##################################### Task 1#######################################

***Visualizing the Movie Lens Dataset ratings for 1st user Visualizing part of the matrix***

Graphical user interface, text, application

Description automatically generated***Scatter chart

Description automatically generated***

Chart, histogram

Description automatically generatedChart, histogram

Description automatically generated***A histogram plot of no. of ratings per user*** ***A histogram plot of no. of ratings per movie***

Table

Description automatically generated with medium confidence***A sparse Rating Matrix Display for first 10 users*** ***A normalized Rating Matrix for first 10 users***

Table

Description automatically generated with medium confidence

***Visualization of sparse matrix ratings and normalized ratings and binarized ratings***

Chart, scatter chart

Description automatically generatedA picture containing scatter chart

Description automatically generated

***A histogram plot of normalized ratings per user and per movie***

Chart, histogram

Description automatically generated

***The above-normalized ratings are in quite a sync with prior knowledge of user behavior because most users don’t give feedback in writing.***

***Graphical user interface, text

Description automatically generatedDesigned a recommender using user-based collaborative filtering from the recommender lab package. Also evaluated the recommender based on Accuracy performance matrix:***

***On sampling with different lengths the recommender system is performing badly which is the lowest though, also if we look into the splitting, we have used the method as cross-validation which usually performs better than random split, need to dig further***

Text

Description automatically generated***Evaluating the user-based recommender for top 1,3,5,10,15and 20 recommendations and checking the confusion matrix for the same***

***Plotting the ROC curve for the above user-based recommender system:***

Chart, line chart, scatter chart

Description automatically generated

***From the ROC curve, it’s obvious that the recommender system is making a random guess. This cannot be suggested as a good recommender system.***

Text, letter

Description automatically generated***Predicted the top ten movies using the above recommender system for three users***