

Week 5

Saturday, January 1, 2022 6:03 PM

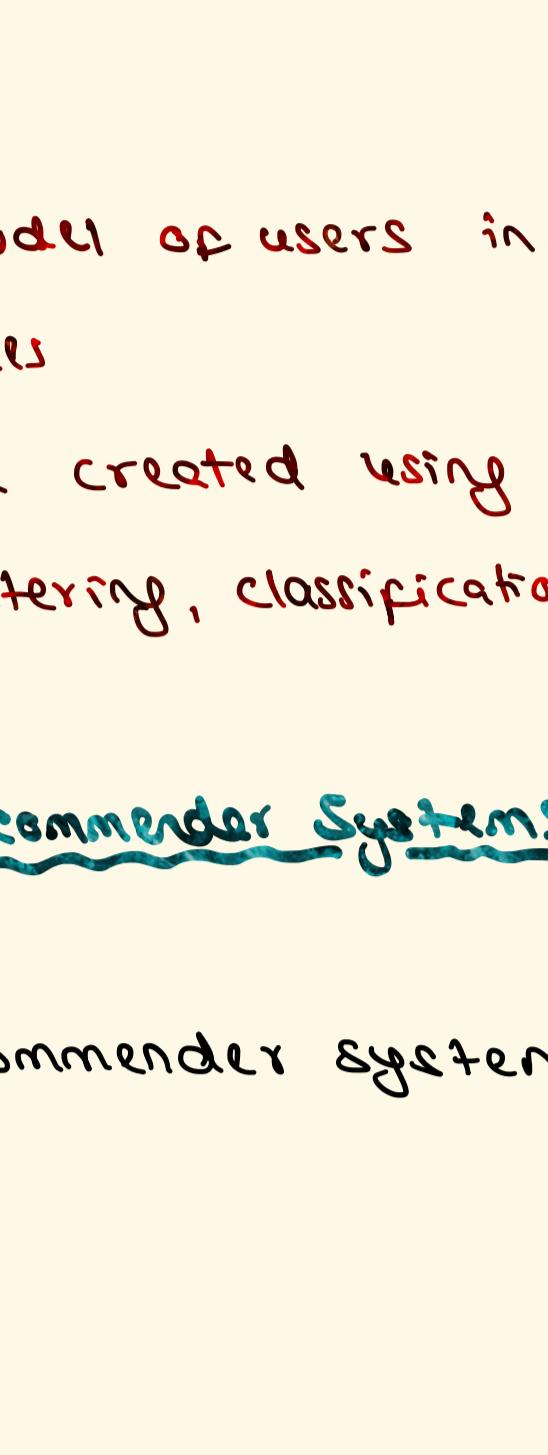
CONTENT-BASED RECOMMENDATION ENGINES

* Intro to Recommender Systems

- What are recommender systems?
 - Recommender systems capture the pattern of people's behavior and use it to predict and use it to predict what else they might want or like.

• Applications

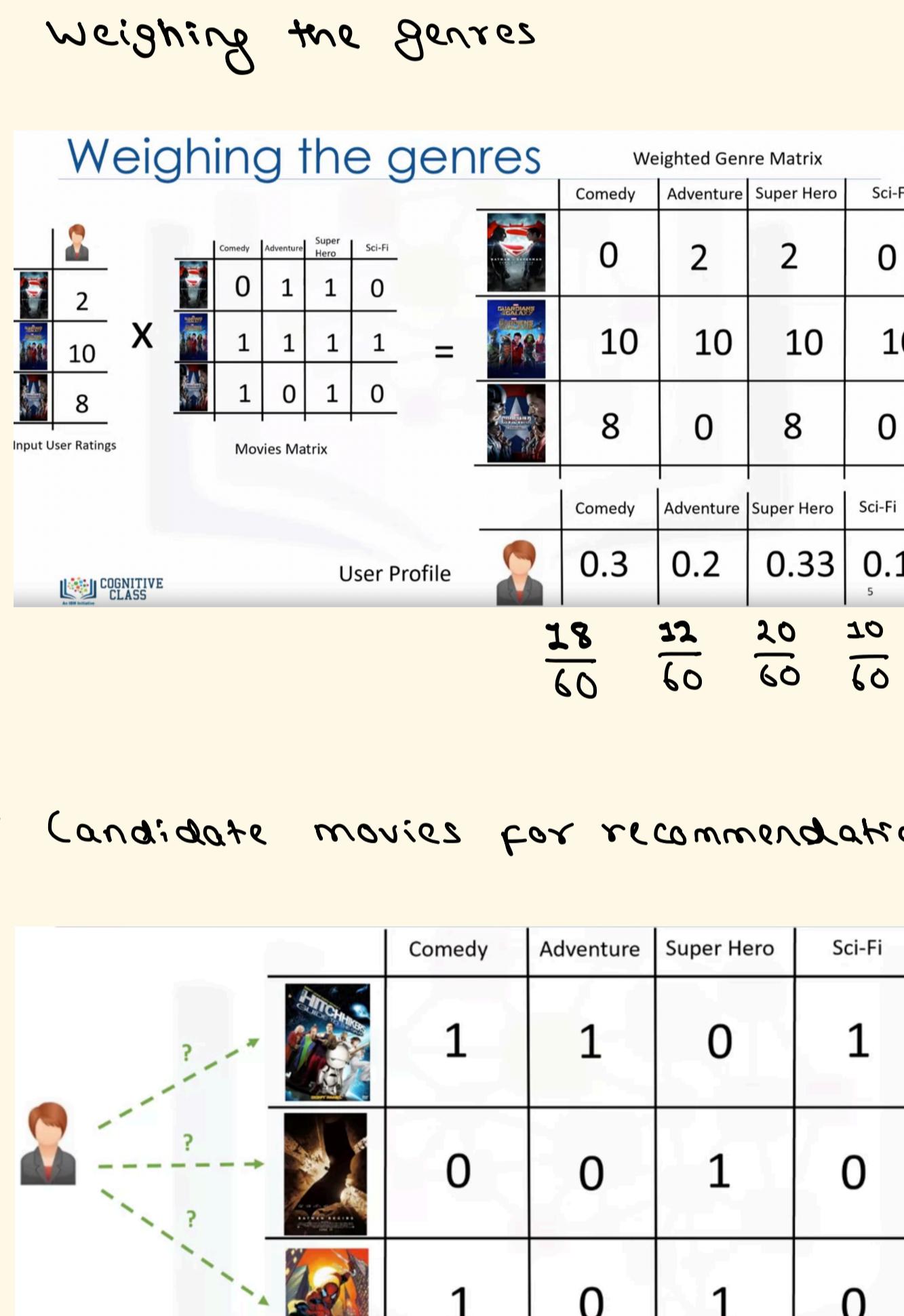
- What to buy?
 - E-commerce, books, movies, beer, shoes
- Where to eat?
- Which job to apply to?
- Who you should be friends with?
 - LinkedIn, Facebook, ...
- Personalize your experience on the web
 - News platforms, news personalization



• Advantages of recommender systems

- Broader exposure
- Possibility of continued usage or purchase of products
- Provides better experience

• Two types of recommender systems

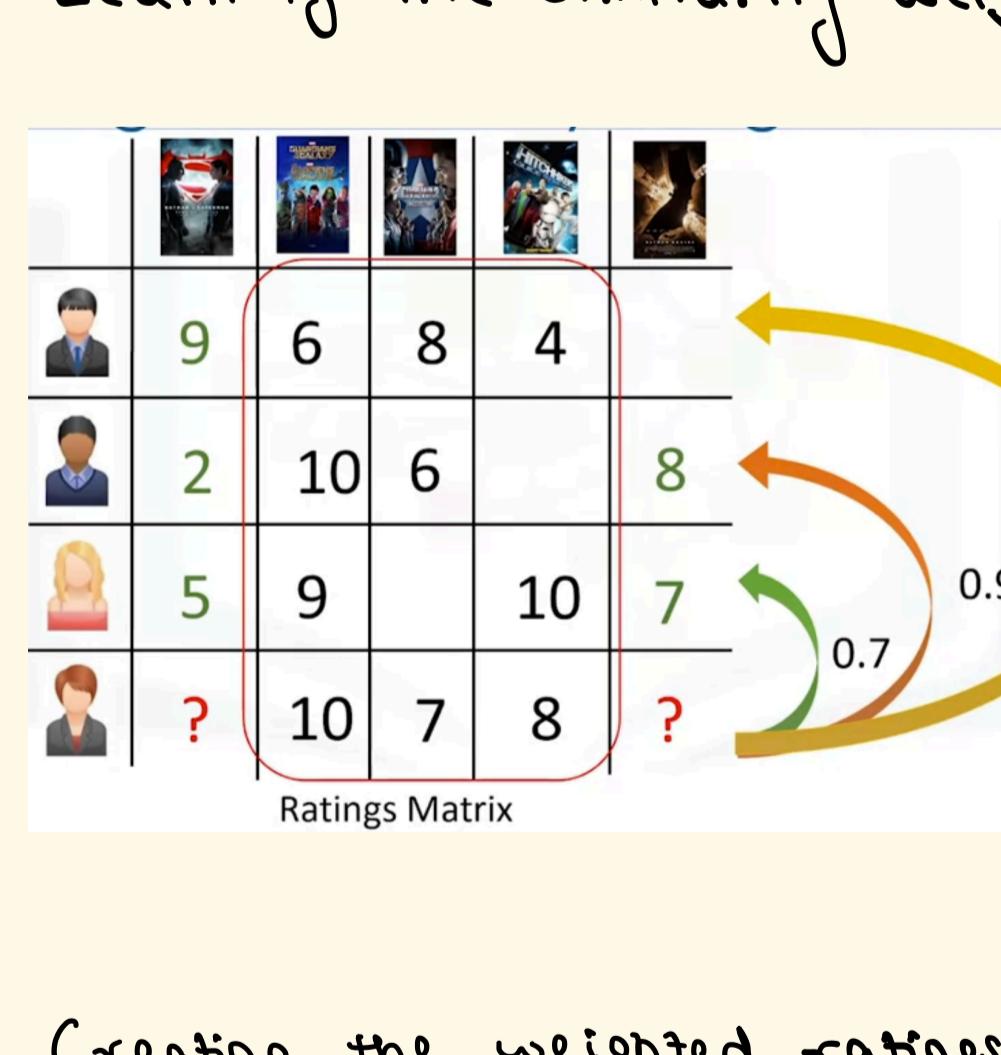


• Implementing recommender systems

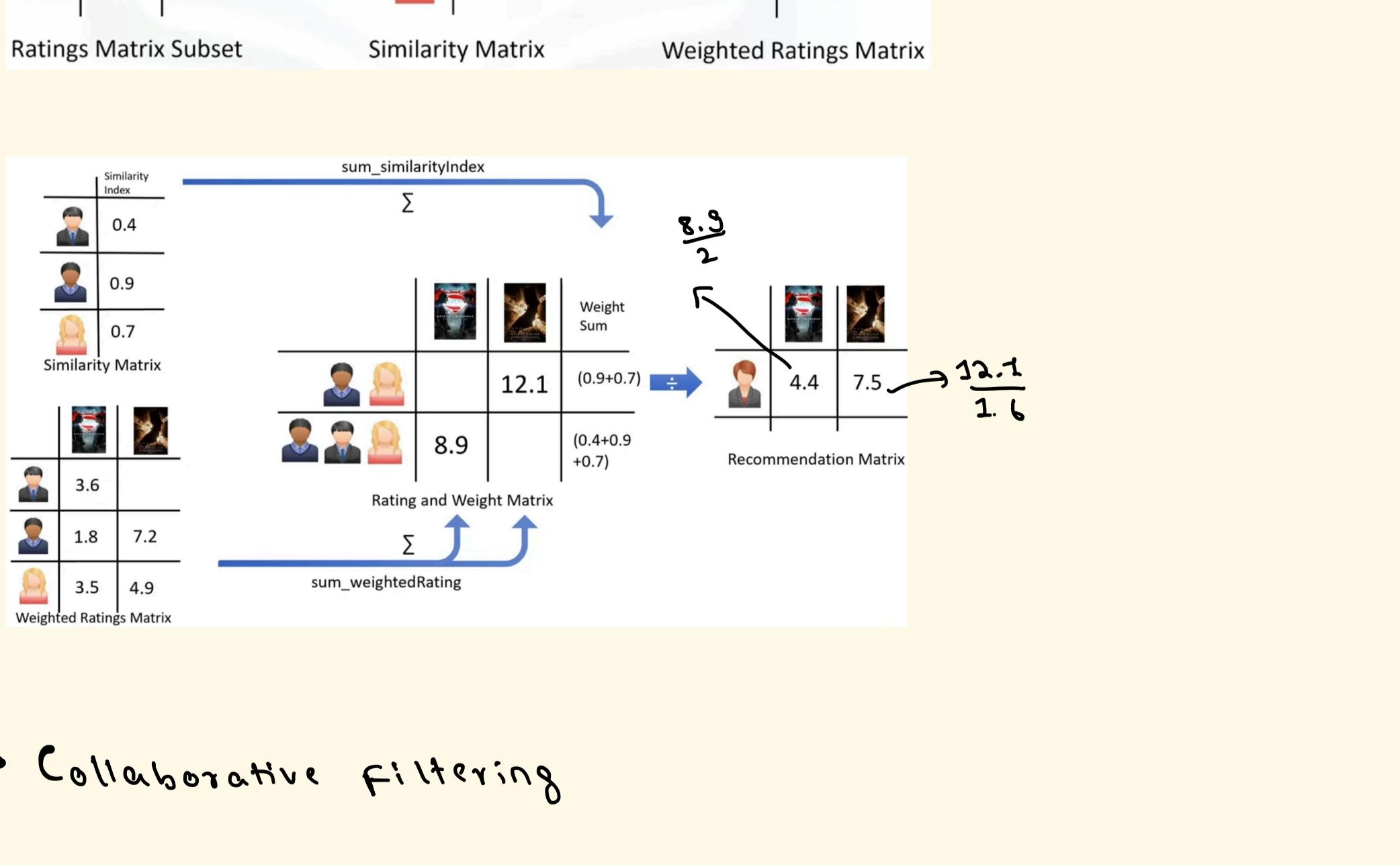
- Memory-based
 - Uses the entire user-item dataset to generate a recommendation
 - Uses statistical techniques to approximate users of items e.g., Pearson Correlation, Cosine Similarity, Euclidean Distance, etc.
- Model-based
 - Develops a model of users in an attempt to learn their preferences
 - Models can be created using ML techniques like regression, clustering, classification, etc.

* Content-based Recommender Systems

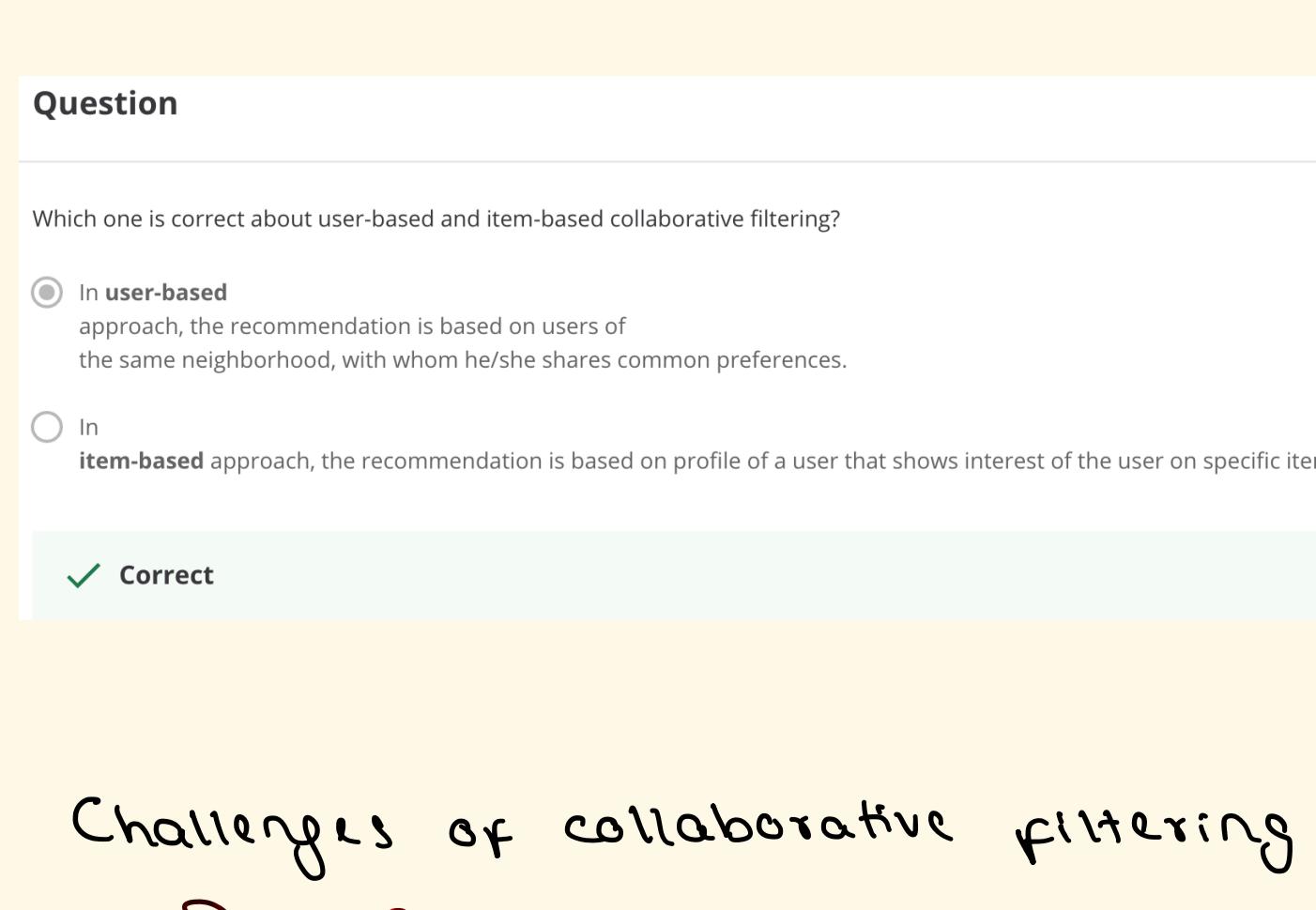
• Content-based recommender systems



• Weighing the genres



• Candidate movies for recommendation



• Finding the recommendation



* Collaborative Filtering

- User-based collaborative filtering
 - Based on user's neighbourhood
- Item-based collaborative filtering
 - Based on item's similarity

• User-based collaborative filtering

• User ratings matrix

	Item 1	Item 2	Item 3	Item 4	
User 1	9	6	8	4	
User 2	2	10	6		8
User 3	5	9	10	7	
Active user	?	10	7	8	?

• Learning the similarity weights

• Creating the weighted ratings matrix

• Collaborative filtering

Question

Which one is TRUE about Content-based recommendation systems?

- Content-based recommendation system tries to recommend items to the users based on their profile.

Correct

- In content-based approach, the recommendation process is based on similarity of users.

- In content-based recommender systems, similarity of users should be measured based on the similarity of the actions of users.

• Challenges of collaborative filtering

- Data Sparsity
 - Users in general rate only a limited number of items
- Cold start
 - Difficulty in recommendation to new users or new items
- Scalability
 - Increase in number of users or items

Question

Which one is correct about user-based and item-based collaborative filtering?

- In user-based approach, the recommendation is based on users of the same neighborhood, with whom he/she shares common preferences.

- In item-based approach, the recommendation is based on profile of a user that shows interest of the user on specific item.

Correct

• Challenges of collaborative filtering

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