CSE 5/7314: Software Testing and Quality Assurance

Sample Midterm Exam

Oct. 6, 2021

Student Name: _____

Exam grade: _____

General Instructions

- This is an open-book take-home exam. You must complete your exam independently.
- Read exam questions carefully before answering them.
- There are four (4) questions, totaling 100 points. The point distribution is shown by each question.
- The exam will be distributed (uploaded to Canvas "files" section) 10/6/2021 at 6:30pm.
- Suggested ways to complete your exam:
  a) You can print your exam, complete it, and scan the completed exam into a pdf file; or
  b) Complete your exam in a document, clearly identify the problems and your answers.
- You have until 9:30pm, 10/6/2021, to finish the exam and upload your file(s) to Canvas.
- **Good luck!**

I. QA/SQE/Testing Basics ..... *(9 points each, 36 points total)*

1. The QA/testing techniques we study in this class focus on reliability. Can they be used to assure/improve other quality attributes/characteristics? Briefly justify yourself.

2. True or false? SQE=QA=Testing. Briefly justify yourself.

(I. – Continued) QA/SQE/Testing Basics ..... *(9 points each, 36 points total)*

3. What are the primary differences between formal/systematic testing and informal/ad-hoc testing processes and their individual elements?

4. True or false? As software systems are getting larger and more complex with a wide variety of target users, UBST would be preferable over CBT. Briefly justify yourself.

II. Simple Coverage Testing ..... *(20 points)*

Starting with the checklist for IBM's DB2 family of products from our textbook, or starting with your own checklist of no less than 10 items, construct your testing model(s) and test cases to perform formal/systematic testing. Be sure to justify your choices, include sufficient details and steps, not just showing the final result. If you start with a hierarchical checklist instead of a flat checklist (or vice versa), what would you do differently?

III. UBST ..... *(20 points)*

How would you perform UBST on the system from Question II? In particular, pay attention to the choices of data collection methods (measurement, survey, or expert opinion), OP-development methods (Musa-1, Musa-2 or your own method), and justify your choices. Assuming that you have all support and data you need, construct your OP for UBST on this system.
(*Make up numbers, whenever necessary, to complete your OP construction.*)

IV. Input Domain Boundary Testing ..... *(24 points)*

Consider the following decision problem for visiting a travel destination: Starting from DFW area, 1) region a: if it is within Texas and within 200 miles, you will take a day trip by car; 2) region b: if it is outside of region a, but within 500 miles, you will take a multi-day trip by car; and 3) region c: outside both region a and region b, you will take a multi-day trip by plane. Apply EPC, Weak 1x1, and Weak Nx1 strategies to perform BT. You need to show your test points graphically (but don't worry about exact maps – this is not a geography exam) and discuss the effectiveness of each strategy. Also discuss the impact of linear vs non-linear boundaries in this problem.