**Task 7: Essay Scoring System**

**Introduction**This Automated Essay Scoring System (AESS) is a Flask-based web application that processes essays, analyzes them for grammatical accuracy, relevance, and structure, and assigns a score based on predefined criteria. The system leverages various natural language processing (NLP) tools such as Spacy for Named Entity Recognition (NER) and LanguageTool for grammar checking.**Background**Automated essay scoring has been explored to reduce the workload of human raters and provide fast, consistent feedback to students. This system focuses on offering an objective scoring mechanism that considers grammar, length, and essay coherence, designed specifically for educational institutions or students who want instant essay feedback.**Learning Objectives**

* Understand how to integrate grammar checking and NLP tools to evaluate essay quality.
* Learn how to preprocess text and extract key information for scoring.
* Develop skills to create web applications using Flask that process user input and provide real-time feedback.

**Activities and Tasks**

* Essays are processed by converting them to lowercase and stripping unnecessary whitespace.
* Essays are evaluated for grammatical accuracy using LanguageTool.
* Named entities like people, organizations, or places are identified to ensure the essay's relevance to the main concept.
* Essays are scored based on their length, grammar, and coherence to the main topic, using a predefined rubric.

**Skills and Competencies**

* Understanding how to create a simple web application that processes form inputs and provides output.
* Utilize NLP models such as Spacy for entity recognition and LanguageTool for grammar checking.
* Learn to clean and prepare data, which is crucial for text-based applications.

**Feedback and Evidence**

* The application provides instant feedback on the essay's score, along with an explanation of how the score was derived.
* Users receive a summary of grammatical errors and how they impacted the final score.
* The system analyzes whether the essay relates to its main concept, penalizing off-topic submissions.

**Challenges and Solutions**

* One challenge is ensuring that the essay input matches an entry in the preprocessed dataset. This was solved by applying preprocessing techniques like lowercasing and stripping whitespace to ensure compatibility.
* Essays may vary significantly in grammar accuracy. The solution was to adjust scoring dynamically based on the number of grammatical errors found using LanguageTool.
* Ensuring that the essay remains on-topic was tackled by implementing Named Entity Recognition (NER) to extract relevant concepts and assess essay relevance.

**Outcomes and Impact**The AESS provides a fast and scalable way to assess essays, saving educators time and providing consistent scoring. It helps students receive immediate feedback and understand how their writing is evaluated based on length, grammar, and topic relevance.**Conclusion**This Automated Essay Scoring System is an efficient and practical solution for grading essays. By leveraging NLP models and grammar-checking tools, the system ensures consistency and objectivity in scoring, offering immediate feedback to users. Future improvements could include expanding the scoring criteria and enhancing the system's ability to handle more diverse types of essays.