**INTERNSHIP: PROJECT REPORT**

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| Internship Project Title | RIO 45 - Design Document for a Responsive Question Creation Web App with Plagiarism |
| Project Title | Question Creation Web App with Plagiarism |
| Name of the Company | TCS iON |
| Name of the Industry Mentor | Nilesh Haridas |
| Name of the Institute | B. P. Poddar Institute of Management and Technology, Kolkata |

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| Start Date | End Date | Total Effort (hrs.) | Project Environment | Tools used |
| 21-07-2021 | 30-07-2021 | 48 Hours | Windows 10 OS, Java with SQL or MERN Stack, Web-browser | MS Office, Paint, Visual-paradigm, Figma |
| Project Synopsis:  In this project we are going to design a responsive web application that will allow the Subject Matter Experts to enter questions and stores those in a database after doing a plagiarism validation using Google Search API services.  This web application will have a user-friendly interface for entering questions with a form like structure where validation will be integrated. Also, it will check the question texts and options along with picture if there is any plagiarism with the previous database of questions and also with the internet if there is any exposed content. It will show report of different matching percentages for both type of matches and based on that report the SME (user) can confirm or modify or reject any question to continue further steps. There will be another additional user confirmation option if user want to add a question with more than 50% match into the database. | | | | |
| What is Plagiarism – Description:  Plagiarism is presenting someone else’s work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition. Plagiarism may be intentional or reckless, or unintentional. Under the regulations for examinations, intentional or reckless plagiarism is a disciplinary offence.  In this project we are going to design a web application that will prevent the unintentional plagiarisms while setting up questions by Subject Matter Experts into the database so that there are less repetition of questions from previous questions and also to prevent from entering questions those are exposed in the internet which can be easily found by students during exams and the chances of malpractice will increase eventually. That is why plagiarism check is very crucial while making questions as well. | | | | |
| Solution Approach:  To implement the web application which integrates plagiarism check and adding questions to the database, at first, we have to create a login interface for the Subject Matter Expert so that no one else can use the application for inserting questions into the system.  Then we have to make the interface of the question entering screen which will be like a form structure. Where the SME will be able to enter questions.  After that we have to take data from the form (which the SMEs will enter) and connect it with the database. After taking data (here the questions) from the SME, we have to validate matching with the database as well as the internet. At first, we will implement a search function which will search the question entered by the SME in the database, and if it finds some match, it will store the matching percentage. Then we have to implement google search API to search the question in google to find any similar question that already exist. If there is any similar question on the internet, calculate the matching percentage and store that.  Then we have to create a report page in our web application. There we have to fetch the matching percentage in both cases those we have stored previously and show it to the user. Multiple options will be in that page, like- ‘Reject’, ‘Go Back and Modify Question’, ‘Proceed’. If the SME clicks ‘Proceed’ even after the matching percentage exceeds a certain limit defined by the organization (here 50%, but it may be change with time, so better to have an option where the value can be changed), show a warning and pop the option to ‘Go Back and Modify Question’ and provide another option to ‘Proceed Anyway’. If the matching percentage is less than 50%, then don’t show any warning.  If the user clicks ‘Go Back and Modify Question’, then redirect him/her to the question-entering form page so that they can modify their previously entered question. If the user clicks ‘Reject’, then redirect to a new form (not the form he previously filled) so that he/she can add a new question. And if the user clicks ‘Proceed’ or ‘Proceed Anyway’, then connect to the database and add the question to the database and simultaneously direct the user to a new page. This page will contain two options- ‘Finish’ and ‘Enter Another question’. If the SME clicks ‘Enter Another Question’, it will redirect to a new question form to add question. And if the user clicks ‘Finish’, the application will close and display a ‘Successful’ page. | | | | |
| Assumptions:  The assumptions taken during preparing the Design Document for the Responsive Web Application are-   1. The developer will use a responsive and mobile first approach while making the software in Java or in MERN stack. 2. More than 50% match will be considered as a serious plagiarism issue. 3. Only SME will interact with this application and the database will be handled by another system. | | | | |
| Technology Use:  Here we can use any full stack technology to develop this responsive web application. If we use Java, e have to create front end UI part using HTML, CSS and JS and the backend will be created using Java. We can use JDBC for connecting it to Database and seamlessly use this application from any platform.  If we use MERN stack for developing this responsive web application, we can use React for developing the front end UI along with HTML, CSS and JS. Using flexbox will increase the responsiveness. We can connect it to MongoDB for database service and host it using Express JS and Node JS. | | | | |
| Project Diagrams:  Diagram 01- Wireframe of the Web Application (Flow of events and Data)  Diagram 02- Login Page  Diagram 03- Question Form Page  Diagram 04- Report of Plagiarism Page  Diagram 05- Warning Page if entered confirm even after 50%+ matching  Diagram 06-Finish or Add another question page  Diagram 07- Question Added successfully page | | | | |
| Algorithms:  The Algorithm for the application is as follows-  Step01- User (SME) will log into the system.  Step02- SME will enter question in the question form.  Step03- The System will check plagiarism by comparing the question entered by the SME with the already existing questions in the database and with the questions available on internet by google search API.  Step04- Application will display the report of the plagiarism percentage for both the above mentioned cases.  Step05- The SME can choose modify question and go back to Step02. And if the SME chooses the reject option, he will be given a new form for question.  Step06- The SME can proceed and if the plagiarism % is more than 50%, then it will pop a warning screen and ask for another confirmation. If the plagiarism % is less than 50% or the SME confirms again, the question will be added to the database and go to Step07.  Step07- The SME will be given two options of adding another question or finish. If SME chooses to add another question, go to Step02. If the SME chooses finish, go to Step08.  Step08- A ‘Question added successfully’ Screen will be visible, and the application will close.  Step09- Exit. | | | | |
| Outcome:    Using this responsive application, the Subject Matter Expert will be able to add questions seamlessly using any device (Smartphone or Computer) as it will be a responsive web application. Also the login feature will secure the system so that external persons can not access the application and alter the database by any mean. This web application will enable the SME to only concentrate on creating questions, not on searching whether the questions are already in the database or exposed on the internet and easily available. It will save a lot of time and enhance quality of work. As the application will be directly linked to database, and after all confirmations the questions will be directly added to the database, the SME don’t need to have knowledge about databases or the organization will not have to engage any database expert to enter questions into database.  So we can see this application will have a good impact on both work efficiency and cost management. | | | | |
| Exceptions considered:  There may be some exceptions like questions having similar words but different concepts, which may throw false positive percentage of plagiarism. Along with that there may be some cases where the concepts are same but using different words cause lower percentage of plagiarism. | | | | |
| Enhancement Scope:  There are some enhancement scopes for this web application. Like we can add features of suggestions how to reduce chances of plagiarism in a particular question which already have a higher percentage of plagiarism by using machine learning algorithms. Also we can add a draft feature in the application so that one can take break while entering a question. We can add more security features so that there will not be any loophole as it may cause major vulnerability of the whole database. | | | | |
| Link to Code and executable file:  Not applicable for the current internship as it is only based on the Design Document. | | | | |