**Video Streaming Platform: Project Outline**

Summary

Develop a scalable and robust video streaming platform featuring a modern frontend, RESTful backend API, real-time analytics, and flexible video storage options.

**Scope**

1. Video uploading and streaming.
2. User authentication and authorization.
3. Real-time analytics for video playback events.
4. Designed for both local and cloud-based deployment.

**Challenges**

1. Achieving low-latency video streaming.
2. Scaling components independently based on load.
3. Secure storage and transmission of video data.
4. Real-time analytics with Kafka integration.

**Tech Stack**

1. **Frontend**: Vanilla JS and HTML
2. **Backend API**: NodeJS with Express
3. **Streaming Service**: Rust or Go
4. **Transcode Video Storage**: ??
5. **User Information Database**: Postgres
6. **File Storage**: Local filesystem
7. **Analytics**: Apache Kafka
8. **Containerization**: Docker
9. **Orchestration**: Kubernetes

**Basic Architecture**

* **Frontend Pod**
* **Backend API Pod**
* **Video Stream Controller**
* **Transcoded Video Storage**
* **Video Meta Data Storage**
* **Transcode Queue**
* **Transcode Workers**
* **Raw Video Storage**
* **User Information Storage**

**Extra Features**

1. Adaptive bitrate streaming.
2. Content recommendation based on user behavior.
3. Kafka-based real-time analytics dashboard.