In the following sections, we are going to deal with some significant matrices for recommender systems.

The first we are going to talk about is the item content matrix or ICM.

We have seen that one important input to a recommender system are the list of items and their attributes.

One possible way to mathematically describe these is by using the item content matrix or ICM.

Rows in the item content matrix represent items and columns represent attributes.

In their simplest form, the values in the item content matrix are in binary format, either zero or one.

If an item contains a specific attribute, the corresponding value in the matrix will be set to one, zero, or otherwise.

In this example, the ICM describes that Tom Cruise is an attribute for the movie Top Gun.

In fact, Tom Cruise was the leading actor of the movie.

In a more useful scenario, each number in the item content matrix represents how much important

an attribute is to characterize an item and can assume any positive value.

For instance, Stan Lee made a cameo appearance in the movie, The Avengers.

As such, the corresponding value in the ICM should be set to a value lower than the value we

use to describe leading actors.