

## Problem 1

The final output of problem 1 is shown below:

```
# Finding the expected rating for item 508 for user 1
similar_user_ids = top10_similar['user_id'].values
item_508_ratings = u_matrix.loc[similar_user_ids, 508].dropna()

if not item_508_ratings.empty:
    expected_rating = item_508_ratings.mean()
    print('The expected rating for item 508 is', expected_rating)
else:
    print('No expected rating')
```

The expected rating for item 508 is 4.2

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## Problem 2

The final output of problem 2 is shown below:

```
# Which user would a recommender system suggest this movie to?
if cos_sim_200 > cos_sim_15:
    print('Recommender system would suggest movie 95 to user 200 based on Cosine Similarity')
else:
    print('Recommender system would suggest movie 95 to user 15 based on Cosine Similarity')

if dist_200 < dist_15:
    print('Recommender system would suggest movie 95 to user 200 based on Euclidean Distance')
else:
    print('Recommender system would suggest movie 95 to user 15 based on Euclidean Distance')
```

Recommender system would suggest movie 95 to user 200 based on Cosine Similarity  
Recommender system would suggest movie 95 to user 200 based on Euclidean Distance

Based on both results of Cosine Similarity and Euclidean Distance, recommend system would suggest movie 95 to user 200.