Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User based collaborative filtering is also called user-user collaborative filtering.It is a type of recommendation system algorithm that uses user similarity to make product recommendations.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	The application of recommender systems is wide ranging with them being used by companies to recommend movies,music,learning materials.	Java / Python
3.	Application Logic-2	Television programs,books,documents,houses,business partners,websites,conferences.	IBM Watson STT service
4.	Application Logic-3	Tourism scenic spots, products,financial services,learning materials,etc.	IBM Watson Assistant
5.	Database	It is an artificial intelligence or AI algorithm,usually associated with machine learning,that uses Big data to suggest or recommend additional products to consumers.	MySQL, NoSQL, etc.
6.	Cloud Database	The most commonly used recommendation algorithm follows the "People like you,like that"logic.	IBM DB2, IBM Cloudant etc.
7.	File Storage	Memory based methods use user rating historical data to compute the similarity between user or items.	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	A recommendation engine is a type of data filtering tool using machine learning algorithms to recommend the most relevant items to a particular user or customer.	IBM Weather API, etc.
9.	External API-2	It operates on the principle of finding patterns in consumer behavior	Aadhar API, etc.

		data,which can be collected implicitly or explicitly.	
10	Machine Learning Model	Machine learning based recommendations systems are powerful engines using machine learning algorithms to segment customers based on their user data and behavioral patterns.	Object Recognition Model, etc.
11	Infrastructure (Server / Cloud)	Predict embeddings for each input image.	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Software that analyzes available data to make suggestions for something that a website user might be interested.	Technology of Opensource framework
2.	Security Implementations	If a security threat occur between the user and the store access path the intruder might modify the user ratings.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Scalability is a key factor when determining which type of recommender systems to use.	Technology used
4.	Availability	The item availability is the average likelihood of recommendation over all users who have item as a target.	Technology used
5.	Performance	The use of additional diagnostic metrics and visualizations can offer deeper and sometimes surprising insights into a model's performance.	Technology used