

INTERDISCIPLINARY PROJECT REPORT

at

Sathyabama Institute of Science and Technology

(Deemed to be University)

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering Degree in Computer Science and Engineering

By

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF COMPUTING

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC | 12 B Status
by UGC | Approved by AICTE
JEPPIAR NAGAR, RAJIV GANDHISALAI,
CHENNAI – 600119

APRIL 2023



SATHYABAMA

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **ROHIT KUMAR S(40731081)** who carried out the project entitled "**ONLINE ASSESSMENT SYSTEM USING NATURAL LANGUAGE PROCESSING**" under my supervision from FEB 2023 to APRIL 2023.

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Submitted for Viva voce Examination held on **17-04-2023**

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DECLARATION

I, **ROHIT KUMAR S** hereby declare that the Project Report entitled “**ONLINE ASSESSMENT SYSTEM USING NATURAL LANGUAGE PROCESSING**” done by me under the guidance of **Ms. K. Ishwarya, M.Tech., (Ph.D.)** at **BENX Solutions LLP**, submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Computer Science and Engineering.

DATE: 17-04-2023

A handwritten signature in blue ink, appearing to read 'Rohit', with a horizontal line underneath.

PLACE: CHENNAI

SIGNATURE OF THE CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to **Board of Management of SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

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I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Computer Science and Engineering** who were helpful in many ways for the completion of the project.

Training Certificate

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To,
The Head of the Department
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Subject:- Internship/Project Work

Dear Sir/Mam

We are pleased to inform you that, **Mr. Rohit Kumar S (40731081)** pursuing 3rd-year B.E Computer Science and Engineering with Specialization in Artificial Intelligence is selected for Internship/Project Work at BENX Solutions LLP, Chennai, and will be reporting to Dr.J. Cruz Antony.

The duration of the project is from **13th February 2023 - 30th April 2023**

We wish to inform you that this is a non-stipend project where no remuneration or reimbursement of expenses will be permissible. The projects are purely used for academic purposes.

For BenX Solutions LLP

Dr.J.Cruz Antony
Founder and Designated Partner



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ABSTRACT

The answer script evaluation is an important part of assessing student's performance. Typically, an answer script evaluation is done manually that sometimes can be biased. The evaluation depends on various factors like mood swing of the evaluator, the inter-relation between the student and evaluator. Additionally, evaluation is a very tedious and time-consuming task. In this paper, a natural language processing-based method is shown for automatic answer script evaluation. Our experiment consists of text extraction from answer script, measuring various similarities between summarized extracted text and stored correct answers, and then assign weight value to each calculated parameters to score the answer script. For summary generation from the extracted text, we have used keyword-based summarization techniques. Here four similarity measures (Cosine, Jaccard, Bigram, and Synonym) are used as parameters for generating the final mark. Automatic evaluation of answer scripts has been found very useful from our experiments, and often the assigned marks is the same as manually scored marks.

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CHAPTER-1

INTRODUCTION

1.1 Introduction to Online Assessment System:

Online assessment systems have become increasingly popular in recent years due to the convenience and efficiency they offer. With the rise of natural language processing (NLP), these systems can now provide a more accurate and personalized evaluation of a student's understanding and skills. By leveraging NLP algorithms, online assessment systems can automatically grade student responses and provide immediate feedback, which saves time for teachers and students alike. The algorithms can analyze the nuances of language, such as grammar, syntax, and meaning, to provide a more precise assessment than traditional multiple-choice questions.

One of the key benefits of using NLP in online assessments is personalization. The algorithms can adapt to a student's learning style, offering customized recommendations based on their performance in previous assessments. This allows students to focus on areas where they need to improve, leading to better learning outcomes.

Moreover, online assessment systems that use NLP can be especially helpful for non-native speakers who might struggle with language barriers when taking assessments. The algorithms can process responses in multiple languages, allowing students to take assessments in their native language and still receive accurate evaluations.

Implementing an online assessment system using NLP involves several steps, including designing the assessment, developing the NLP model, training the model, integrating it with the online platform, and evaluating its effectiveness.

Online assessment systems that use NLP have the potential to revolutionize the way we evaluate student understanding and skills. By providing automated grading, immediate feedback, personalization, and language support, these systems offer a more efficient, accurate, and convenient way of assessing student performance.

1.2 Objective of Online Assessment System:

The objective of using an online assessment system using NLP is to provide a more efficient, accurate, and personalized way of assessing a student's understanding and skills. Here are some specific objectives:

1. **Automated Grading:** One of the main objectives of using NLP in online assessment systems is to automate the grading process, reducing the workload of teachers and instructors.
2. **Improve assessment accuracy:** NLP techniques can be used to identify patterns and trends in student responses, helping to improve the accuracy of assessments. By analyzing large amounts of data, NLP algorithms can identify common mistakes and misconceptions that may not be apparent to human graders.
3. **Reduce grading time:** NLP algorithms can automate the grading process, reducing the time and effort required by human graders. This can help institutions scale up their assessments, allowing them to handle a larger volume of students or assessments.
4. **Immediate Feedback:** Online assessment systems using NLP can provide immediate feedback on student responses, allowing students to identify areas where they need to improve and adjust their learning strategies accordingly.
5. **Personalization:** NLP algorithms can adapt to the learning style of individual students, providing personalized recommendations based on their performance in previous assessments.
6. **Language Support:** NLP algorithms can process responses in multiple languages, allowing students who are non-native speakers to take assessments in their native language.
7. **Accuracy:** Using NLP in online assessments can provide more accurate evaluations of student performance than traditional multiple-choice questions, as the algorithms can analyze the nuances of language, such as grammar, syntax, and meaning.

8. Standardized assessment: NLP can help to standardize the assessment process by providing objective criteria for grading and eliminating subjective bias.
9. Evaluate language proficiency: NLP techniques can be used to evaluate a student's language proficiency, including their ability to read, write, speak, and understand a language. This can be particularly useful in language learning and language proficiency exams.
10. Adaptability to different subjects: An online assessment system using NLP can be adapted to different subjects, making it useful for a wide range of educational institutions and programs.
11. Continuous assessment: An online assessment system using NLP can enable continuous assessment, allowing students to receive feedback on their progress throughout the course rather than just at the end.

Overall, the objectives of using an online assessment system using NLP are to improve the assessment process, provide more accurate and consistent results, create a personalized learning experience for students, and enable educators to analyze data and adjust teaching strategies accordingly.

CHAPTER-2

AIM AND SCOPE OF PRESENT INVESTIGATION

2.1 Aim:

The purpose of an online assessment system that uses NLP is to provide a more accurate and efficient way of evaluating a student's understanding and skills. By automating the grading process and providing immediate feedback, teachers and instructors can save time and students can identify areas of strength and weakness to adjust their learning strategies. Personalization is also possible as NLP algorithms can adapt to the individual learning style of each student and provide customized recommendations. Overall, an online assessment system using NLP can enhance the quality of education by creating a more effective, efficient, and personalized way of assessing student performance.

2.2 Scope:

The scope for an online assessment system using NLP is vast and can benefit various stakeholders in the education sector. Here are some areas where this system can be applied:

1. K-12 Education: Online assessment systems using NLP can be implemented in K-12 education to evaluate student understanding and skills in various subjects, such as language arts, science, and mathematics.
2. Higher Education: Online assessment systems using NLP can be implemented in higher education to assess student performance in courses, such as business, engineering, and medicine.
3. Requirements gathering: Before developing the system, it is important to gather requirements from stakeholders, such as educators, students, and administrators. This could involve conducting interviews, surveys, and focus groups to identify the specific needs and goals of the system.
4. Design and development: Based on the requirements, the system would need to be designed and developed. This could involve selecting appropriate NLP techniques and tools, such as text classification, sentiment analysis, and

language modeling. The system would also need to be integrated with a user-friendly interface for students and educators.

5. Testing and evaluation: Once the system is developed, it would need to be tested and evaluated to ensure that it meets the requirements and objectives. This could involve conducting pilot studies or usability testing with a sample of students and educators.
6. Deployment and maintenance: Once the system is tested and evaluated, it would need to be deployed for use. Ongoing maintenance and support would also be required, including bug fixes, updates, and user support.
7. Language Learning: Online assessment systems using NLP can be used to evaluate the language proficiency of students learning a second language.
8. Standardized Tests: Online assessment systems using NLP can be implemented for standardized tests, such as SAT, GRE, and TOEFL, to automate the grading process and provide immediate feedback.
9. Employee Training: Online assessment systems using NLP can be implemented in employee training programs to evaluate employee understanding and skills in various topics, such as compliance, safety, and customer service

2.3 Identification of need:

The need for an online assessment system arises from the challenges faced in traditional methods of assessment. Here are some reasons why an online assessment system is necessary:

- Time-saving: With traditional assessment methods, teachers and instructors spend a lot of time grading and evaluating student responses. An online assessment system using NLP can automate the grading process, saving valuable time for teachers and instructors.
- Immediate feedback: Traditional assessment methods may not provide immediate feedback to students, which can hinder their learning progress. Online assessment systems using NLP can provide immediate feedback, helping students identify areas of strength and weakness and adjust their

learning strategies accordingly.

- **Personalization:** Traditional assessment methods may not cater to individual learning styles, which can lead to suboptimal learning outcomes. Online assessment systems using NLP can adapt to the individual learning style of each student, providing customized recommendations based on their performance in previous assessments.
- **Accuracy:** Traditional assessment methods may be prone to human error and subjectivity. Online assessment systems using NLP can analyze the nuances of language, such as grammar, syntax, and meaning, to provide more accurate evaluations of student performance.
- **Accessibility:** Traditional assessment methods may not be accessible to all students, especially those who are non-native speakers. Online assessment systems using NLP can process responses in multiple languages, ensuring fairness and accessibility for all students.

Overall, the need for an online assessment system using NLP arises from the limitations of traditional assessment methods and the potential benefits that an online assessment system can offer, such as time-saving, immediate feedback, personalization, accuracy, and accessibility.

CHAPTER 3

EXPERIMENTAL OR MATERIAL AND METHODS; ALGORITHMS USED

3.1 System Design of Online Assessment System using NLP:

Designing an online assessment system using NLP involves several components, including data collection, natural language processing, evaluation and feedback, and user interface. Here is a basic system design for an online assessment system using NLP:

1. **Data Collection:** The system should collect relevant data, such as student responses and performance metrics, which can be used to evaluate student understanding and skills.
2. **Natural Language Processing:** The system should use NLP algorithms to analyse the nuances of language, such as grammar, syntax, and meaning, to provide accurate evaluations of student performance. This includes text pre-processing, feature extraction, and classification using machine learning models.
3. **Evaluation and Feedback:** The system should evaluate student responses and provide immediate feedback, including scores and personalized recommendations based on their performance in previous assessments.
4. **User Interface:** The system should have a user-friendly interface that allows students to access and complete assessments easily.
5. **Integration:** The system should integrate with existing learning management systems, such as Moodle or Canvas, to ensure a seamless user experience for both students and instructors.
6. **Security:** The system should be designed with security measures in place to protect sensitive student data and prevent unauthorized access.

3.2 Software Requirements:

OS – Windows Vista or higher version.

Visual Studio Code :- Visual Studio Code, also commonly referred to as VS Code, is a source-code editor made by Microsoft with the Electron Framework, for Windows,

Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git.

Visual Studio Code is a source-code editor that can be used with a variety of programming languages including java, JavaScript, Go, Node.js, Python, C++, C, Rust and Fortran. It is based on the Electron framework, which is used to develop Node.js web applications that run on the Blink layout engine.

Visual Studio Code employs the same editor component (codenamed "Monaco") used in Azure DevOps (formerly called Visual Studio Online and Visual Studio Team Services). Out of the box, Visual Studio Code includes basic support for most common programming languages.

This basic support includes syntax highlighting, bracket matching, code folding, and configurable snippets. Visual Studio Code also ships with IntelliSense for JavaScript, TypeScript, JSON, CSS, and HTML, as well as debugging support for Node.js.

Support for additional languages can be provided by freely available extensions on the VS Code Marketplace.

Browser :-

A web browser is a software application that is used to access the world wide web(www) or as known by everyone on the Internet. It is an interface between us and the information available on the web.

This information might be pictures, audio, videos, or some other files that are shown on our screens through a web page. The web browser can be called a client program as it requests the webserver for the information demanded by the user.

Some of the common browsers are Google, Mozilla Firefox, Safari, internet explorer, Netscape Navigator, etc. The whole process of gathering information begins with the user when it enters the URL of the desired website in the address bar.

3.3 Programming Languages Used:

Python 3.10.2:

Python is a popular high-level programming language that is widely used in a variety of applications, including web development, data analysis, scientific computing, artificial intelligence, machine learning, and more. It was first released in 1991 by Guido van Rossum and has since become one of the most popular programming languages

in the world.

Python is known for its simple and easy-to-learn syntax, which allows developers to write code quickly and efficiently. It is an interpreted language, which means that code is executed line by line, making it easier to debug and test. Python also has a large standard library and many third-party libraries and frameworks that can be used for various tasks.

Python is widely used in data science and machine learning applications because of its powerful libraries, such as NumPy, Pandas, and Scikit-learn, which make it easy to work with large datasets and perform complex analysis. Python is also popular in web development, with frameworks such as Django and Flask that make it easy to build web applications.

Overall, Python's versatility, ease of use, and powerful libraries have made it a popular choice for a wide range of applications and industries.

Flask :

Flask is a micro web framework written in Python that allows developers to quickly and easily create web applications. It is a lightweight and flexible framework that provides tools and libraries to build web applications using Python. Flask is designed to be easy to use, and it is a popular choice for developers who are new to web development.

One of the key features of Flask is its simplicity. Flask does not come with a lot of built-in functionality, but instead, it provides a set of building blocks that developers can use to build their own web applications. This allows developers to create applications that are tailored to their specific needs, without being bogged down by unnecessary features or complexity.

Flask also supports the use of templates, which makes it easy to create dynamic web pages. Templates allow developers to separate the presentation of data from the logic that generates it, making it easier to create maintainable and scalable applications.

HTML:

The Hypertext Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

CSS:

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or XML (including XML dialects such as SVG, MathML or XHTML). CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of content and presentation, including layout, colors, and fonts. This separation can improve content accessibility; provide more flexibility and control in the specification of presentation characteristics.

Enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, which reduces complexity and repetition in the structural content; and enable the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

Numpy:

NumPy is a Python library that provides support for large, multi-dimensional arrays and matrices, along with a large collection of mathematical functions to operate on these arrays. It is an essential library for scientific computing in Python and is widely used for data analysis, machine learning, and other computational tasks.

NumPy's main object is the ND array (N-dimensional array), which is a collection of elements of the same type arranged in a grid. It provides a fast, efficient way to handle large datasets and perform complex operations on them, such as mathematical operations, statistical analysis, and linear algebra operations.

In addition to its array and matrix functionality, NumPy also provides a number of other useful features, including functions for working with Fourier transforms, random number generation, and linear algebra operations. It also provides integration with other Python libraries, such as Pandas and SciPy, which makes it a versatile tool for data analysis and scientific computing.

Firestore:

Firestore Realtime Database is a cloud-hosted NoSQL database provided by Google. It is a serverless database that allows developers to store and sync data in real-time between clients and server. Firestore Realtime Database is designed to be a flexible and scalable solution for storing and retrieving data for web and mobile applications. One of the key features of Firestore Realtime Database is that it allows developers to store data in JSON format. This makes it easy to work with data, as JSON is a widely used data format that is supported by many programming languages. Additionally, the database is schemaless, which means that developers can store data in a flexible and dynamic way without having to define a fixed schema.

Firestore Realtime Database also provides powerful security features, allowing developers to secure their data using Firestore Authentication and Firestore Security Rules. With Firestore Authentication, developers can authenticate users and restrict access to data based on user roles and permissions. Firestore Security Rules provide fine-grained control over data access, allowing developers to define rules that specify who can read and write data.

PythonAnywhere(Hosting):

PythonAnywhere is an online integrated development environment (IDE) and web hosting service (Platform as a service) based on the Python programming language. It provides in-browser access to server-based Python and Bash command-line interfaces, along with a code editor with syntax highlighting.

Program files can be transferred to and from the service using the user's browser.

Web applications hosted by the service can be written using any WSGI-based application framework.

FuzzyWuzzy(module):

FuzzyWuzzy module is quite effective in differentiating the two strings referring to the same thing, but they are written slightly differently. Sometimes we need a program that can automatically identify wrong spelling. It is a process of finding strings that match a given pattern. It uses **Levenshtein Distance** to calculate the difference between sequences. This library can help map databases that lack a common key, such as joining two tables by company name, and these appear differently in both tables.

3.4 FOLDER STRUCTURE :-

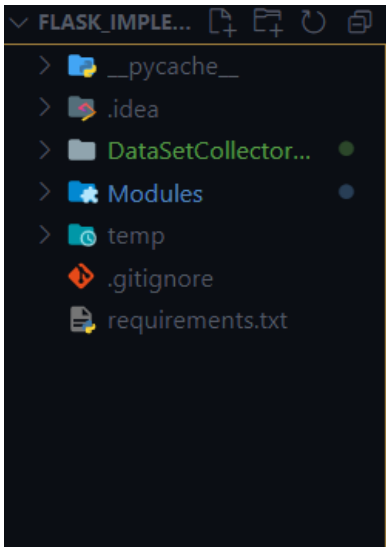


FIG 3.4.1

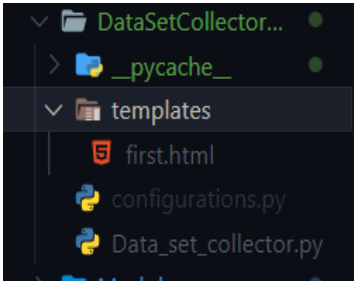


FIG 3.4.2

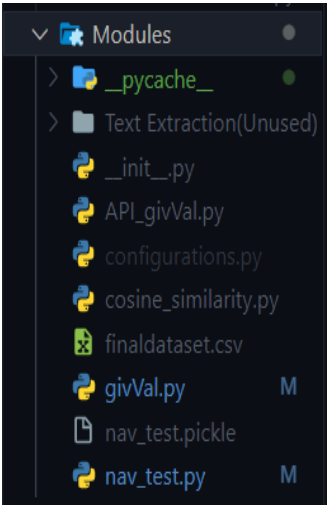


FIG 3.4.3

3.5 SYSTEM ARCHITECTURE DIAGRAM:

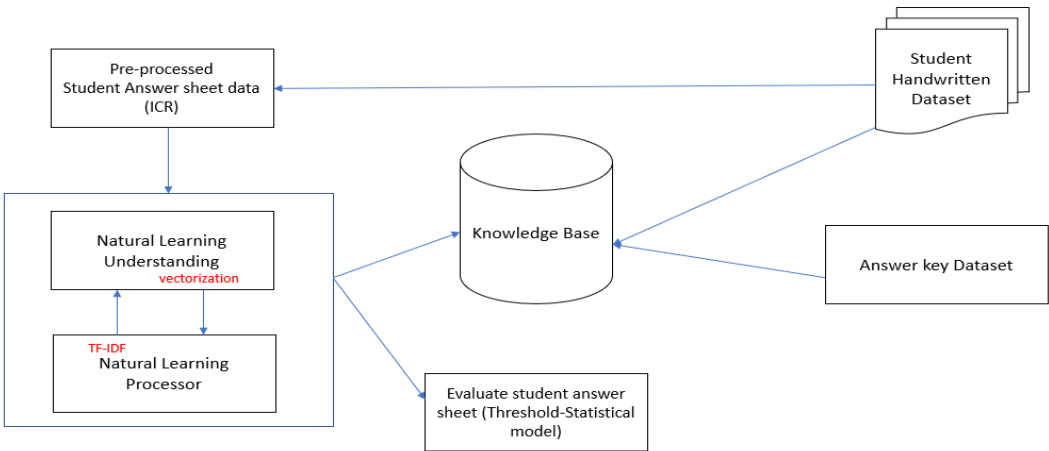


FIG 3.5.1

CHAPTER-4

RESULT AND DISCUSSION, PERFORMANCE ANALYSIS

4.1 RESULT AND PERFORMANCE ANALYSIS:

The evaluation of student answers using NLP result offers several benefits over traditional evaluation methods, including increased accuracy, efficiency, and consistency. By using NLP algorithms, the system can analyze the nuances of language, such as grammar, syntax, and meaning, to provide more accurate evaluations of student performance. This can reduce the subjectivity and bias associated with traditional evaluation methods, ensuring fairness and consistency in the evaluation process.

Moreover, the evaluation of student answers using NLP result can provide immediate feedback to students, allowing them to identify areas of strength and weakness and adjust their learning strategies accordingly. This can lead to improved learning outcomes and higher student engagement.

Overall, the evaluation of student answers using NLP result is a powerful tool for improving the assessment process and enhancing the learning experience for students. By providing accurate, efficient, and consistent evaluations, it can help students achieve their full potential and reach their academic goals.

4.2 Future Scope of the Project:

The future scope of an online assessment system using NLP is vast and can be expanded in several directions. Here are some potential areas of future development:

1. **Integration with Learning Management Systems:** The system can be integrated with Learning Management Systems (LMS) to provide a more comprehensive learning experience. This integration can enable the system to access student data, including their learning history and performance, and provide personalized recommendations and assessments.
2. **Multilingual Support:** The system can be expanded to support multiple

languages, enabling students from different regions and backgrounds to take advantage of the benefits of the system.

3. Adaptive Learning: The system can be further developed to offer adaptive learning, where the system adapts to individual student learning styles and provides customized recommendations and assessments.
4. Expanding Subject Matter: The system can be expanded to cover a wider range of subject matter, beyond traditional academic subjects such as math and English, to include more specialized fields such as law, medicine, and engineering.
5. Advanced NLP Algorithms: The system can be further developed to incorporate more advanced NLP algorithms, such as sentiment analysis, semantic analysis, and natural language generation, to provide more sophisticated assessments and feedback.
6. Collaboration Tools: The system can be expanded to include collaboration tools, such as group assessments, peer reviews, and discussion forums, to enable students to learn and collaborate with their peers in a more interactive and engaging way.
7. Enhanced Security: The system can be expanded to include enhanced security measures, such as biometric authentication and data encryption, to ensure the security and privacy of student data.
8. Gamification: The system can be further developed to include gamification elements, such as badges, rewards, and leaderboards, to incentivize student engagement and motivation.
9. Real-time Analytics: The system can be expanded to include real-time analytics, allowing educators to monitor student performance and progress in real-time and make necessary adjustments to their teaching strategies.
10. Adaptive Testing: The system can be further developed to include adaptive testing, where the difficulty level of the assessment adjusts based on the student's performance, enabling students to be challenged at their appropriate level.

By incorporating these features into an online assessment system using NLP, we can create a more personalized, engaging, and effective learning experience for students. These features can also help educators to better understand student performance and adapt their teaching strategies to meet the unique needs of each student.

CHAPTER-5

SUMMARY AND CONCLUSION

5.1 SUMMARY:

The online assessment system using NLP will be designed to automate and optimize the assessment process, making it more efficient and effective for both students and educators. The system will use various NLP techniques, such as text classification, sentiment analysis, and language modeling, to analyze student responses and provide feedback. This will allow educators to identify common mistakes and misconceptions, as well as provide personalized feedback to students to help them improve.

In addition to improving assessment accuracy and reducing grading time, the system will also provide valuable insights into student performance and progress. By analyzing student responses over time, the system can monitor student progress and identify areas where additional support may be needed. This can help educators provide targeted interventions to help struggling students and improve overall learning outcomes.

To ensure the privacy and security of student data, the system will comply with relevant data protection regulations and implement appropriate security measures. This may include encryption of data in transit and at rest, role-based access controls, and regular data backups.

5.2 CONCLUSION:

In conclusion, the development of an online assessment system using natural language processing (NLP) has the potential to revolutionize the way assessments are conducted and evaluated. The system will use various NLP techniques to analyze student responses, provide personalized feedback, and monitor student progress over time. By automating and optimizing the assessment process, the system will improve assessment accuracy, reduce grading time, and provide valuable insights into student learning.

Furthermore, Python's powerful libraries and tools for NLP and data analysis make it an ideal choice for the development of the system. With appropriate data privacy and security measures in place, the online assessment system using NLP can help educators improve overall learning outcomes and provide more effective and efficient assessments for their students.

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- <https://www.npmjs.com/package/minjs>

APPENDIX

A.SCREENSHOTS:

Student Page:

The screenshot shows a web browser window with a dark header bar. The address bar displays "127.0.0.1:5000". The page content is centered and contains three questions, each followed by a text input field. The questions are:

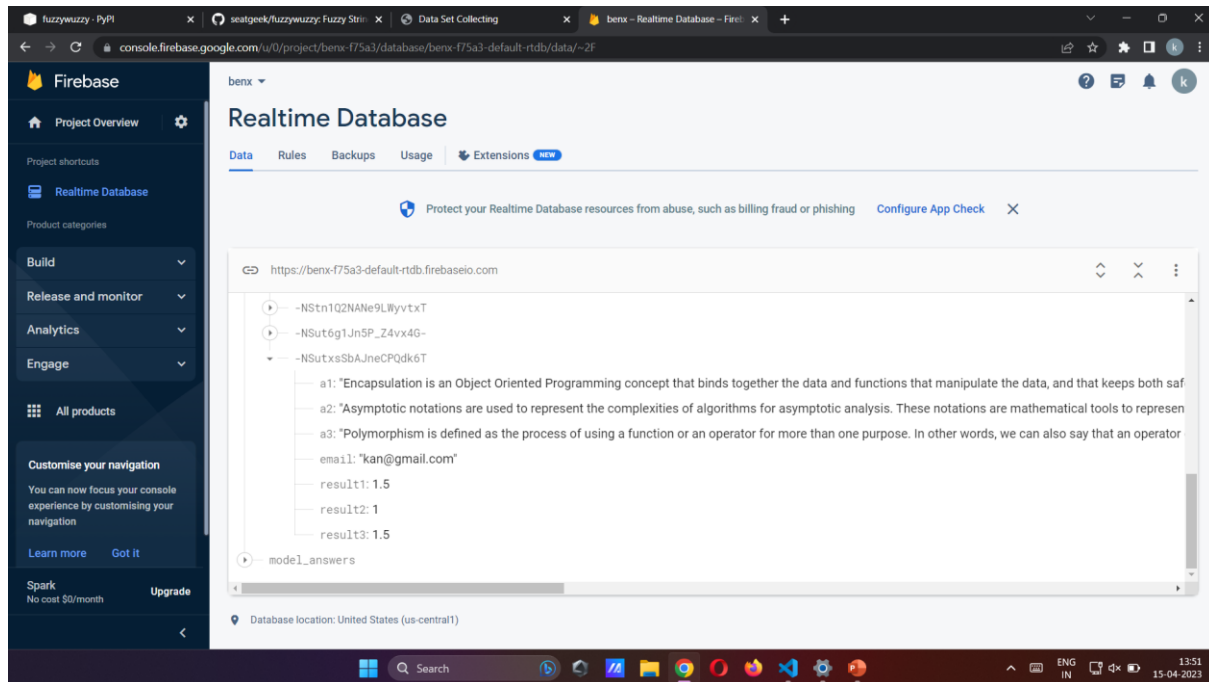
- Question1 :
What is Encapsulation? Give Example.
- Question2 :
Define Asymptotic Notation and list its types.
- Question3 :
What is Polymorphism ? List its Types.

Below the third question, there is a horizontal line, followed by another instance of the question and input field:

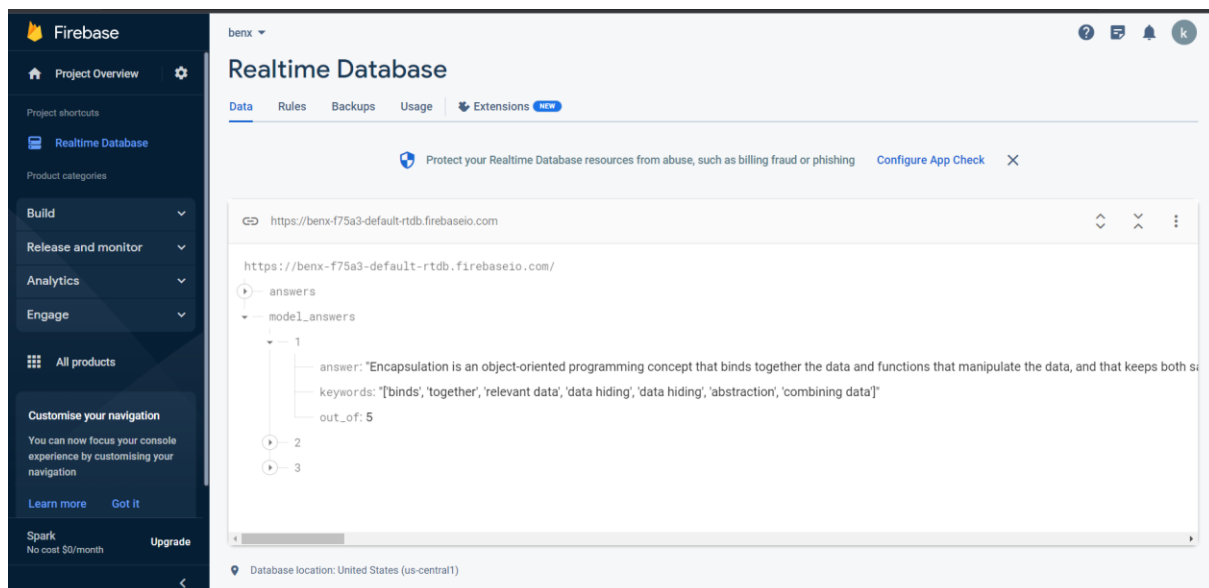
Question3 :
What is Polymorphism ? List its Types.

At the bottom of the page, there is a form with an "Email ID*" input field and a blue "Submit" button.

Firestore Database:



Model Answers:



Student Response:

```
-NSutxsSbAJneCPQdk6T
  a1: "Encapsulation is an Object Oriented Programming concept that binds together the data and functions that manipulate the data, and that keeps both safe"
  a2: "Asymptotic notations are used to represent the complexities of algorithms for asymptotic analysis. These notations are mathematical tools to represent"
  a3: "Polymorphism is defined as the process of using a function or an operator for more than one purpose. In other words, we can also say that an operator"
  email: "kan@gmail.com"
```

Student Answers Grading:

```
-L7mptYdYLpLWl05hVFF
  a1: "Defined as wrapping of data under a single unit."
  a2: "Asymptotic notation are used to analyze an algorithm. Types are big o big omega big theta."
  a3: "Ability to take more than one form. Types static and dynamic"
  email: "kulkarnipavan@gmail.com"
  result1: 1.5
  result2: 0.5
  result3: 1
```

Evaluation(Terminal):

```
vaibhavminiyan@gmail.com
It is an object oriented concept related to the data hiding. Abstraction of the program is the encapsulation. It shows the relevant data. It is the mechanism of binding the data, and the function that use them.
Keywords : 3
Grammar : 1
Token Set Ratio : 5
class[1-9] : [3]
Marks : 1.5
Time complexity analysis. Analyze the algorithm. Running time complexity analyse. Algorithms growth rate. It also measures the efficiency of the algorithm.
Keywords : 5
Grammar : 1
Token Set Ratio : 4
class[1-9] : [3]
Marks : 1.5
```

Transformer Model:

Sentence Transformer:

22

Final Similarity Score:

```
[ ] sen_embeddings2 = model.encode(text2)

[ ] from sklearn.metrics.pairwise import cosine_similarity

[ ] cosine_similarity(sen_embeddings1,sen_embeddings2)
array([[0.9286523]], dtype=float32)

[ ]
```

92% similar