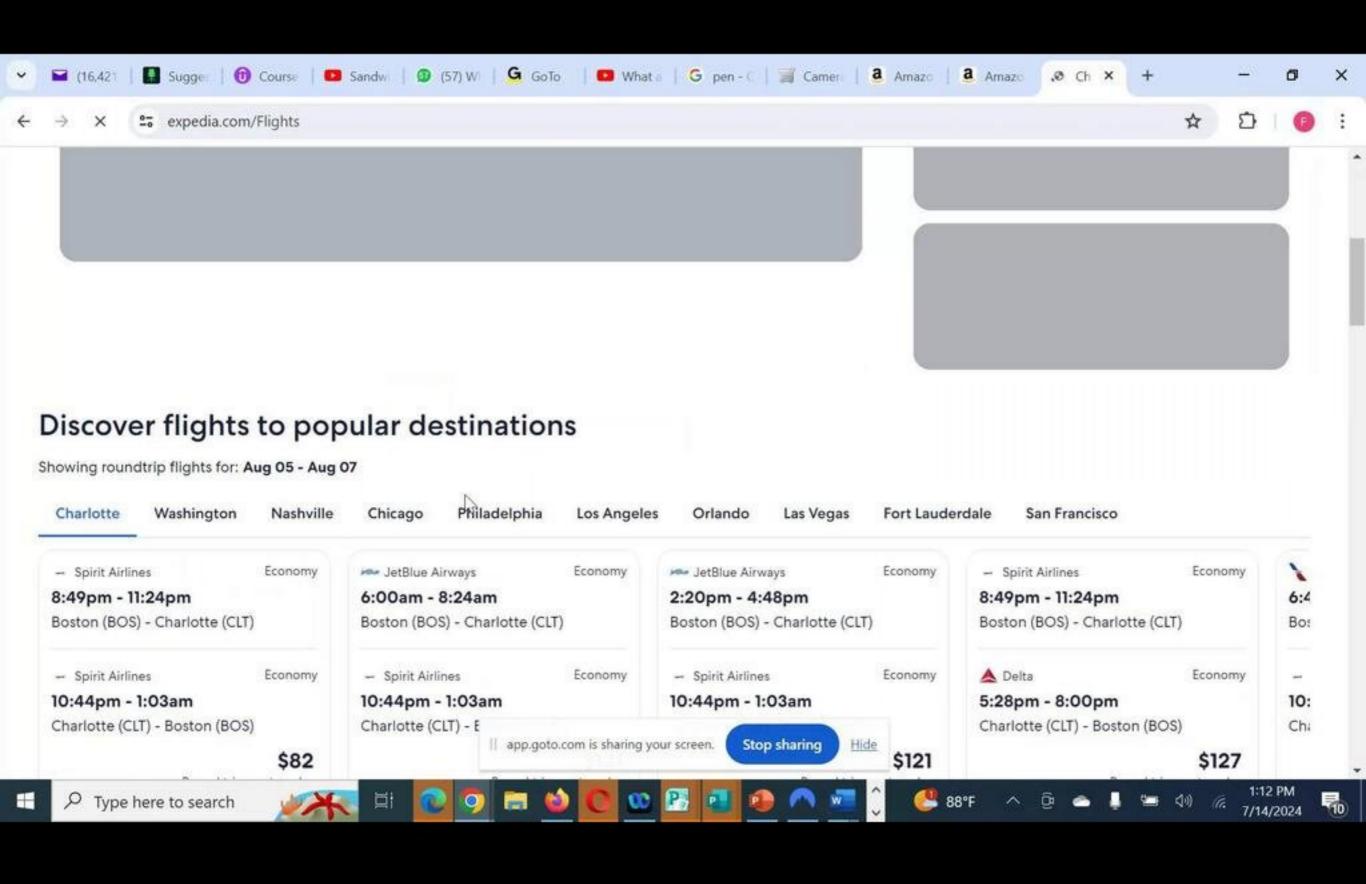
Levels of Integration Testing

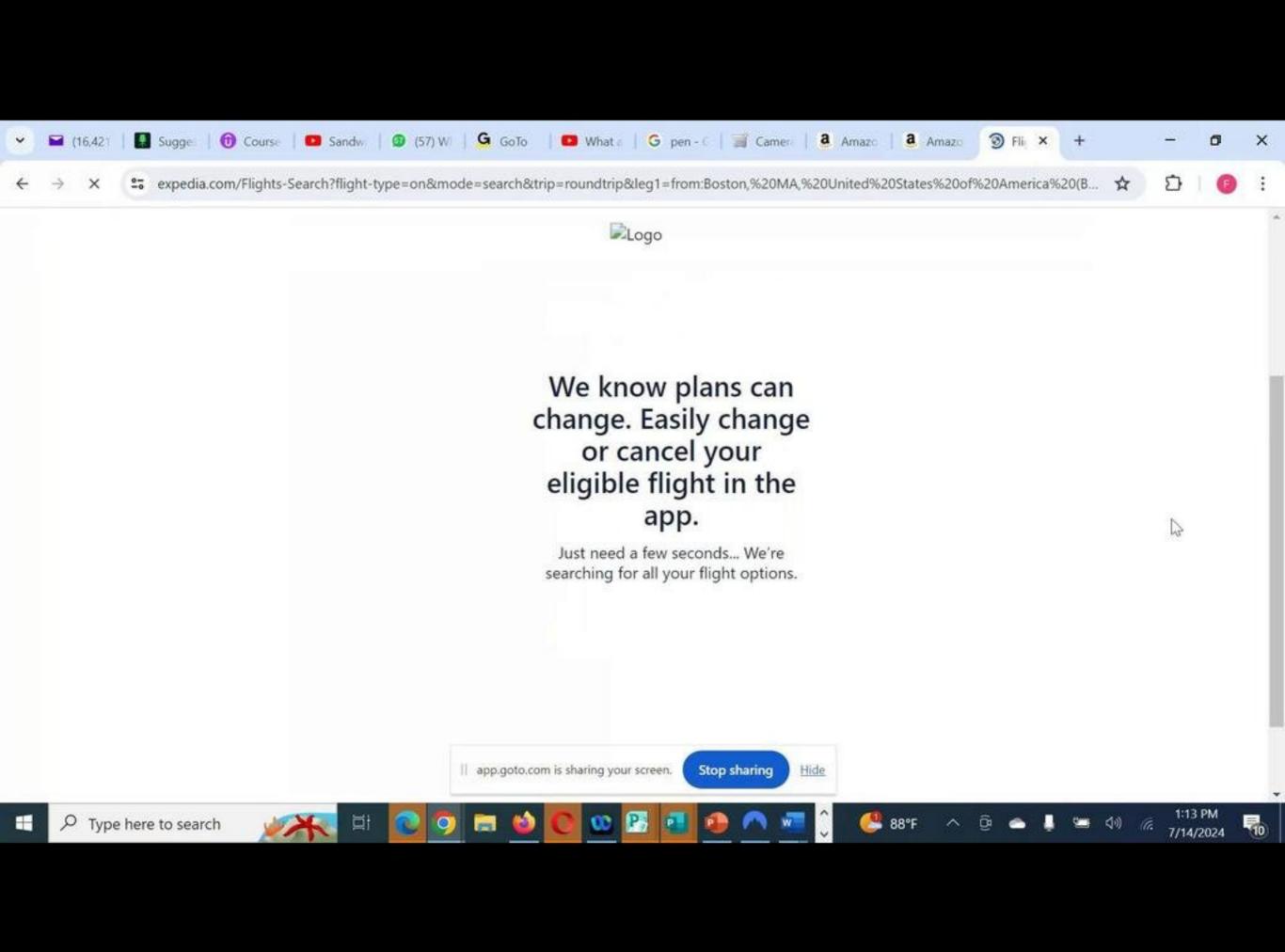
There may be more than one level of integration testing, for example

- Component
 Integration Testing
- System
 Integration Testing

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Component Integration Testing

Component integration testing tests the interactions between software components

Component integration testing is done after Component /Unit testing

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System Integration Testing

System integration testing tests the interactions between different systems

Done mostly after system testing is complete

Done to identify the cross-platform issues which may arise after integrating the system to other system

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Incremental Integration Testing

- Top-down approach
- Bottom-up approach
- Functional incremental

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Big bang integration testing

All components or systems are integrated simultaneously, after which everything is tested as a whole

Advantage of big bang approach is that everything is finished before integration testing starts. So, STUBS and DRIVERS are not required

Disadvantage is that it is difficult to trace cause of failures due to late integration

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Incremental Integration Testing

All programs are integrated one by one and testing is done after every step

Advantage is that defects are found early and easy to find root cause for those defects

Disadvantage is that it is time consuming because STUBS and DRIVERS are required

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Top down approach

Testing takes place from top to bottom

Follows the control flow or architectural structure (e.g. It starts from the GUI or main menu).

The top down approach utilises STUBS to replace the unfinished components

The top level component of the hierarchy is tested first with the lower unfinished components it integrates with being replaced by STUBS

Testing continues down the hierarchy by replacing the stubs with code

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Bottom up approach

Takes place from the bottom of the control flow upwards

The lowest level components are tested first

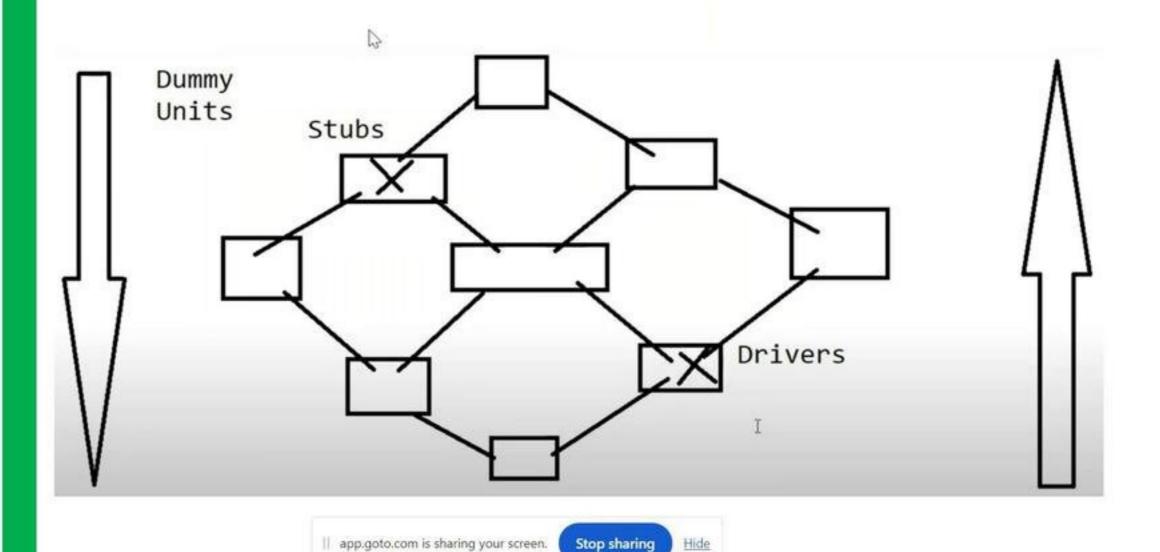
Missing components are substituted with DRIVERS

As soon as code for other module gets ready, these drivers are replaced with the actual module.

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Sandwich integration testing approach.







System Testing

Testing the behavior of the whole software/system as defined by scope is known as system testing

Purpose of system testing is to find as many defects as possible

It is often carried out by specialist testers that form an independent test team

The system test environment should correspond to the production environment much as possible to minimize the risk of environment-specific failures not found by previous testing cycles

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System Testing

System testing should investigate both functional and non-functional requirements of the system

Black box techniques (Specification – based) should be used to system test the functional requirements

White box techniques (Structure-based techniques) ma then be used to assess the thoroughness of the testing

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Test cases for System Testing

System testing includes test cases based on:

- Software Requirements specifications (SRS)
- Business processes
- End user scenarios
- High level description of system behaviors
- Interactions with the operating system
- Risks involved for the system





Acceptance Testing

Acceptance testing starts after system testing is done and all major defect are resolved

Acceptance testing is most often responsibility of customer but other stakeholders are also involved

The main goal in acceptance testing is to establish confidence in the system

Test environment for acceptance testing should be in most aspects representative of production environment (as-if production)

Finding defects should not be the main focus of acceptance testing, its main focus should be to determine if the system is fit for purpose.

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