1. **Can you explain the difference between user-based and item-based collaborative filtering?**

**Ans**. User-based vs Item-based Collaborative Filtering

**User-based**: This approach identifies users who are similar to the target user based on their past. It then recommends items that similar users have liked. If we are looking for similarities based on the user then it is known as user-based collaborative filtering.

**Item-based**: This method focuses on finding items that are similar to items the target user has liked in the past. It then recommends these similar items. For example, if you liked a particular movie, it would recommend other movies with similar characteristics (e.g., same genre, director, actors).

If we are looking for the similarities based on the item-based then it is known as item-based collaborative filtering.

\*\* The key differences we will be looking during the item-based collaborative filtering and user-based collaborative filtering are

Similarity calculation, Recommendation generation and scalability. \*\*

1. **What is collaborative filtering, and how does it work?**

**Ans.** Collaborative filtering is a technique used in recommendation systems to predict what a user might like based on their past behaviour and the behaviour of other users. It's based on the idea that users who have agreed in their preferences in the past are likely to agree again in the future.

The concept of collaborative filtering is nothing but looking at the similarities and filtering out the similar things is known as collaborative filtering.

Collaborative filtering is just one type of recommendation system. Other approaches include content-based filtering and hybrid methods that combine collaborative filtering with other techniques.

**How does collaborative filtering works:**

1. **Data Collection:** The system collects data on user interactions with items. This could include ratings, purchases, views, clicks, etc.
2. **Similarity Calculation:** The system calculates the similarity between users or items based on their interaction patterns.
3. **Recommendation Generation:** The system generates recommendations for the target user based on the preferences of similar users or the similarity of items.