P1

HEC DEGREE REQUIREMENTS

Muhib Hussain Siddiqi (21K-3089)
Fahad Salman (21K-3103)

1. Introduction:

The project aims to validate the degree completion requirements for a student pursuing a Bachelor of Science in Computer Science based on the rules proposed by the Higher Education Commission (HEC) Pakistan. The goal is to ensure that the student has successfully completed the necessary courses, fulfilling credit hour requirements.

2. Project Demonstration:

The project demonstrates its functionality by taking a student's transcript in CSV format and checking if the specified degree completion requirements have been met. It leverages a rule-based approach.

3. Problem Analysis:

The main challenges addressed by the project include:

- Designing a system to validate degree completion based on a set of rules and credit hour requirements.
- Handling course prerequisites and ensuring that the completion of one course allows progression to subsequent connected courses.
- Implementing a robust solution to accurately calculate and verify credit hours.

4. Problem Specification:

The project deals with the following key specifications:

- Differentiating between general education, domain courses, and elective courses.
- Managing prerequisites, ensuring that incomplete prerequisites prevent the progression to subsequent courses.
- Distributing courses across eight semesters, adhering to the proposed curriculum structure.

5. Implementation and Testing:

The project is implemented in Python, utilizing data structures and libraries such as pandas for CSV file handling. The implementation involves:

- Reading and processing student transcripts and course information from CSV files.
- Implementing functions to check prerequisites, count credit hours, and verify degree completion.
- Distributing courses across eight semesters based on the proposed curriculum.
- Testing involves validating the system against known cases, ensuring accurate credit hour calculations, and proper handling of prerequisites.

6. Performance Evaluation:

Performance is evaluated based on:

- Accuracy in validating degree completion against the specified rules.
- Efficiency in processing and analyzing large datasets.
- Proper handling of course prerequisites and credit hour calculations.

7. Results:

The project successfully validates degree completion for students based on the proposed HEC rules. The results include clear indications of whether a student has met the credit hour requirements and completed all necessary courses.

8. Conclusion:

In conclusion, the project provides a reliable and automated method for verifying degree completion in accordance with the HEC guidelines. The rule-based approach ensures accurate validation, and the system effectively handles the complexities of course prerequisites and credit hour calculations.