**Project Title:**-  
BERT-Based Adaptive Learning System for Personalized Education

**Group Members:- (BSCS 8TH A)**

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**Tech Stack:-**  
MERN (MongoDB, Express, React, Node.js) + Python (Flask/FastAPI) + BERT (NLP Model)

**Project Overview:-**  
This system will provide a personalized learning experience for students by analyzing their responses, learning speed, and engagement. It will use BERT, a natural language processing (NLP) model, to understand and evaluate student answers. The system will adapt learning content accordingly:

* If a student struggles with a topic, the system provides simpler explanations and extra exercises.
* If a student excels, the system offers advanced content and challenges.
* Real-time feedback will help improve learning efficiency.

The system integrates with a MERN-based web platform:

* **BERT Model (Python)**: Analyzes student responses and determines learning paths.
* **Backend (Node.js)**: Manages student data and learning recommendations.
* **Frontend (React)**: Displays personalized lessons and tracks student progress.
* **Database (MongoDB)**: Stores student performance data and learning history.

**Objectives/Goals:-**

1. Provide personalized learning paths for students based on their responses.
2. Analyze student answers using BERT for better assessment.
3. Store and track learning progress to improve recommendations.
4. Develop an adaptive system that adjusts content based on performance.

**Use Cases:-**

1. **Adaptive Learning**: Adjusts difficulty level based on student progress.
2. **Performance Analysis**: Tracks student learning trends and provides feedback.
3. **Personalized Content:** Suggests learning materials tailored to individual needs.

**Requirement Gathering:-**

1. **Software:**
   * **Frontend**: React for user interface.
   * **Backend**: Node.js and Express for API and data management.
   * **Database**: MongoDB to store student performance and recommendations.
   * **AI Model**: Python (Flask/FastAPI) with BERT for NLP-based learning analysis.
2. **Features:**
   * AI-powered student response analysis.
   * Personalized lesson recommendations.
   * Progress tracking and performance analytics.
   * Interactive and adaptive learning experience.