

Neurosurgery Question Bank Testing Solution

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Abstract:

Create a web-based database driven question bank (q-bank) application for Neurosurgeons in training preparing for the National Board Examination administered by the American Board of Neurological Surgeons. The application will offer sophisticated analytics that help test candidates identify content areas of weakness and allow the user to create custom tests based on specific criteria including number of questions, difficulty and content. The Neurosurgery Question Bank testing solution will bring exam preparation in Neurosurgery into the information technology age, a change long overdue.

Detailed Description:

At the present time in the medical and surgical specialties, computer based testing has not become the norm as it has in many other areas of professional and educational testing and training. Many board licensing exams are still administered on paper and many physicians in training still utilize question text books that have been in existence for years to prepare for their board examinations. Unfortunately, utilizing such educational materials is inefficient and requires a lot of page flipping to access answers and read explanations. Moreover, these materials lack sophisticated analytics that help test candidates identify content areas of weakness. Test preparers are subject to the test organization and content as laid out by the author of their chosen text and they cannot design custom tests that will allow them to focus on particular areas of weakness. Test preparers are also unable to create tests that are comprised of only questions they have previously answered incorrectly allowing them to focus on shoring up these deficits in their knowledge. Neurosurgery is one of the many medical and surgical specialties that is faced with this issue. Recently some inferior computer based preparation tools entered the marketplace; however, the solutions have had technical challenges and still lack the sophisticated performance analytics that are so critical in test preparation.

The current endeavor will create a question bank (q-bank) application for Neurosurgeons in training preparing for the National Board Examination administered by the American Board of Neurological Surgeons. The application will be web based and have an e-commerce front end for subscriptions, accounts for users, and a database of questions from various content categories. Users will be able to generate tests varying in number of questions, difficulty and content areas. The user will be able to choose to include questions they have or have not done before or both. The application will have appropriate security encryption for subscriber data and their credit card information and for the proprietary database of questions. The application will track the difficulty of all questions by following the overall performance on each question by all users of the q-bank; this information will then be used to determine the difficulty level based on the established business rules at regular intervals. Each user will be able to generate a score report for each individual test taken or to assess their cumulative performance on all tests taken. The score report will provide their overall performance and how they have performed in the various content sub-categories. The cumulative score report will show will how

much of the q-bank they have completed and how many questions in each content category they have completed. Users will be able to create tests using random question selection from all questions in the database or by limiting questions to those they have not yet seen, questions they have already done, and / or questions that they have done previously but got wrong. Users will also be able to construct tests based on sub-category and difficulty (for example choosing to include low, medium, and / or high difficulty questions or all difficulty levels). Questions will be multiple-choice and will utilize text and media including photos and videos. The database / application design will be optimized to support multiple concurrent users without compromising the user experience as a slow application is unacceptable to the end user. Users will be able to take tests in 'timed' test mode, 'tutorial' mode or 'flash-card' mode. Test history will be saved and users will be able to generate score reports for tests previously taken and review tests they have already taken in a mode similar to 'tutorial' mode where the answer they selected is shown, the correct answer and difficulty level is shown and any explanation and references are provided. Once this q-bank is perfected within Neurosurgery, content experts in other medical and surgical specialties will be identified and this solution will be rolled out across various medical and surgical specialties.