

# ENTITY-RELATIONSHIP (ER) DIAGRAM

## EXAMPLE I - DOCTORS IN SPACE - SPACE MEDICAL SYSTEM

### PURPOSE

The purpose of this exercise is to design an ER diagram for a database that will be able to handle the storage of data that is necessary/useful to those working in the medical bay of a starship. The goal is to keep things simple – there may be many more things stored in a similar database if ever implemented in real life – but we will try to focus on the essentials based on the provided requirements, which have been moved to the next page so they can all be shown at once. This document will be available on Blackboard, in case you would like to download it and follow along.

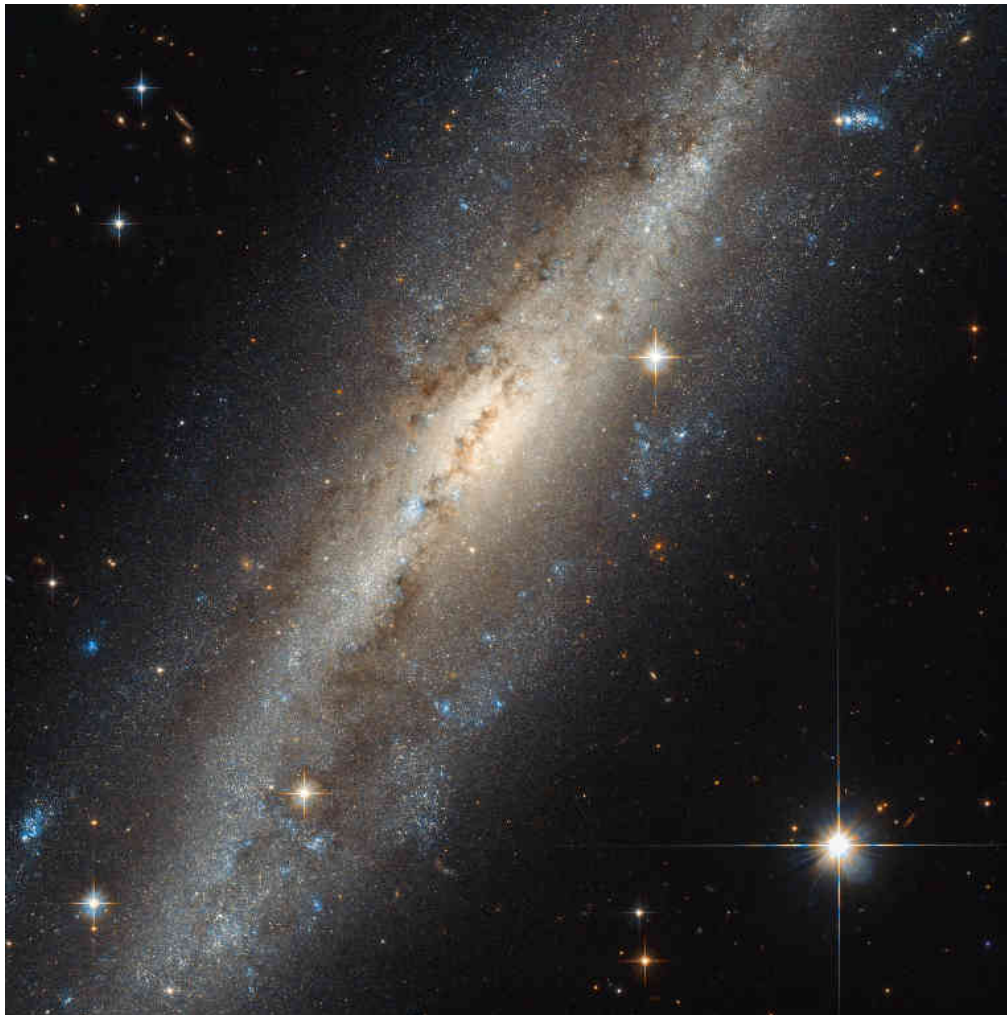


Figure 1: A galaxy. Which will be more complicated? Its star chart? Or our ER diagram?

## REQUIREMENTS

This database will be used by the medical personnel of the starship's sick bay, as well as by epidemiologists that are interested in tracking where and how diseases are contracted. To serve this purpose, we will be tracking which diseases were contracted by which crew members and when. To track where diseases are spreading, we will also want to keep a record of which planets each crew member visited, and when they were there.

Some types of data that need to be available from this database (requirements) are listed below

- Every time a ship's physician treats a crew member, a record must be stored of what illness was treated, and what treatment was used.
- Crew members may have allergies to certain treatments that need to be avoided. The doctor needs to be able to find this information in our database.
- Whenever a crew member visits a planet, information must be stored on the period of time they spent there.
- Information on planets that the starship has visited or may visit should be stored. This information will include a the planet's name and location. If there are diseases known to be endemic to the planet, that information should be available.
- For each disease that is known, we need to be able to store a description of the symptoms and a list of effective treatments.
- For each type of treatment, a list of possible side effects caused by that treatment should be available.
- The captain of the starship should be able to list the names of all of the crew members that a given physician has treated.
- It needs to be possible to generate a list of the names of all of the planets that a given crew member has visited, along with the diseases common on those planets and recommended treatments for those diseases.
- For a given disease, it should be possible to list the treatments for that disease, with a list of all of the crew members that have allergies to each of those treatments.
- The system should be able to produce the following statement for each crew member:  
Crew Member has been treated for Disease using Treatment by Physician at Time on Date