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If you have any doubts please refer to the JNTU Syllabus Book. Software Testing Methodologies Notes Pdf – STM Notes Pdf UNIT I Introduction: Purpose of testing, Dichotomies, the model for testing, consequences of bugs, the taxonomy of bugs UNIT II Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates, and achievable paths, path sensitizing, path instrumentation, application of path testing. UNIT III Transaction Flow Testing: Transaction flows, transaction flow testing techniques. Dataflow testing:-Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing. UNIT IV Domain Testing:-domains and paths, Nice & ugly domains, domain testing, domains, and interfaces testing, domain and interface testing, domains and testability. UNIT V Paths, Path products, and Regular expressions: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection. Software Testing Methodologies Pdf Notes – STM Pdf Notes UNIT VI Logic-Based Testing: Overview, decision tables, path expressions, KV charts, specifications. UNIT VII State, State Graphs and Transition testing: State graphs, good & bad state graphs, state testing, Testability tips. UNIT VIII Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (students should be given an exposure to a tool like JMeter or Win- runner.) Textbooks – Software Testing Methodologies – STM notes pdf – STM pdf notes – STM Pdf – STM Notes 1. Software Testing techniques – Baris Beizer, Dreamtech, second edition. 2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech. Follow us on Facebook and Support us with your Like Download JNTU KAKINADA B.Tech SOFTWARE TESTING METHODOLOGIES R13 RT41054112017 fr 279 Question paper :: FirstRanker.com Download Page :: Download JNTU KAKINADA B.Tech SOFTWARE TESTING METHODOLOGIES R13 RT41054112017 fr 279 Question paper :: FirstRanker.com Download Page :: Syllabus ,STM , old Question papers, Answers, important Question SOFTWARE TESTING METHODOLOGIES, R13 Regulation, B.Tech , JNTUK, Syllabus, download, Unit-I Software Testing Introduction Evolution Myths & Facts Goals Psychology Definition Model for testing Effective Vs Exhaustive Software Testing Unit-II Verification and Validation Verification Verification of Requirements high level and low level designs How to verify code Validation Unit-III Dynamic Testing II: White-Box Testing need Logic coverage criteria Basis path testing Graph matrices Loop testing data flow testing mutation testing inspections Structured Walkthroughs Technical reviews Unit-IV Validation activities Unit testing Integration Testing Function testing system testing acceptance testing Progressives Vs regression testing Regression testability Objectives of regression testing when regression testing done? Regression testing types Regression testing techniques Unit-V Efficient Test Suite Management Test case design Why does a test suite grow Minimizing the test suite and its benefits test suite prioritization Types of test case prioritization prioritization techniques measuring the effectiveness of a prioritized test suite Software Quality metrics SQA models Debugging: process techniques correcting bugs Basics of testing management tool test link and Jira Unit-VI Automation and Testing Tools need for automation categorization of testing tools selection of testing tools cost incurred Guidelines for automated testing overview of some commercial testing tools Reference Books Software testing techniques - Baris Beizer, International Thomson computer press, second edition. Software Testing, Principles, techniques and Tools, M G Limaye, TMH For other Subject Syllabus Click here IF you don't find something you are searching for contact us CREC. Dept. of CSE Page 1 LECTURE NOTES ON SOFTWARE TESTING METHODOLOGIES B.TECH CSE III YEAR II SEMESTER (JNTUA-R13) Ms.V.BHARGAVI ASST.PROFESSOR DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING CHADALAWADA RAMANAMMA ENGINEERING COLLEGE CHADALAWADA NAGAR, RENIGUNTA ROAD, TIRUPATI (A.P) - 517506 CREC. Dept. of CSE Page 2 UNIT 1CREC. Dept. of CSE Page 3 UNIT 1. INTRODUCTION 1. PURPOSE OF TESTING: Testing consumes atleast half of the time and work required to produce a functional program. MYTH: Good programmers write code without bugs. (Its wrong!!!) History says that even well written programs still have 1-3 bugs per hundred statements. Productivity and Quality in software: o In production of consumer goods and other products, every manufacturing stage is subjected to quality control and testing from component to final stage. o If flaws are discovered at any stage, the product is either discarded or cycled back for rework and correction. o Productivity is measured by the sum of the costs of the material, the rework, and the discarded components, and the cost of quality assurance and testing. o There is a trade off between quality assurance costs and manufacturing costs: If sufficient time is not spent in quality assurance, the reject rate will be high and so will be the net cost. If inspection is good and all errors are caught as they occur, inspection costs will dominate, and again the net cost will suffer. o Testing and Quality assurance costs for 'manufactured' items can be as low as 2% in consumer products or as high as 80% in products such as space-ships, nuclear reactors, and aircrafts, where failures threaten life. Where as the manufacturing cost of a software is trivial. o The biggest part of software cost is the cost of bugs: the cost of detecting them, the cost of correcting them, the cost of designing tests that discover them, and the cost of running those tests. o For software, quality and productivity are indistinguishable because the cost of a software copy is trivial. Testing and Test Design are parts of quality assurance should also focus on bug prevention. A prevented bug is better than a detected and corrected bug. Phases in a tester's mental life can be categorised into the following 5 phases: 1. Phase 0: (Until 1956: Debugging Oriented) There is no difference between testing and debugging. Phase 0 thinking was the norm in early days of software development till testing emerged as a discipline. 2. Phase 1: (1957-1978: Demonstration Oriented) The purpose of testing here is to show that software works. Highlighted during the late 1970s. This failed because the probability of showing that software works 'decreases' as testing increases. I.e. The more you test, the more likely you'll find a bug. 3. Phase 2: (1979-1982: Destruction Oriented) The purpose of testing is to show that software doesn't work. This also failed because the software will never get CREC. Dept. of CSE Page 4 released as you will find one bug or the other. Also, a bug corrected may also lead to another bug. 4. Phase 3: (1983-1987: Evaluation Oriented) The purpose of testing is not to prove anything but to reduce the perceived risk of not working to an acceptable value (Statistical Quality Control). Notion is that testing does improve the product to the extent that testing catches bugs and to the extent that those bugs are fixed. The product is released when the confidence on that product is high enough. (Note: This is applied to large software products with millions of code and years of use.) 5. Phase 4: (1988-2000: Prevention Oriented) Testability is the factor considered here. One reason is to reduce the labour of testing. Other reason is to check the testable and non-testable code. Testable code has fewer bugs than the code that's hard to test. Identifying the testing techniques to test the code is the main key here. Test Design: We know that the software code must be designed and tested, but many appear to be unaware that tests themselves must be designed and tested. Tests should be properly designed and tested before applying it to the actual code. Testing isn't everything: There are approaches other than testing to create better software. Methods other than testing include: 6. Inspection Methods: Methods like walkthroughs, deskchecking, formal inspections and code reading appear to be as effective as testing but the bugs caught don't completely overlap. 7. Design Style: While designing the software itself, adopting stylistic objectives such as testability, openness and clarity can do much to prevent bugs. 8. Static Analysis Methods: Includes formal analysis of source code during compilation. In earlier days, it is a routine job of the programmer to do that. Now, the compilers have taken over that job. 9. Languages: The source language can help reduce certain kinds of bugs. Programmers find new bugs while using new languages. 10. Development Methodologies and Development Environment: The development process and the environment in which that methodology is embedded can prevent many kinds of bugs. 2. DICHOTOMIES: Testing Versus Debugging: Many people consider both as same. Purpose of testing is to show that a program has bugs. The purpose of testing is to find the error or misconception that led to the program's failure and to design and implement the program changes that correct the error. Debugging usually follows testing, but they differ as to goals, methods and most important psychology. The below table shows few important differences between testing and debugging. CREC. Dept. of CSE Page 5 Testing Debugging Testing starts with known conditions, uses predefined procedures and has predictable outcomes. Debugging starts from possibly unknown initial conditions and the end can not be predicted except statistically. Testing can and should be planned, designed and scheduled. Procedure and duration of debugging cannot be so constrained. Testing is a demonstration of error or apparent correctness. Debugging is a deductive process. Testing proves a programmer's failure. Debugging is the programmer's vindication (Justification). Testing, as executes, should strive to be predictable, dull, constrained, rigid and inhuman. Debugging demands intuitive leaps, experimentation and freedom. Much testing can be done without design knowledge. Debugging is impossible without detailed design knowledge. Testing can often be done by an outsider. Debugging must be done by an insider. Much of test execution and design can be automated. Automated debugging is still a dream. Function Versus Structure: Tests can be designed from a functional or a structural point of view. In functional testing, the program or system is treated as a blackbox. It is subjected to inputs, and its outputs are verified for conformance to specified behaviour. Functional testing takes the user point of view- both about functionality and features and not the program's implementation. Structural testing does look at the implementation details. Things such as programming style, control method, source language, database design, and coding details dominate structural testing. Both Structural and functional tests are useful, both have limitations, and both target different kinds of bugs. Functional tests can detect all bugs but would take infinite time to do so. Structural tests are inherently finite but cannot detect all errors even if completely executed. Designer Versus Tester: Test designer is the person who designs the tests where as the tester is the one actually tests the code. During functional testing, the designer and tester are probably different persons. During unit testing, the tester and the programmer merge into one person. Tests designed and executed by the software designers are by nature biased towards structural consideration and therefore suffer the limitations of structural testing. Modularity Versus Efficiency: A module is a discrete, well-defined, small component of a system. Smaller the modules, difficult to integrate; larger the modules, difficult to CREC. Dept. of CSE Page 6 understand. Both tests and systems can be modular. Testing can and should likewise be organised into modular components. Small, independent test cases can be designed to test independent modules. Small Versus Large: Programming in large means constructing programs that consists of many components written by many different programmers. Programming in the small is what we do for ourselves in the privacy of our own offices. Qualitative and Quantitative changes occur with size and so must testing methods and quality criteria. Builder Versus Buyer: Most software is written and used by the same organization. Unfortunately, this situation is dishonest because it clouds accountability. If there is no separation between builder and buyer, there can be no accountability. The differe



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