

# Recommender System – Collaborative Filtering

## Exercise sheet

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For this exercise, we will be using real-world data from Last.fm<sup>1</sup> to see how Collaborative Filtering can be used to recommend artists to users.

### 1 Dataset

We start with the data from Table 1. The table shows the play counts for each band in the data set of the 10 users – assume empty cells to correspond to no (0) plays for the user-artist pair. The number of times a user has played a song by an artist is used as an implicit rating (rather than asking them to explicitly rate the artists).

	The Beatles	Radiohead	Coldplay	Pink Floyd	Muse
User 1	39655				
User 2		903	962		44076
User 3		489	6051		47468
User 4	14975			31957	
User 5	31526			5882	
User 6					42970
User 7	33685	2304		2351	
User 8		18652	31121		690
User 9	4		118857		
User 10			168		44036

We are next given the ratings for two users for whom we want to make recommendations:

	The Beatles	Radiohead	Coldplay	Pink Floyd	Muse
User 21	3344	?	?	22458	?
User 101	?	6293	2286	?	5156

### Tools

To generate recommendations to the two users, we will use the excel spreadsheet cf-extended.xlsx. The spreadsheet contains the data set as well as an implementation of user-based and item-based collaborative filtering.

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<sup>1</sup><http://ocelma.net/MusicRecommendationDataset/lastfm-360K.html>