# ASSIGNMENT AIR-2

**Roll No:** 41205

**Problem Statement:**

Implement any one of the following Expert System:

1. Medical Diagnosis of 10 diseases based on adequate symptoms.

2. Identifying birds of India based on characteristics.

**Objective:**

1. Understand the disease classification problem
2. Create an expert system to classify diseases

**Outcome:** One will be able to write an expert system for classification problems

**Pre-requisites:**

1. 64-bit Linux OS
2. Programming Languages: Python

**Hardware Specification:**

1. x86\_64 bit
2. 2/4 GB DDR RAM
3. 80 - 500 GB SATA HD
4. 1GB NIDIA TITAN X Graphics Card

**Software Specification:**

1. Ubuntu 14.04

# Theory:

* Artificial Intelligence is a piece of software that simulates the behaviour and judgement of a human or an organization that has experts in a particular domain is known as an expert system.
* It does this by acquiring relevant knowledge from its knowledge base and interpreting it according to the user’s problem.
* The data in the knowledge base is added by humans that are expert in a particular domain and this software is used by a non-expert user to acquire some information.
* It is widely used in many areas such as medical diagnosis, accounting, coding, games etc.
* An expert system is AI software that uses knowledge stored in a knowledge base to solve problems that would usually require a human expert thus preserving a human expert’s knowledge in its knowledge base.
* They can advise users as well as provide explanations to them about how they reached a particular conclusion or advice. Knowledge Engineering is the term used to define the process of building an Expert System and its practitioners are called Knowledge Engineers.
* The primary role of a knowledge engineer is to make sure that the computer possesses all the knowledge required to solve a problem.
* The knowledge engineer must choose one or more forms in which to represent the required knowledge as a symbolic pattern in the memory of the computer.
* Characteristics of an Expert System:
  + Human experts are perishable, but an expert system is permanent.
  + It helps to distribute the expertise of a human.
  + One expert system may contain knowledge from more than one human experts thus making the solutions more efficient.
  + It decreases the cost of consulting an expert for various domains such as medical diagnosis.
  + They use a knowledge base and inference engine.
  + Expert systems can solve complex problems by deducing new facts through existing facts of knowledge, represented mostly as if-then rules rather than through conventional procedural code.
  + Expert systems were among the first truly successful forms of artificial intelligence (AI) software.
* The expert system used for the purpose was a neural network.

**Output:**

Symptom severity

Graphical user interface, application

Description automatically generated

Sample dataset

A screen shot of a computer

Description automatically generated with low confidence

Training process

Text

Description automatically generated with low confidence

Final accuracy



**Conclusion:** We have implemented an expert system to classify diseases.