TASK-3: DECISION TREE

REQUIREMENTS:

You are required to implement Decision Tree using ID3 algorithm. Your program can assume that all features/ attributes take only discrete values (no real-valued attributes), the data contains no missing attributes.

Use Kaggle cardiovascular disease Dataset (download) to train a model and test the performance using accuracy metric. Make any needed data preprocessing to increase model performance.

Create and train another decision tree instance using scikit-learn library (make sure it uses same algorithm - **ID3**). Compare between both models taking into consideration time needed for training, time for prediction, and model performance.

THIS TASK SHOULD BE DONE INDIVIDUALLY

Consider the following dataset, where we want to predict if a student will get an A in the course given the five attributes on the left.

Early registration	Finished homework II	Senior	Likes Coffee	Liked The Last homework	A
1	1	0	0	1	1
1	1	1	0	1	1
0	0	1	0	0	0
0	1	1	0	1	0
0	1	1	0	0	1
0	0	1	1	1	1
1	0	0	0	1	0
0	1	0	1	1	1
0	0	1	0	1	1
1	0	0	0	0	0
1	1	1	0	0	1
0	1	1	1	1	0
0	0	0	0	1	0
1	0	0	1	0	1

Build ID3 decision tree manually using the above dataset, use it as a reference to test your implementation.

YOU SHOULD SUBMIT:

1. Your manually built tree showing all calculation results and rules used (no need to write down all calculation steps).
2. Your implementation along with clear documentation to each method and how to use your code.