uCertify

Course Outline

Software Testing Quality Assurance

06 Jul 2024

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2. Pre-Assessment
3. Exercises, Quizzes, Flashcards & Glossary

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4. Expert Instructor-Led Training
5. ADA Compliant & JAWS Compatible Platform
6. State of the Art Educator Tools
7. Award Winning Learning Platform (LMS)
8. Chapter & Lessons

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   Chapter 2: BASIC CONCEPTS AND PRELIMINARIES

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   Chapter 7: DOMAIN TESTING

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   Chapter 9: SYSTEM TEST CATEGORIES

   Chapter 10: FUNCTIONAL TESTING

   Chapter 11: TEST GENERATION FROM FSM MODELS

   Chapter 12: SYSTEM TEST DESIGN

   Chapter 13: SYSTEM TEST PLANNING AND AUTOMATION

   Chapter 14: SYSTEM TEST EXECUTION

   Chapter 15: ACCEPTANCE TESTING

   Chapter 16: SOFTWARE RELIABILITY

   Chapter 17: TEST TEAM ORGANIZATION

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1. Course Objective

Gain the knowledge and skills required for starting a career in the field of software testing with the Software Testing Quality Assurance course. Explore performance and load testing, ensuring your software stands strong, and discover the best practices that elevate your software quality. The course focuses on testing techniques and helps students fulfill the software testing requirement of today's industries. This course contains interactive learning resources that will help you understand all the aspects of software testing.

2. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

3. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

4. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.

5. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.

6. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.

7.  Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

8.  ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

9.  State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

10.  Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been

recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
    1. Best Postsecondary Learning Solution

- **2015**
    1. Best Education Solution
    2. Best Virtual Learning Solution
    3. Best Student Assessment Solution
    4. Best Postsecondary Learning Solution
    5. Best Career and Workforce Readiness Solution
    6. Best Instructional Solution in Other Curriculum Areas
    7. Best Corporate Learning/Workforce Development Solution

- **2016**
    1. Best Virtual Learning Solution
    2. Best Education Cloud-based Solution
    3. Best College and Career Readiness Solution
    4. Best Corporate / Workforce Learning Solution
    5. Best Postsecondary Learning Content Solution
    6. Best Postsecondary LMS or Learning Platform
    7. Best Learning Relationship Management Solution

- **2017**
    1. Best Overall Education Solution
    2. Best Student Assessment Solution
    3. Best Corporate/Workforce Learning Solution
    4. Best Higher Education LMS or Learning Platform

- **2018**
    1. Best Higher Education LMS or Learning Platform

2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**
  1. Best Virtual Learning Solution
  2. Best Content Authoring Development or Curation Solution
  3. Best Higher Education Learning Management Solution (LMS)

- **2020**
  1. Best College and Career Readiness Solution
  2. Best Cross-Curricular Solution
  3. Best Virtual Learning Solution

11. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: PREFACE

- Who Should Read This Course?
- How Should This Course be Read?
- Notes for Instructors

Chapter 2: BASIC CONCEPTS AND PRELIMINARIES

- QUALITY REVOLUTION
- SOFTWARE QUALITY
- ROLE OF TESTING
- VERIFICATION AND VALIDATION
- FAILURE, ERROR, FAULT, AND DEFECT
- NOTION OF SOFTWARE RELIABILITY
- OBJECTIVES OF TESTING
- WHAT IS A TEST CASE?
- EXPECTED OUTCOME
- CONCEPT OF COMPLETE TESTING
- CENTRAL ISSUE IN TESTING
- TESTING ACTIVITIES
- TEST LEVELS
- SOURCES OF INFORMATION FOR TEST CASE SELECTION
- WHITE-BOX AND BLACK-BOX TESTING
- TEST PLANNING AND DESIGN

- MONITORING AND MEASURING TEST EXECUTION
- TEST TOOLS AND AUTOMATION
- TEST TEAM ORGANIZATION AND MANAGEMENT
- OUTLINE OF COURSE
- REFERENCES

Chapter 3: THEORY OF PROGRAM TESTING

- BASIC CONCEPTS IN TESTING THEORY
- THEORY OF GOODENOUGH AND GERHART
- THEORY OF WEYUKER AND OSTRAND
- THEORY OF GOURLAY
- ADEQUACY OF TESTING
- LIMITATIONS OF TESTING
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 4: UNIT TESTING

- CONCEPT OF UNIT TESTING
- STATIC UNIT TESTING
- DEFECT PREVENTION
- DYNAMIC UNIT TESTING
- MUTATION TESTING
- DEBUGGING
- UNIT TESTING IN EXTREME PROGRAMMING
- JUNIT: FRAMEWORK FOR UNIT TESTING
- TOOLS FOR UNIT TESTING
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 5: CONTROL FLOW TESTING

- BASIC IDEA
- OUTLINE OF CONTROL FLOW TESTING
- CONTROL FLOW GRAPH
- PATHS IN A CONTROL FLOW GRAPH

- PATH SELECTION CRITERIA
- GENERATING TEST INPUT
- EXAMPLES OF TEST DATA SELECTION
- CONTAINING INFEASIBLE PATHS
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 6: DATA FLOW TESTING

- GENERAL IDEA
- DATA FLOW ANOMALY
- OVERVIEW OF DYNAMIC DATA FLOW TESTING
- DATA FLOW GRAPH
- DATA FLOW TERMS
- DATA FLOW TESTING CRITERIA
- COMPARISON OF DATA FLOW TEST SELECTION CRITERIA
- FEASIBLE PATHS AND TEST SELECTION CRITERIA
- COMPARISON OF TESTING TECHNIQUES

- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 7: DOMAIN TESTING

- DOMAIN ERROR
- TESTING FOR DOMAIN ERRORS
- SOURCES OF DOMAINS
- TYPES OF DOMAIN ERRORS
- ON AND OFF POINTS
- TEST SELECTION CRITERION
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 8: SYSTEM INTEGRATION TESTING

- CONCEPT OF INTEGRATION TESTING
- DIFFERENT TYPES OF INTERFACES AND INTERFACE ERRORS
- GRANULARITY OF SYSTEM INTEGRATION TESTING

- SYSTEM INTEGRATION TECHNIQUES
- SOFTWARE AND HARDWARE INTEGRATION
- TEST PLAN FOR SYSTEM INTEGRATION
- OFF-THE-SHELF COMPONENT INTEGRATION
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 9: SYSTEM TEST CATEGORIES

- TAXONOMY OF SYSTEM TESTS
- BASIC TESTS
- FUNCTIONALITY TESTS
- ROBUSTNESS TESTS
- INTEROPERABILITY TESTS
- PERFORMANCE TESTS
- SCALABILITY TESTS
- STRESS TESTS
- LOAD AND STABILITY TESTS

- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 11: TEST GENERATION FROM FSM MODELS

- STATE-ORIENTED MODEL
- POINTS OF CONTROL AND OBSERVATION
- FINITE-STATE MACHINE
- TEST GENERATION FROM AN FSM
- TRANSITION TOUR METHOD
- TESTING WITH STATE VERIFICATION
- UNIQUE INPUT–OUTPUT SEQUENCE
- DISTINGUISHING SEQUENCE
- CHARACTERIZING SEQUENCE
- TEST ARCHITECTURES
- TESTING AND TEST CONTROL NOTATION VERSION 3 (TTCN-3)
- EXTENDED FSMS
- TEST GENERATION FROM EFSM MODELS

- ADDITIONAL COVERAGE CRITERIA FOR SYSTEM TESTING
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 12: SYSTEM TEST DESIGN

- TEST DESIGN FACTORS
- REQUIREMENT IDENTIFICATION
- CHARACTERISTICS OF TESTABLE REQUIREMENTS
- TEST OBJECTIVE IDENTIFICATION
- EXAMPLE
- MODELING A TEST DESIGN PROCESS
- MODELING TEST RESULTS
- TEST DESIGN PREPAREDNESS METRICS
- TEST CASE DESIGN EFFECTIVENESS
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 13: SYSTEM TEST PLANNING AND AUTOMATION

- STRUCTURE OF A SYSTEM TEST PLAN
- INTRODUCTION AND FEATURE DESCRIPTION
- ASSUMPTIONS
- TEST APPROACH
- TEST SUITE STRUCTURE
- TEST ENVIRONMENT
- TEST EXECUTION STRATEGY
- TEST EFFORT ESTIMATION
- SCHEDULING AND TEST MILESTONES
- SYSTEM TEST AUTOMATION
- EVALUATION AND SELECTION OF TEST AUTOMATION TOOLS
- TEST SELECTION GUIDELINES FOR AUTOMATION
- CHARACTERISTICS OF AUTOMATED TEST CASES
- STRUCTURE OF AN AUTOMATED TEST CASE
- TEST AUTOMATION INFRASTRUCTURE
- SUMMARY

- LITERATURE REVIEW
- REFERENCES

Chapter 14: SYSTEM TEST EXECUTION

- BASIC IDEAS
- MODELING DEFECTS
- PREPAREDNESS TO START SYSTEM TESTING
- METRICS FOR TRACKING SYSTEM TEST
- ORTHOGONAL DEFECT CLASSIFICATION
- DEFECT CAUSAL ANALYSIS
- BETA TESTING
- FIRST CUSTOMER SHIPMENT
- SYSTEM TEST REPORT
- PRODUCT SUSTAINING
- MEASURING TEST EFFECTIVENESS
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 15: ACCEPTANCE TESTING

- TYPES OF ACCEPTANCE TESTING
- ACCEPTANCE CRITERIA
- SELECTION OF ACCEPTANCE CRITERIA
- ACCEPTANCE TEST PLAN
- ACCEPTANCE TEST EXECUTION
- ACCEPTANCE TEST REPORT
- ACCEPTANCE TESTING IN eXtreme PROGRAMMING
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 16: SOFTWARE RELIABILITY

- WHAT IS RELIABILITY?
- DEFINITIONS OF SOFTWARE RELIABILITY
- FACTORS INFLUENCING SOFTWARE RELIABILITY
- APPLICATIONS OF SOFTWARE RELIABILITY

- OPERATIONAL PROFILES
- RELIABILITY MODELS
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 17: TEST TEAM ORGANIZATION

- TEST GROUPS
- SOFTWARE QUALITY ASSURANCE GROUP
- SYSTEM TEST TEAM HIERARCHY
- EFFECTIVE STAFFING OF TEST ENGINEERS
- RECRUITING TEST ENGINEERS
- RETAINING TEST ENGINEERS
- TEAM BUILDING
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 18: SOFTWARE QUALITY

- FIVE VIEWS OF SOFTWARE QUALITY
- MCCALL'S QUALITY FACTORS AND CRITERIA
- ISO 9126 QUALITY CHARACTERISTICS
- ISO 9000:2000 SOFTWARE QUALITY STANDARD
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

Chapter 19: MATURITY MODELS

- BASIC IDEA IN SOFTWARE PROCESS
- CAPABILITY MATURITY MODEL
- TEST PROCESS IMPROVEMENT
- TESTING MATURITY MODEL
- SUMMARY
- LITERATURE REVIEW
- REFERENCES

12. Practice Test

Here's what you get

50	1	73
PRE-ASSESSMENTS QUESTIONS	FULL LENGTH TESTS	POST-ASSESSMENTS QUESTIONS

Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

13. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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