Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	29 October 2023
Team ID	NM2023TMID03194
Project Name	Subscribers Galore: Exploring the World's Top YouTube Channels
Maximum Marks	4 Marks

Technical Architecture:

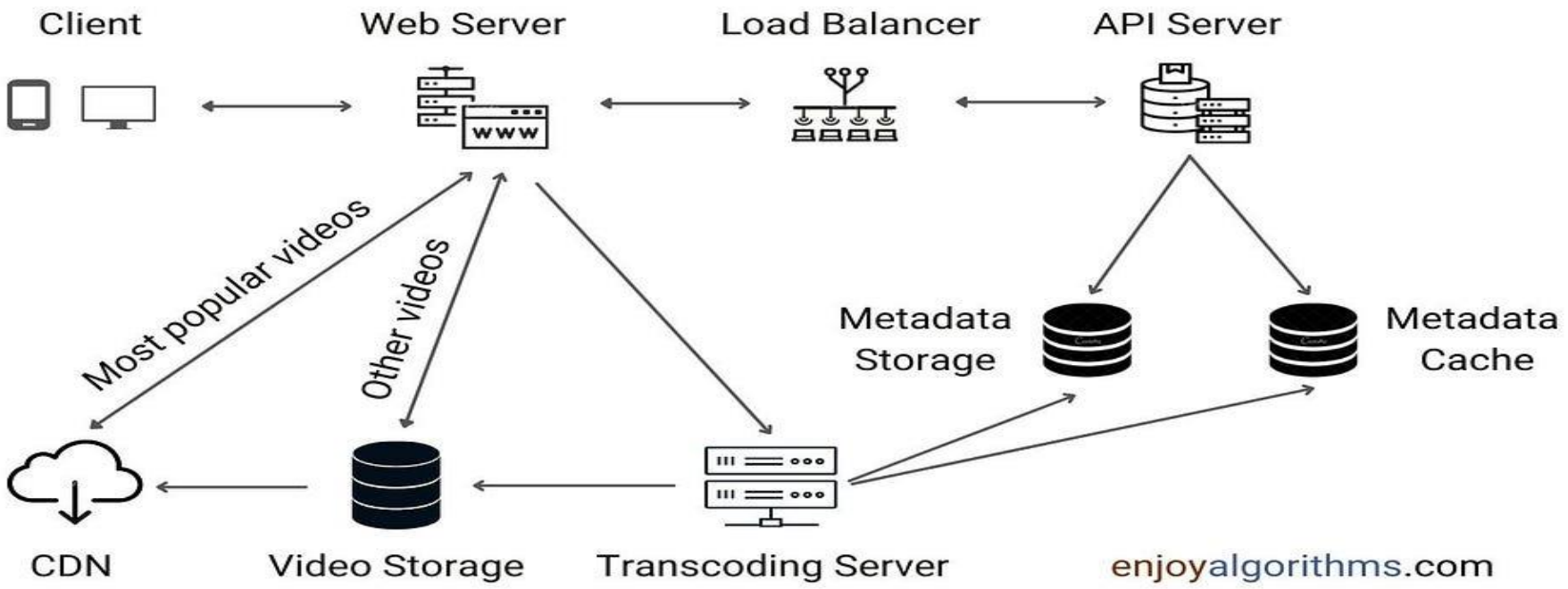

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	Objective Definition	Clearly define the purpose and goals	Document editors like Google Docs or Microsoft Word.
2.	Data Collection	Gathering raw data about channels, videos, and user engagement.	Web scraping tools (e.g., Beautiful Soup, Scrapy), YouTube API, Google Sheets or Microsoft Excel for raw data collection.
3.	Analysis Tools	Software and platforms to analyze collected data.	Statistical software like R or Python (Pandas, NumPy), content analysis tools like NVivo.
4.	Content Categorization	Grouping channels based on content type.	Manual sorting or clustering algorithms in Python or R
5.	Engagement Metrics Analysis:	Dive deep into engagement metrics.	MData visualization tools like Tableau, Power BI, or Python's Matplotlib/Seaborn.
6.	Aesthetic & Production Evaluation:	Assessing quality and style of videos.	Manual assessment, user surveys using tools like SurveyMonkey.
7.	Monetization Strategies Analysis:	Investigate revenue sources.	Manual research, interviews, or YouTube Analytics.
8.	SEO & Metadata Analysis:	Study discoverability tactics	SEO tools like TubeBuddy or vidIQ, keyword analysis tools like Google Keyword Planner
9.	Audience & Community Analysis:	Understand viewer demographics and behavior	YouTube Analytics, Google Analytics (for associated websites), social media analytics tools.
10.	Feedback Mechanisms:	Gather feedback or insights.	Object Recognition Model, etc.

11.	Documentation & Reporting:	Compile comprehensive reports.	Report writing tools like LaTeX, Microsoft Word, or Google Docs

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	User Dashboard:	A central hub for users to view summarized data and key insights.	Front-end frameworks like React or Angular; back-end platforms like Node.js or Django.
2.	Real-time Data Fetching:	Pulling data in real-time from YouTube..	YouTube API, asynchronous programming using JavaScript's Async/Await or Python's asyncio.
3.	Data Visualization:	Graphs, charts, and other visual tools to showcase channel performance metrics.	D3.js, Chart.js, or libraries in React like Recharts.
4.	Content Categorization and Filtering:	Allows users to filter channels based on content type, location, language, etc.	Database query optimization using SQL databases like PostgreSQL or NoSQL databases like MongoDB.
5.	Engagement Metrics Analyzer:	Evaluates likes, views, comments, shares, etc., to gauge audience engagement	Data analysis libraries like Pandas in Python
6.	Trend Prediction:	Predicts upcoming trends based on historical data.	Machine learning frameworks like TensorFlow or PyTorch. Competitor Comparison: