Tasks for Lab-5

25-02-2026

You have a friend who spends every Saturday afternoon doing exactly one of the following four activities:

- Shopping
- Watching a movie
- Playing tennis
- Staying in their room

You have observed your friend's behaviour over 11 weekends. For each weekend, you recorded the following attributes and built the following data table:

- **Weather:** Sunny, Windy, or Rainy
- **Parents' Visit:** Visit or No-visit
- **Financial Status:** Rich (has money) or Poor (borrowed cash)
- **Upcoming Exam:** Exam or No-exam
- **Activity:** One of the four activities listed above

#	Weather	Parents	Cash	Exam	Decision
1	sunny	visit	rich	yes	cinema
2	sunny	no-visit	rich	no	tennis
3	windy	visit	rich	no	cinema
4	rainy	visit	poor	yes	cinema
5	rainy	no-visit	rich	no	stay-in
6	rainy	visit	poor	no	cinema
7	windy	no-visit	poor	yes	cinema
8	windy	no-visit	rich	yes	shopping
9	windy	visit	rich	no	cinema
10	sunny	no-visit	rich	no	tennis
11	sunny	no-visit	poor	yes	tennis

Tasks

1. **Decision Tree Construction**
   Build decision tree models using ID3, CART, C4.5 algorithm to predict your friend's Sunday activity.
2. **Dataset Extension**
   Add new instances to the dataset so that the information gain of two selected attributes becomes equal (ignoring decimal values).
3. **Two-Attribute Decision Tree & Analysis**
   Using two attributes, construct a decision tree and analyse the results. Comment on which attribute has a more significant impact on the model's performance