

Defective Software – In 1992, Mary Bandar received an invitation to attend a kindergarten in Winona, Minnesota, along with others born in '88. Mary was born in 1888 and 104 years old at the time. <http://www.apnewsarchive.com/1993/Woman-Born-in1888-Gets-Surprise-Invitation-To-Kindergarten/ida0d5e1ddb4be59cdc6b066d0e9517e29> – An F-18 crashed because of a missing exception condition: if ... then ... without the else clause that was thought could not possibly arise.

Programs take input in a variety of ways: mouse, keyboard, and other devices. Must test Valid and Invalid inputs. Most importantly, there are an infinite amount of sequences of inputs to be tested. Environments . Difficult to replicate the user's combination of hardware, peripherals, OS, and applications

Equivalence partitioning Example Example of a function which takes a parameter “month”. The valid range for the month is 1 to 12, representing January to December. This valid range is called a partition. In this example there are two further partitions of invalid ranges. Test cases are chosen so that each partition would be tested. In equivalence-partitioning technique we need to test only one condition from each partition

Equivalence partitioning is not a stand alone method to determine test cases. It is usually supplemented by boundary value analysis. • Boundary value analysis focuses on values on the edge of an equivalence partition or at the smallest value on either side of an edge. Example of a function which takes a parameter “month”. • Test cases are supplemented with boundary values. Software Testing Levels – Unit testing : Individual program units or object classes are tested.

Unit testing • Unit testing is the process of testing individual components in isolation. • Unit testing can be automated, but may still be performed manually. • Units may be: – Individual functions or methods within an object – Object classes with several attributes and methods. Assert • Last semester in IP module you used “assert” expression. – It can be used as a means of checking the programs expected behavior. – It can be used for unit testing. This simple function requires a boolean (conditional) expression.

Unit Testing Method Used for unit testing: White Box Testing method is used for executing the unit test. When should Unit testing be done? Unit testing should be done before Integration testing. By whom should unit testing be done? Unit testing should be done by the developers. Advantages of Unit testing: 1. Issues are found at early stage. Since unit testing are carried out by developers where they test their individual code before the integration. Hence the issues can be found very early and can be resolved then and there without impacting the other piece of codes. 2. Unit testing helps in maintaining and changing the code.

Top-down Testing . Top down integration testing is an incremental integration testing technique which begins by testing the top level module and progressively adding in lower level module one by one. It provides early working module of the program and so design defects can be found and corrected early. Bottom-up Integration Testing

Software Maintenance “Managing the processes of system change” . Modifying a program after it has been put into use. . Software Maintenance results in a service being delivered to the customer. . The change may be simple changes to correct coding errors, more extensive changes to correct design errors

or significant enhancement to correct specification error or accommodate new requirements. Types of Maintenance .