COMBINATION OF COSINE SIMILARITY AND STEP-WORD ALGORITHM BASED PLAGIARISM DETECTION IN QUESTION BANK GATHERING INFORMATION SYSTEM

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ABASTRACT: Education is very important as it provides its candidates with important knowledge, including basic essentials skills and cultural norms values. Education empowers minds which enable to conceive innovative thoughts and ideas. Hence assessment of educations is a critical step in the learning process. It determines whether the course objectives and outcomes have been achieved or not. Fare assessment can also motivate students. If students know they are not doing well, they may begin to work harder. Question banks provides opportunity to enhance performance, improve the learning ability and skills to write the answer, understanding question logic and exam pattern, designed by the institute. Question banks also provides opportunity to self-evaluate before even going for the examination. Question bank database contain the variety of question, but not redundant questions (plagiarism free) from each unit according to the syllabus. Now a days Accreditation bodies have also raised the standards of evaluation of teaching-learning process. Mapping the questions with COs, POs and Blooms level taxonomy will make the standard of the question banksup to mark.

Keywords: Question bank, Accreditation Body, Mapping with COs POs, Blooms Level, Plagiarism checking, Artificial Intelligence, Cosine-similarity, Step-word Algorithm.

I. INTRODUCTION

Education helps to empower make the country greater. Education has made significant transformation in our society as well. Teaching or sharing knowledge is one of the finest ways to make powerful the country. Evaluation of students is the essential and important part of teaching- learning process, and is has to be done through examinations process and preparation of examination. Now a day technologies lend a hand the faculties to reserve the varieties of question in the computer database. Present-day technologies give a hand to the teacher to reserve the questions in a computer databases. In present day the teaching-learning process through electronic devices, has became essential part of the studies and research area. Conversely, the impact of globalization and rapid changes in educational system in the world has shrunk the boundaries of education with digital technologies to encourage equality of education. Non-formal education system takes the support from technologies to become the part now have become part of formal system to meet the services by bridging the gaps between those systems.

II. QUESTION BANK

Question bank is a huge, systematic and organized collection of variety of questions to evaluate the student's improvement in the academic and fulfillment of requirements in the process of teaching-learning. The question bank is an essential aspect of educational models and utility service designed to fulfill the predetermined purposes i.e. to enhance the instructional aspect and to critic the learners' instructional efforts (Biswas & Pradhan, 2002). The convincing, trustworthy and translucent varieties of questions depend on purpose of examination.

III. LITERATURE SURVEY

Parthasarthy M. and R. Anathasayanam says that Question bank provides an opportunity to improve the evaluation, learning and answering skills among the students, questioning logics among the teachers, and examination patterns among curriculum designers. The question bank is not a learning material but supports as self-evaluation guide.

Xin Wang, Zhong Wang and Wei Huang says the question bank system is a important method of computer aided system. It has been more and more widespread development and application both at domestic and abroad.

ChifundoChilivumbo says Question Banks are used to increase the access to quality material for assessing the students in institutions of higher learning. A good question bank which is in line with the learning orientated assessment framework, should facilitate the, learning orientated assessment tasks, developing evaluate expertise and aid in student engagement with some feedback.

Ang Tan Fong, HU Heng Siew, Por Lip Yee and Liew Chee Sun says Question bank can be described as the databank that keeps all the examination questions whether pre-existing or created by user while web based examination system is an online assessment tool that used to evaluate students' performance. Internet-based education is growing in number and in quality. We expect many kinds of merits of IT-based education. It enables us to let learners more eager to study the subject, to easily share the world-wide instructive resources, to give students distance learning and conduct online examination at anywhere in the world.

IV. UPDATED ADVANCE VERSION of QUESTION BANK

As the mentioned by the Xin Wang and their colleagues that question bank system is one of superlative methods of computer aided system. Employees can also utilize the Information Technology for the expansion of services such as those offered by the Library of question and the teaching

staff. Online question bank sources are accessible to students both on and off campus. It is one way to fetch the faculty's class content to students online.

The main purposes of effective question database or collection of questions are as follows-

- Review and revision.
- Preparing exercises from textbooks
- Conduct formative/periodical assessment.
- Self-evaluation by the students.

University and institute efficiently make use of previous year's examination questions to prepare candidates for the forthcoming examination. The question bank is prepared to support students and teachers for preparing lesson plan, reviewing class sessions, and preparing classroom tests (Zachariah, 1993).

Question banks will be very helpful for the students, who may write wrong answers according to misinterpreting the questions and for them, for who wants to improve their writing skill of any question, also who write related answers for different cognitive level questions. It is important to analyze every aspect of teaching-learning process to make more effective and efficient.

V. ARCHITECTURE

Question bank will help students to know more about the examination pattern, depth of question, how to write appropriate answer to the questions, how to manage the time to attempt each unit, to avoid the examination fear and it will be helpful to enhance performance in the examination as well. It helps to find out the expected standard of the questions and plan for short and sharp answers (Race, 2003).
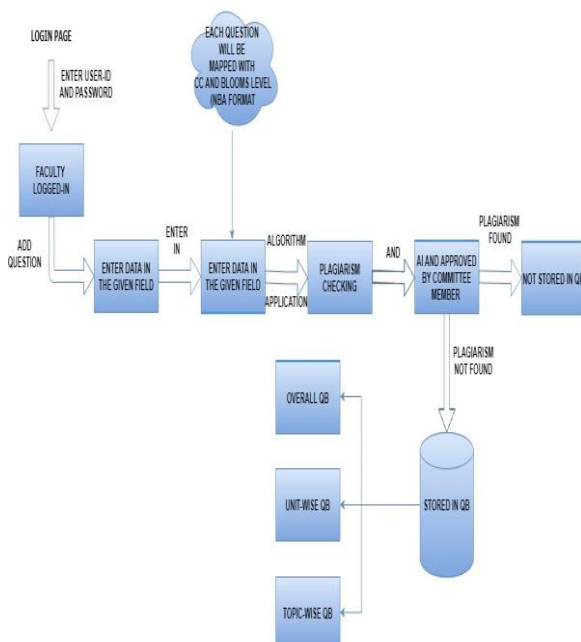

Figure 1- Basic Architecture of the System

Firstly the authorized user (faculty) will register, after the successful registration the user will be provided by the login details. After logging-In the user have to complete their profile information i.e. basic details including subject interest, experience and other information. Then user can enter 'N' numbers of question in the question bank according to their subject interest.

While adding, eachquestion will be mapped with course outcome (COs) and program outcome (POs) according to accreditation body format.Accreditation bodies are very particular for learning process,the Bloom taxonomy table of cognitive processes when forming the question could make sure that the assessment finds its mark. Also, every question should be mapped to a CO and every CO should be mapped to a PO. Bloom taxonomy plays an important role in the accreditation body format. COs, POs and Blooms level taxonomy increase the standard of the assessments, and learning process.

To create and maintain the question bank, drafting varieties of questions is one of the key tasks. Where the cosine-relation algorithm and step word algorithm are play a very important role to make this task trouble-free.

The proposed system has a unique quality i.e. all the questions will be verified by the committee member and Artificial Intelligence (Plagiarism Checking).

Plagiarism checking will check all the questions before adding to the question bank, whether the recently added questions are already available in the question bank database. If not, then only the question will be added in the database, otherwise it will pitch an error message on the screen.

VI. MODULES

Public View-Other user (visitor) can view the question bank according to their interest.

Student View- Students can login with their credentials (given by the institute) and they can view or download the question bank according to their respective branch, semester and subject interest.

Faculty View- Faculty has to login with their provided credentials. Thefaculty can upload, edit or delete the question from question bank.

Faculty can update their personal information, if require.

Add Question- This module will use to insert the questions in the database.

Faculty have to choose their subject interest while registering themselves, therefore they can upload the question bank to the database.

Fields include-

Course- From here faculty can choose the course i.e. Engineering, medical, pharmacy etc.

Branch- Faculty can choose branch, for which they can insert the questions in the database.

Semester- Faculty can choose semester, for which they can insert the questions in the database.

Subject- Here we choose subject from faculty's subject interest to add the questions.

Unit- Faculty can add questions unite wise.

Topic-Faculty can add questions unite wise.

Difficulty level- To unbiased and get expected output faculty have to define each question from any of the difficulty level.

Difficulty level of any question can be justified by following-

- Average
- Medium

- Hard

Marks- According to the university examination pattern marks for each question will be associated with the question.

Question Type- Here facultieshave to specify the details of question i.e. solved or unsolved question type.

Blooms Level- According to the NBA accreditation blooms level improve the standard of the question.

Faculty has to choose blooms level of each question while forming the question.

Answer Type- Here faculty has to choose expected answer of the particular question i.e. numerical, derivation, short descriptive or long descriptive.

Outcome-Faculty has to choose the course outcome from NBA format. Each chapter and questions needs to be associated with the course outcome.

Edit Question- Faculty can edit the question and its above mentioned details, if require.

Show Question- This field will work to fetch the questions from the question bank.

Question bank can be fetched in any of the 3 following form-

- Question bank unit wise
- Question bank topic wise
- Over all Question bank

Faculty Profile- Faculty profile module will maintain the basic details of any faculty.

Subject Interest- As the name says this module will maintain the details of subject interest of any faculty.

Approval Committee- There will be a committee for following two jobs-

Approve faculty- Approval committee will approve the faculty of each institute whether they are eligible to upload the question or not.

Approve questions- Approval of questions by the respective approval committee members.

VII. RESULT

Figure 2- Add Questions

Figure 3- Add Questions with mapping requires Fields

Figure 4- Show Questions unite wise

Figure 5- Show Questions Topic wise

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