CREATING AN OPEN CERTIFICATION PROCESS: OUR APPROACH

CEM KANER & TIM COULTER

FLORIDA INSTITUTE OF TECHNOLOGY

OPEN MEANS …

- **Questions, exams, and study guides posted with them are Creative-Commons (attribution) licensed.**
- **Open questions**
  - For now, all questions are "objective" (computer-scorable)
  - All questions in the question database are visible to the public. Several people memorize the questions while they write an exam, then post the questions to mailing lists or web sites. Rather than calling it cheating to consult such information, we provide the same information—full information—to everyone.
  - Anyone can create a question, so long as they follow our structural, annotating and referencing rules. All questions are signed by the author. Only the author can revise a question.
  - Different authors can create identical questions with different designated-correct answers.
  - Anyone can comment on a question and its grading scheme. System editors will occasionally reorganize a comment set to clarify and eliminate redundancy.
- **Open exams**
  - An exam is a random stratified sample of the pool of questions.
  - In creating an exam, an exam author can weight some topics heavily (more questions appear on those topics), designate preferred individual questions, and block other questions or topics.
  - Different exams will reflect different visions of testing. Some employers will author custom exams.
  - Exams are subject to review for redundancy with other exams, quality of description of the exam, and sensible selection of question (for example, it is unlikely that one would legitimately include two versions of the same question, differing in which answer is scored correct).
- **Open body of knowledge**
  - Exam authors can publish study guides with their exams; others can critique or supplement them.
- **Open / free references**
  - Authors must justify questions and answers, and critics justify comments, by linking to credible free-access documents on the Web. The insistence on free-access references is controversial and may not last. However, this is an internationally available project. Many of the stakeholders have limited access to the commonly cited books. And there is a remarkable selection of high-quality materials on the web.
- **Free exam administration**
  - Examinees will log on at the open certification site and pick the type of exam desired. The software will select an appropriate group of questions, present a form (the exam) that the user fills out and submits, and score the exam.
- **Exam feedback intended to promote reflection and discussion**
  - When someone writes the exam, the feedback they receive includes the list of questions, their answers, and the discussion associated with each of the questions.

OUR IMPLEMENTATION PLAN

- **We kicked off the project with an Open Certification workshop at the 2006 Conference of the Association for Software Testing -- www.freetestingcertification.com**
- **2006/2007 undergraduate senior project: Tim Coulter, Kevin Gall, Peter Leuken, & Adam Zalko are working in Ruby on Rails to develop the question server.**
- **Question server**
  - Database and user interface for creating, updating and annotating exam questions.
- **Exam server**
  - Database and user interface for
    - Creating, updating and annotating exam types
    - Selecting an exam type and generating a user-fillable exam form
    - Grading a submitted exam and providing user feedback
    - Displaying a user-printable certificate
- **Course servers, study materials and instructional support materials**
  - Full-semester open course in software testing at **www.testingeducation.org/BBST** with instructor training underway at **www.satisfice.com/Moodle**
  - Very rough first draft links to study materials on the web started at the 2007 Workshop for Teaching Software Testing: **http://cs.fit.edu/~ckaner/csterwiki/index.php/Main_Page**
- **Question development and review**
  - We have a small selection of draft questions (perhaps 100 so far) and expect the 2007 Open Certification workshop to kickstart the exam question process
  - The open certification exams are computer-scorable. We face the same difficulties in constructing questions that reach beyond memory work and simplistic application as everyone else. However, we think the open certification exam *process* encourages a deeper level of study and discussion.

BROADER IMPLICATIONS / VISION

- **Software testing is hardly the only subfield of CS/SE/CIS plagued with popular commercial certifications that assess examinees at low levels of the Bloom scale but market the image of the examinee who passes as an expert (or at least, as someone who has a practical clue).**

- **The *structure* we create for testing is generalizable to many other fields. Populating that structure with assessment and study materials will take substantial work, but for a group interested in doing that work, we have a model that is open source and available for free extension.**

The emphasis on openness makes possible a more revealing and less prescriptive use of certification exams.

An examinee who gets a sufficiently high score can claim to be "certified." (We'll print a certificate.)

Rather than rely on this binary state, any employer can administer an exam during an interview and then discuss scored questions and answers with the examinee.

Such discussions should be far more revealing than the raw score. Examinees who gave thoughtful "wrong" answers can demonstrate the worth of their answers. Discussions attached to a question help people study for the exam (and the possible interview) and provide references that candidate and interviewer can skim together during the post-exam discussion.

Even though there are designated-correct answers, the entire process acknowledges the controversy of the simple answer and honors the desirable tendency of testers to challenge everything.