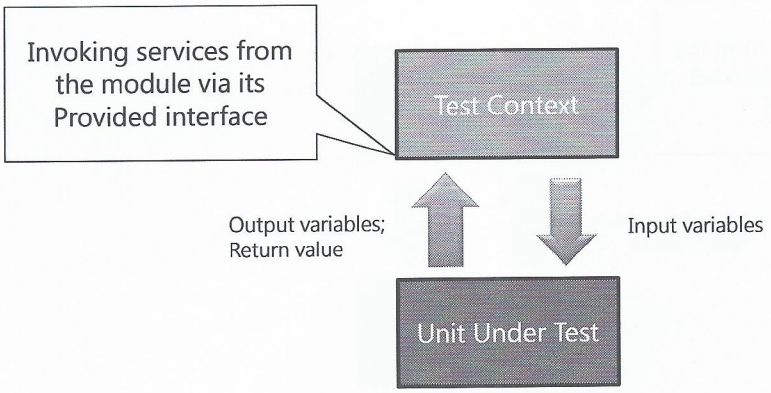
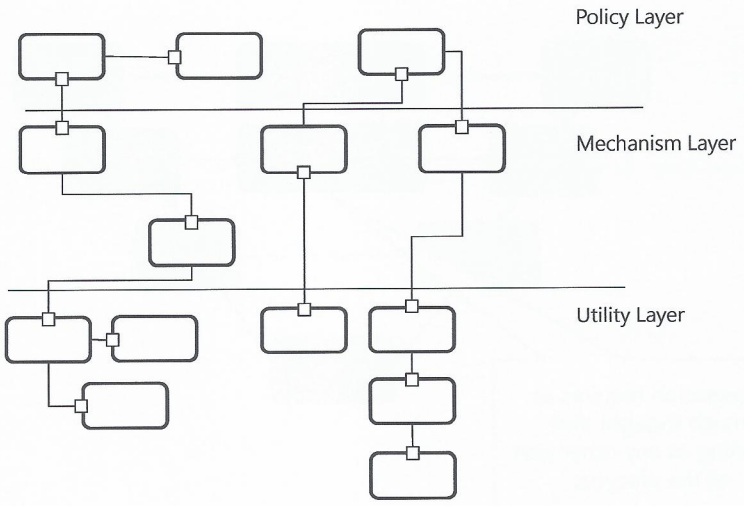
Unit isolation



Unit isolation

Slide 3

Until now we considered modules in isolation; and the units under test only have a single interface which the test harness can exploit.



Unit isolation

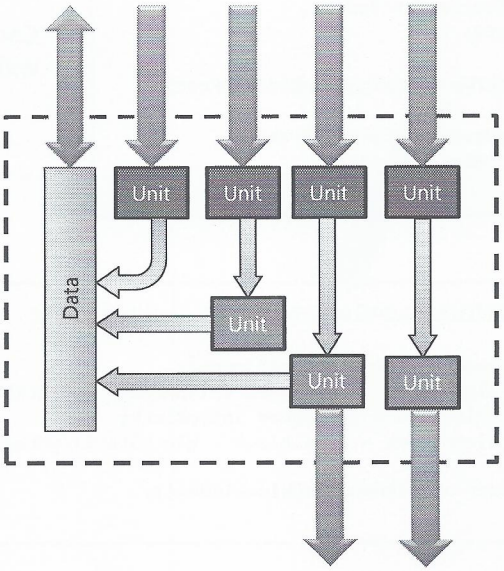
Slide 5

Integration is the process of constructing the system from individual modules.

Integration may follow one of the following:

- Cluster Integration. Modules are connected to form some emergent behaviour (a mechanism).
- Top-down Integration. High-level (more abstract) modules have their lower-level, subordinate modules added as they become available.
- Bottom-Up Integration. Higher-level modules are built on top of existing lower-level modules.
- Middle-Out integration. A (stand-alone) module is developed then incorporated into (potentially pre-existing) higher- and lower-level modules.

Behaviour of a component



Unit isolation

Slide 7

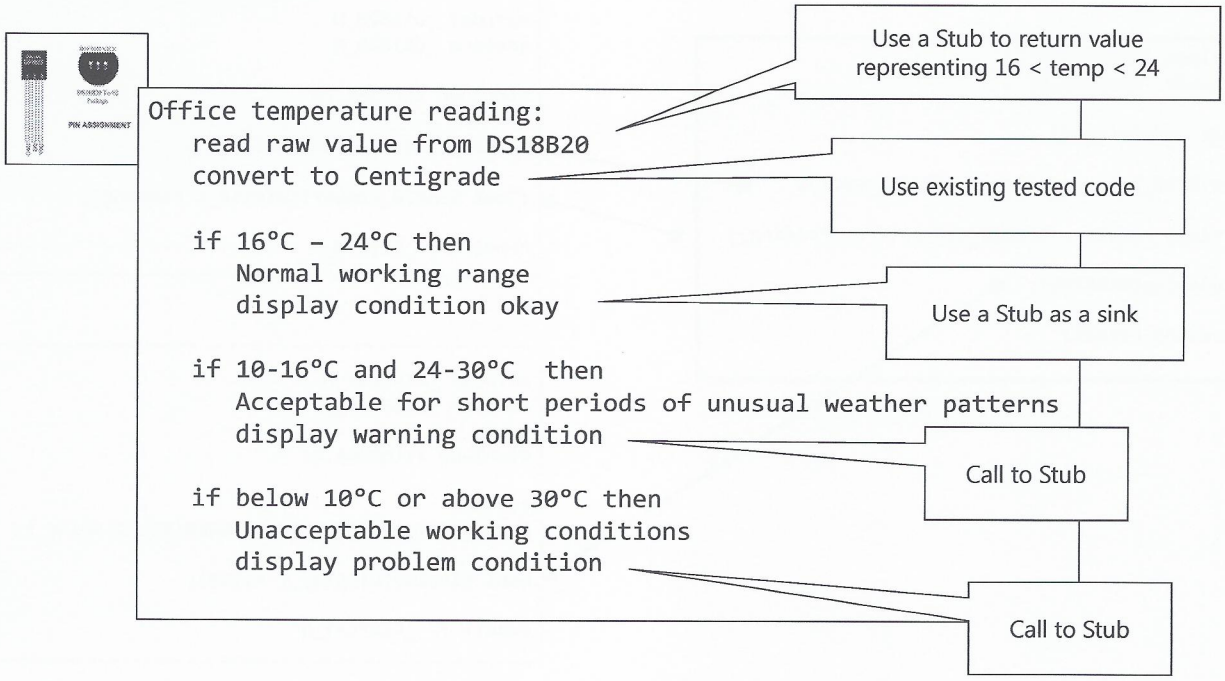
Behaviour of an integrated component.

The are five basic operational patterns with an integrated component:

- Direct access to the Component's internal data (not recommended).
- Access to data via a function (module).
- Access to a function which directs control to a subordinate module (or modules).
- Access to a function which delegates control to a subordinate function which accesses internal data and may make service requests to other Components.
- Using the component to 'wrap' or 'translate' requests, before making service requests of another Component.

Simple test doubles

Initial Framework



Unit isolation

Slide 11

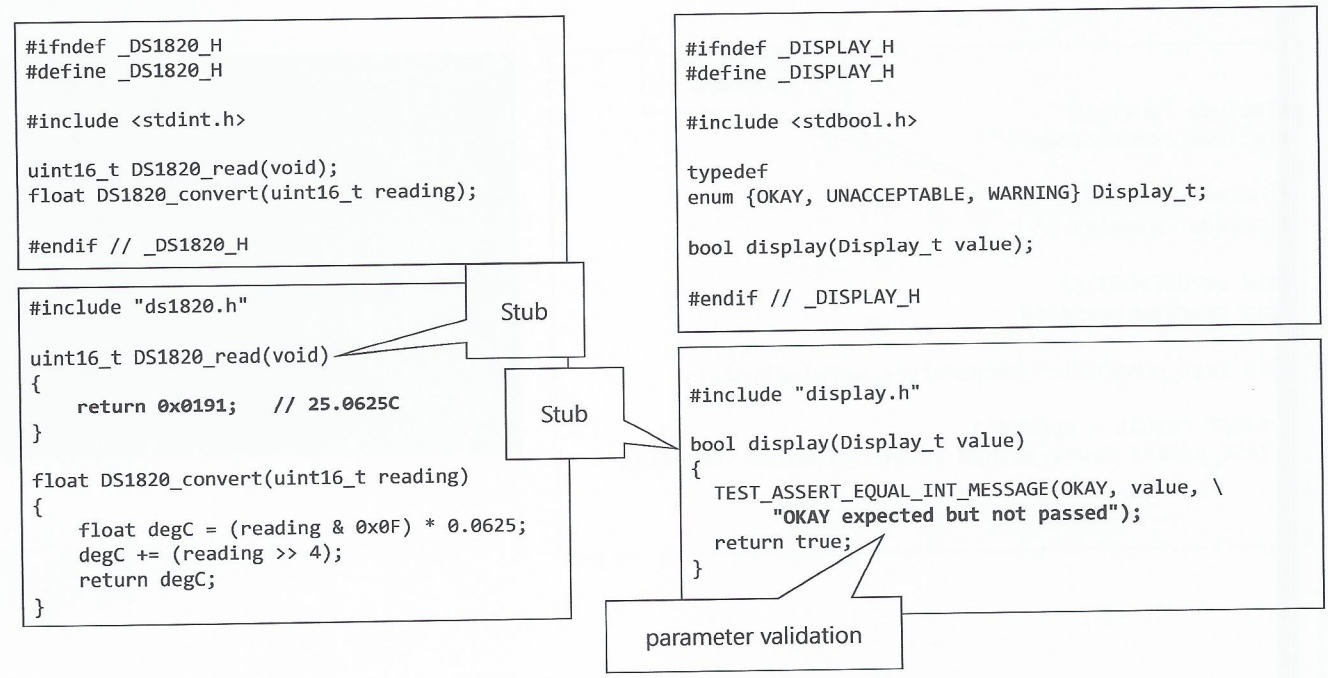
In order to test a higher level algorithm stubs are required for compiling and linking.

A simple stub is purely acting as a sink of function call, in that it does not do anything or return any values (typically void return type).

More complex stubs are used to return a known value, which may be fixed or within a well defined range.

Sink stubs may be enhanced to to basic parameter sanitisation, i.e. checking the passed values are with acceptable boundaries when well defined.

Stub Code



Unit isolation

Slide 13

As DS1820_read takes no parameters then a hard-coded subbed value can be supplied.

The display function could simply have returned 'true', but there can be value in allowing the stubs to perform basic parameter checking and use the test framework to fail a test if appropriate.

The example here has used the Unity ability to supply a user-defined message with each assertion.

Key points

- Stubs are used as used to enable testing of a higher level module
- Stubs may return simple values
- Dummies enable linking but are never called