Collaborative Filtering Lab Document

User	Item1	Item2	Item3	Item4	Item5
Alice	5	3	4	4	5
User1	3	1	2	3	3
User2	4	3	4	3	5
User3	3	3	1	5	4
User4	1	5	5	2	1

1. Create a dataframe that stores the ratings of the users for items.
2. Remove one of the Alice ratings from the dataset.
3. Write a function calculate_pearson_correlation that takes two lists of ratings and returns the Pearson correlation coefficient.
4. Test the function with sample input to ensure it works correctly.
5. Calculate the average rating for each user.
6. Write a loop to go through each user and calculate the similarity with the active user.
7. Combine similarities and ratings to predict the score for an unrated item for the active user.
8. Integrate the Pearson correlation function within the rating prediction process.
9. Use the predictive function to estimate ratings for a user-item pair where the actual rating is known for validation.
10. Compare the predicted rating with actual rating and calculate the error.