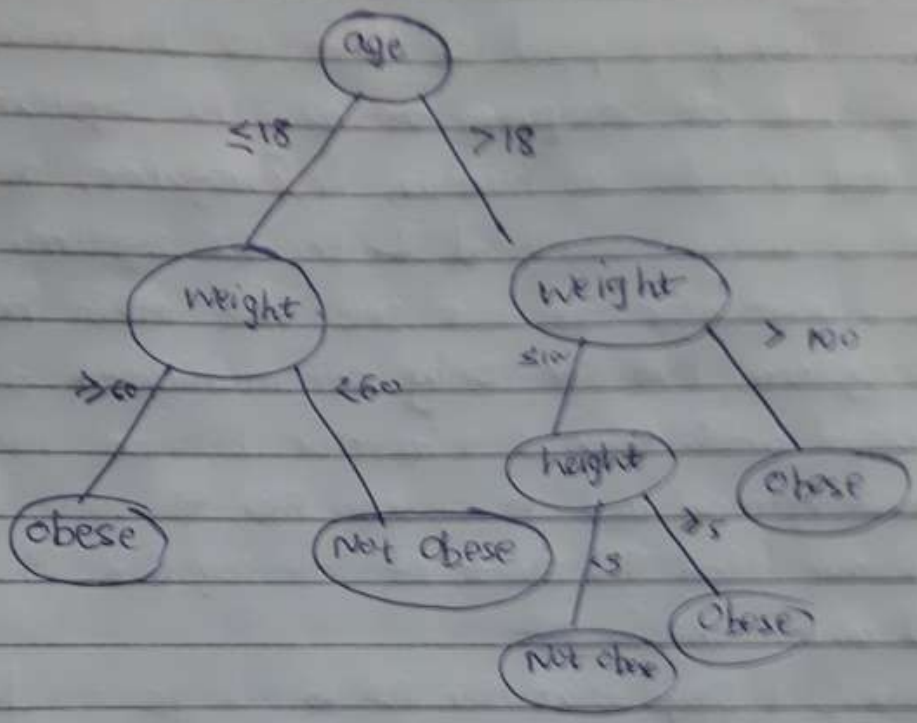
- The algorithm for generating a decision tree for the given dataset "data" is as follows

Data : Dataset for decision tree
Target-feature : The feature for which we want to predict
Features : The set of all remaining features of the dataset

Algo → ID3 (Data, Target-feature, Features):

1. If all examples are +ve then create a node with label of positive and return
2. If all examples are -ve then create a node with ~~of~~ label of negative and return
3. If ~~attribut~~ Features is empty then return a node with label = most common value of Target-Feature, and return
4. Otherwise do
   - 4.1 A ← Find ~~Create~~ a feature from "Features" which best classifies the dataset
   - 4.2 For every possible value(v) of A,
     - 4.2.1 Add a new branch below current ~~root~~ node for A = v
     - 4.2.2 Create a new dataset D' when A = V
     - 4.2.3 If D' is empty
       - 4231 Then below this newly created branch add a new label node with label having most common value of Target feature in D'
       - 4.2.3.2 Otherwise below this branch add the subtree : ID3 (D', Target-feature, Features - A)

Ex. Weight, height, age are features here.



1) What is Feldman's Hundred step rule? How do you differentiate b/w Brain vs Computer model of mind? Explain it with the help of common questions concerned with it.

- Feldman's hundred step rule:

  - Human reactions are phil-physiologically constrained to require roughly 100 serial steps to calculate.

- Brain vs computer models of brain:

  - Brain uses chemicals to transmit information, while computer uses electricity.
  - Brain is constructed of neurons and synapses.
  - Computer is made of IC, transistors, diodes, capacitors etc
  - Information stored in Brain is of type electromechan & electronic impulses.
  - Whereas in computer it is of type numeric and symbolic form.
  - Brain is self-organized structure.
  - Computer is pre-programmed structure.

4) Write a short note on finite Markov Decision Process with proper explanation of the terms used in it.

- Markov decision process model contains
  - set of all possible states
  - set of all possible actions
  - A real-valued reward function, may be sparse or dense reward
  - set of all possible models.

- Markov property states that action on a state depends on the current state only not on the previous states.
- A RL problem that satisfies the markov property is called markov decision process.

- If there is only a finite number of states and actions then it is called a finite MDP (Markov Decision Process)

State: State contains various set of tokens where a agent can be in

Model: Model or transition model tells about the next state while a action is token in a particular state. It is represented as $T(s, a, s')$ where by taking action a in state s, transition T will take it to state s'.

Action: Set of all possible action an agent can take.

Reward:

Policy: Po

Reward: Reward can be negative or positives for taking an action or being in a state.

Policy: Policy is the solution of MDP

2) Explain Lloyd's Cautions. What was Fodor's attack then how did Chalmers defend it?

→ Lloyd's Cautions:

1) First Caution
- He cautions to not take Brain Metaphor too seriously
- If we create an exact brain like structure on computer, this model is in essence the wiring diagram of the brain.
- The goal of cognitive neuroscience as a "principled interpretation of our understanding of the brain that transfigures it into an understanding of the mind".
- Lloyd's meant that this procedure amounts no more to an understanding of mind "than photocopying an alien script amounts to translating it".

2) Second ~~Actio~~ Caution:

- "Just because we can describe the behaviour of a comp. system with cognitive Lang. does not make the system cognitive and certainly does not make the system mind.

→ Fodor's Attack

- He said that thoughts have composite structure, which he refers to as compositionality.
- Put in linguistic terms, words are composed to form phrases, phrases are composed to form sentences, sentences to form paragraphs and so on.

- Thoughts may be expressed linguistically, logically or in some other form, but can be composed to form new thoughts. Compositionality is an essential feature of thought. Cognitive processes are sensitive to the structure of the thoughts they process.

→ Chalmer's Defense

- He asserts that despite Fodor's arguments to the contrary, connectionist models can process in a structure sensitive way
- He distinguishes two versions of compositionality, the concatenative version that Fodor has in mind and a functional version. In the concatenative version, two symbol tokens are composed by concatenating them, that is, by placing one txt to other.
- It allows you to operate holistically on functionally composed representations that is without first proceeding through the step of extraction.
- Cognitive models must use operations other than composition and extraction to go beyond mere implementations of symbolic AI models.