SURWAY

THE SMART WAY TO SURVEY

PROJECT SYNOPSIS

OF MAJOR PROJECT

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CHAPTER – 1 INTRODUCTION

In today's data-driven world, feedback is one of the most influential tools that can be used to improve the quality of education and services offered in institutions. Thus, GNDEC, Ludhiana, respects the role of systematic and thoughtful feedback for the enhancement of performance and organizational effectiveness. In order to optimise and improve the method of feedback we suggest the creation of a new advanced survey creator tool known as "SURWAY – The Smart Way to Survey". The objectives of this project are as follows to develop a sound framework for creating and designing survey forms that are flexible enough to suit the college's needs.

The technology for this project is based on the web and the MERN stack that includes MongoDB, Express.js, React.js, Node.js. With the help of SURWAY, users will be able to create and customize surveys including different question types, topics, and branching options. Creating and administering a simple end-of-term student satisfaction questionnaire or a multiple-paged alumni feedback form, or even a comprehensive course evaluation questionnaire, all of these can be done using the tools that SURWAY will offer.

The specialization of this project is in the sphere of educational technologies and data sciences. The main emphasis is made on the acquisition, analysis, and dissemination of survey data for decision making. Educational technology entails the application of technology in enhancing learning, teaching, and other administrative processes. Terms specific to this project are survey logic, data visualization, and real-time data processing. Survey logic is the concept of how survey questions can be subsequently designed to alter in a manner that only displays questions relevant to the subsequent reply given by the respondent. Data visualization refers to the use of graphics to present data to make big data easier to comprehend, analyze, and apply. Real-time data analysis is the processing of data as it is being gathered and getting insights immediately.

Therefore, the overall purpose of SURWAY is to bring GNDEC's feedback collection and analysis to a whole new level by offering a solution that is easy to use and powerful at the same time for all feedback activities. Thus, by utilizing the advantages of the MERN stack and targeting the educational technology and data analysis fields for its development, SURWAY will guarantee the further enhancement and successful functioning of GNDEC's educational programs.

CHAPTER – 2 RATIONALE: JUSTIFICATION, WHY NEEDED?

The need for utilization of SURWAY emanates from the concern as to the lack of a proper feedback collection system that is easy to adopt in learning institutions. The normal ways of administering feedback may include the use of paper-based forms or simple web-based templates which can be very tiresome, exhausting, and cannot accommodate the specific need of a certain survey. By instituting SURWAY, GNDEC is able to simplify the work and therefore facilitate timely and accurate data collection is facilitated. As it has been indicated, their are several kinds of surveys required in an academic environment. For example, questionnaires where students share their impressions about the effectiveness of certain approaches and materials are crucial for effective teaching activity.Surveys of graduates assist in collecting data about the graduates, their jobs, and how the education received at the institution has affected them, which can aid in the enhancement of the curriculum. Feedback questionnaires for graduating students may be helpful in getting an understanding of the general impression of the institution as well as the positive aspects and the problems encountered during the course of their studies. Further, the testimonials from employers of graduates will be useful in evaluating the practical relevancy of the education offered. Thus, the implementation of SURWAY will help to improve communication with students, faculty members, and other stakeholders, and ultimately provide benefits both in terms of learning outcomes and organizational experience. Also, real-time survey data analysis and reporting will provide timely information necessary when making decisions, thus encouraging an enhanced culture of improvement. The versatility and full-range functionality of the software shall enable GNDEC address ever-changing feedback needs while continuing to offer quality education.

CHAPTER – 3 OBJECTIVES

3.1 To develop a platform that allows users to create new survey forms using predefined components.

3.2 To implement features for editing and managing existing survey forms.

3.3 To implement essential data analysis and reporting features for survey result.

CHAPTER – 4 LITERATURE REVIEW

4.1 Enhanced Feedback and Reflection Through Multimodal Learning Analytics - This research paper introduces Multimodal Learning Analytics (MMLA), which integrates data from various sources to provide a detailed view of students' mental and emotional states. It demonstrates how MMLA enhances feedback and reflection in education, aiding both teachers and students. The paper also addresses challenges such as design complexity, usability, and data integrity to ensure effective implementation in real-world settings [1].

4.2 Improving Engagement and Performance with ML-LA Feedback in Online Learning - This research paper examines machine learning-based temporal learning analytics (ML-LA) for personalized feedback in online collaborative learning. It finds that ML-LA improves cognitive and behavioral engagement and task completion rates. However, challenges remain in translating ML-LA feedback into better learning outcomes and addressing implementation issues [2].

4.3 Automated Sentiment Analysis for Evaluating Teaching Performance - This research paper tackles the challenge of analyzing student responses using advanced natural language processing (NLP) and sentiment analysis. It demonstrates that feature-level sentiment analysis, combining deep learning and dictionary-based methods, achieves around 80% accuracy and recall. This approach reveals detailed insights into instructional performance that traditional methods may overlook, leading to more targeted improvements in educational quality [3].

4.4 Comparing Online and Offline Peer Feedback Effectiveness in Higher Education - This research paper compares online and offline peer feedback in educational technology through a meta-analysis of 12 studies. It finds online peer feedback more effective, with an effect size of 0.33, particularly for skill development. Although students view online feedback positively, some limitations are noted. The study underscores the advantages of online peer feedback for academic achievement and identifies areas for further research to optimize its use [4].

CHAPTER – 5 FEASIBILITY STUDY

Required analysis of feasibility study includes the factors that are technical, operational and economic in the case of SURWAY project:

5.1 Technical Feasibility:

MongoDB, Express JS, React JS, Node JS are collectively called as MERN stack that offers the strongest and efficient foundation to design and create the SURWAY. The collection of survey responses can be stored with the help of MongoDB since it has a flexible schema. Express. js and Node. js provide optimal ways of dealing with items on server-side, while React. js guarantees the constant interactivity of the GUI. The application of these technologies is considered relevant to today's trends in the industry and relative technical resources of GNDEC.

5.2 Operational Feasibility:

Thus, the system that we will develop under the name of SURWAY can tackle with one of the most significant problems of GNDEC and contribute to the improvement of the quality of feedback. This convenience will be due to the neatly designed interface that will enable the faculty and students to create surveys, distribute them, and get responses conveniently. It will also be easy to gather quality data through the platforms as it will be easy to select various layers of details and real time analysis of data collected.

5.3 Economic Feasibility: Explaining to the management the cost that would be incurred in establishing the server structure, developing tools, and acquiring SURWAY maintenance policy, the logic of the development is justified. Better feedback mechanisms will create a positive impact on education results and organizational effectiveness while reducing the initial and ongoing costs for the generation of high value in the process of serving the society.

CHAPTER – 6 METHODOLOGY/PLANNING OF WORK

The methodology of creating SURWAY also shows a structured approach to the research and development, using both quantitative and qualitative methods of the research. The solitary research type identified is the applied research type, based on the idea that identified specific problems, which are associated with the creation of the surveys and the collection of the feedbacks at GNDEC. Survey data, users' engagement and other comments by stakeholders like students, faculty, and administrators are some of the variables of analysis within the unit of analysis.

Methods:

1. **Requirement Analysis:** Hold focus groups and poll distinctive populations of persons using surveys in order to establish specific requirements of the potential users in relation to survey features. This involves seeking contributions from departments and other parties interested in the objective at GNDEC.

2. **System Design:** Sketch the survey platform design requirements and guidelines such as the interface designs, database structures, and system designs.

3. **Development:** Develop and apply the system based on the architecture MERN. Create reusable React front end components. JS, backend services with Node. js and Express. js, and forms and database schemas with MongoDB.

4. **Testing:** Undergo unit testing, integration testing, and user acceptance testing to confirm the system is functional and efficient deliveries the planned facility. Gather information from test users while they are using the website and modify if necessary.

5. **Deployment:** Use web application hosting on a cloud or on physical servers. During the first launch phase, the following needs to be done in relation to the performance, any problems that may come up being handled accordingly.

Tools of Data Collection / Analysis:

- **Surveys and Interviews:** To gather initial requirements and feedback from users.
- **Design Tools:** Like Figma in designing the user interface mock up.
- **Development Tools:** General-purpose tools that might be in use during programming, coding editors like Visual Studio Code, handling versions using git, using project management tools like Jira and Trello.
- **Testing Tools:** Black and white box testing techniques such as Jest for React components, Mocha for Node.js, and testing by the explore and steady techniques.
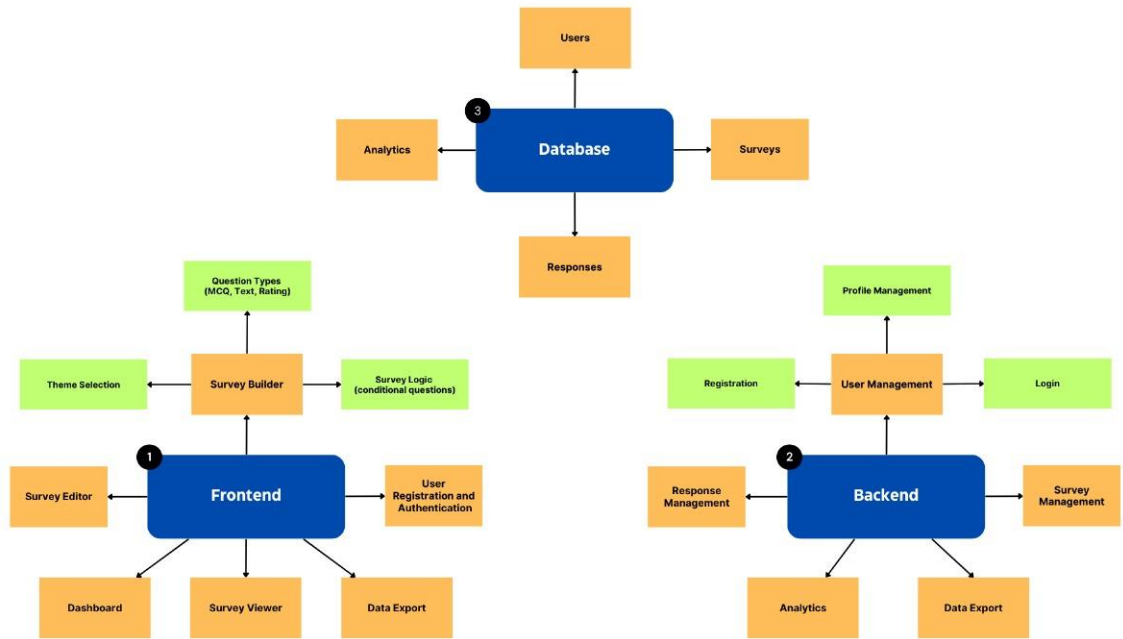
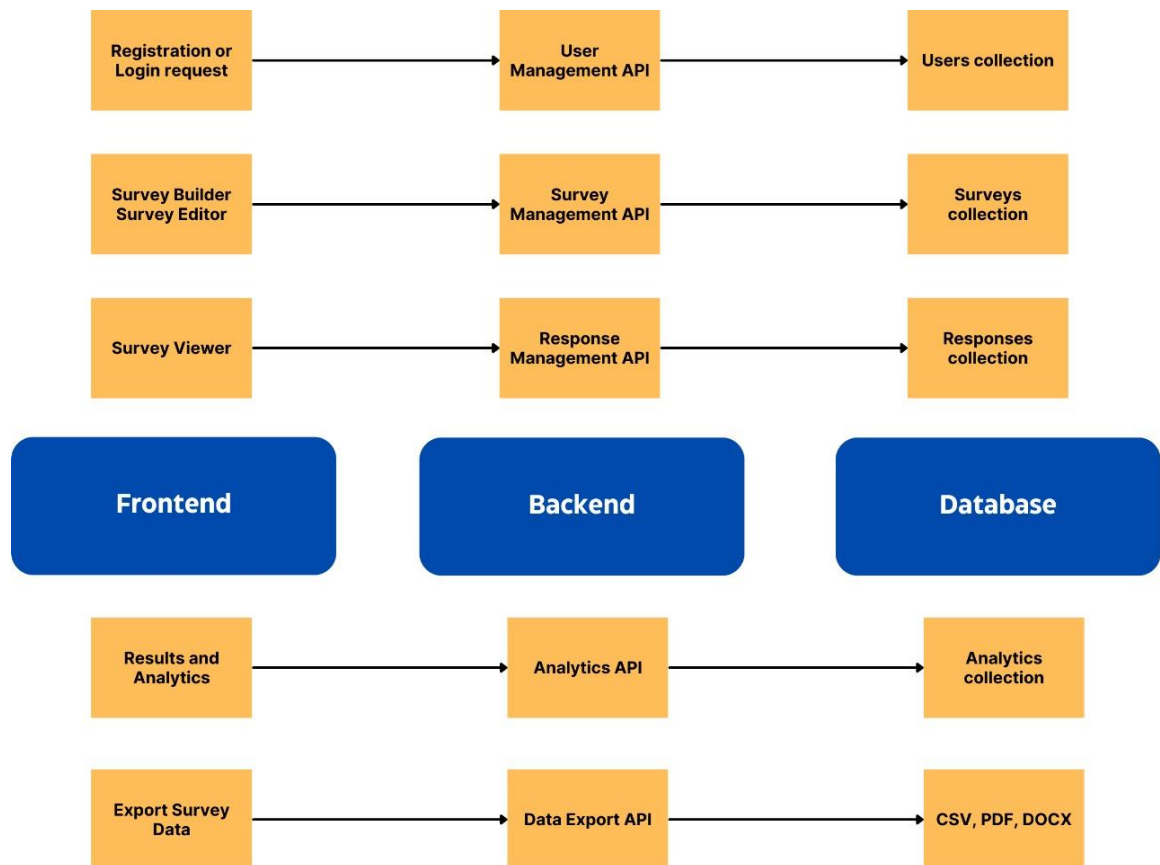Fig. 1.0 – *Structural Diagram of Surway*

Fig. 1.1 – *Flowchart of Surway*

CHAPTER – 7 FACILITIES REQUIRED FOR PROPOSED WORK

To successfully develop SURWAY, the project will need access to a suitable computing environment that houses the relevant development tools and applications. This ranges from development tools with sufficient processing power and memory to a cloud or local server to host the application and additional tools for communication and organization. Also, the access to the databases must be secure and for deployment and testing purposes, reliable internet connection is required.

Software/Hardware Required

Software:

- **Development Environment:** Node.js, Express.js, React.js, MongoDB.
- **Design Tools:** Figma, Adobe XD.
- **Code Editors:** Visual Studio Code
- **Version Control:** Git and GitHub or GitLab.
- **Testing Frameworks:** Jest, Mocha.

Hardware:

- **Development Machines:** Hardware that consists of computers possessing adequate memory or RAM and processor or CPU.
- **Servers:** AWS or Azure using cloud hosting or local hosting of the application on local servers.
- **Backup Solutions:** Regarding the security of data and their availability in case of any loss.

CHAPTER – 8 EXPECTED OUTCOMES

SURWAY is expected to provide a rich and intuitive environment through which to construct engaging survey feedback to suit GNDEC's requirements. Note that the application will facilitate survey construction and customization as well as the real-time data analysis and reporting to the stakeholders while observing data security. It will improve the way of getting information from different stakeholders of the institution and refine the educational practices and management of the institution's operations in a better way. When implemented, feedbacks for SURWAY will be more enhanced and users will be more involved hence enhancing the quantitative decision making system.

CHAPTER – 9 REFERENCES

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