Computer Science

CompSci 367 S1 C
- ASSIGNMENT ONE -

The work done on this assignment must be your own work. Think carefully about any problems you come across, and try to solve them yourself before you ask anyone else for help. Under no circumstances should you work together with another student on any code used in assignments. Any code you reuse from CLIPS sample code **MUST** be referenced.

Assessment

Due: Monday 30th March 2009 11.00 am
Worth: 10% of total 367 marks

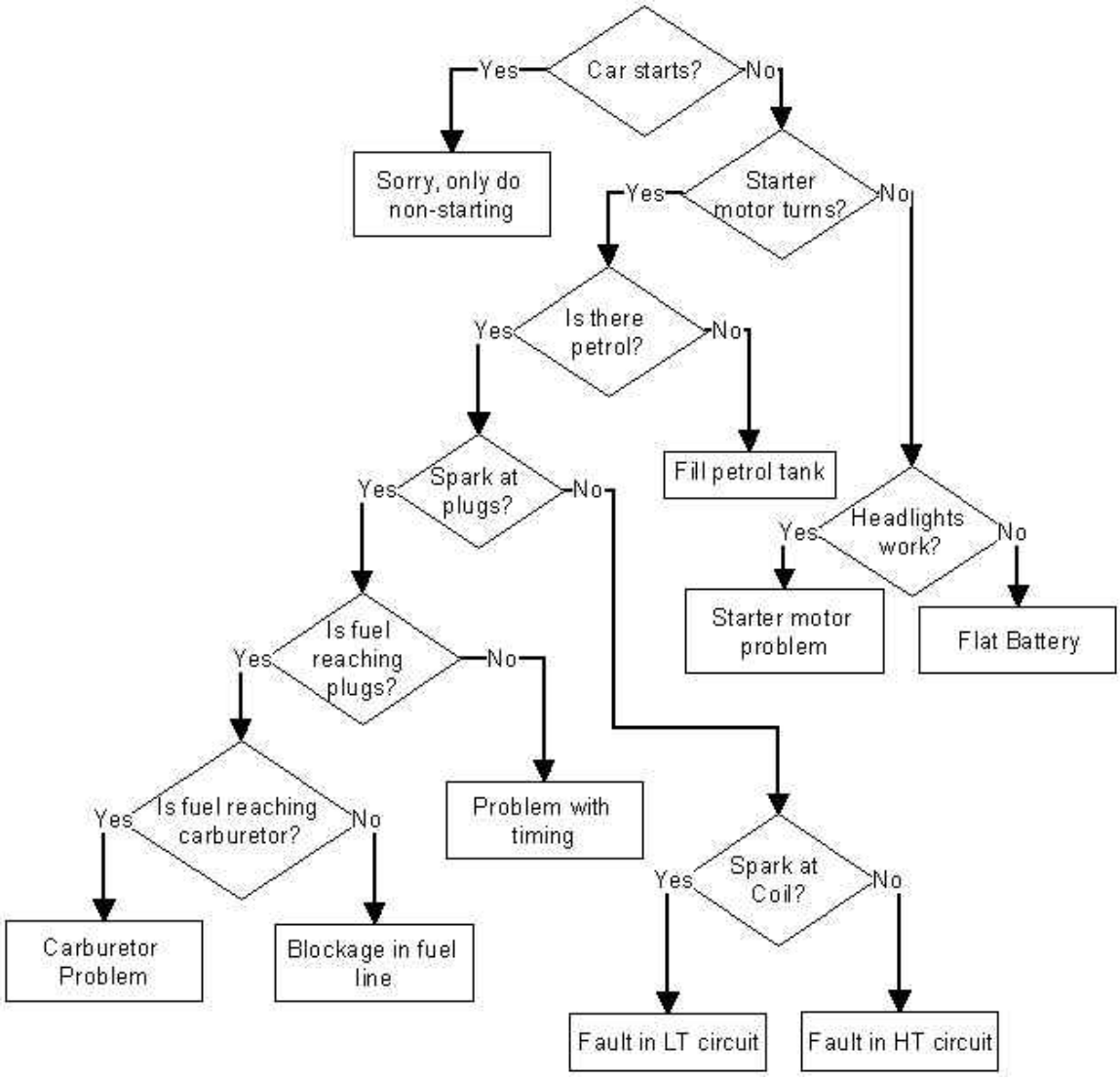
Aim of the assignment

This assignment is intended for you to model knowledge using an intermediate knowledge representation (decision trees) and gain knowledge of a declarative programming language (CLIPS). Additionally, this assignment is aimed at solving problems declaratively rather than algorithmically.

Create a small decision tree for a simple diagnostic task of your choice. Simple computer diagnostics such as: “I can’t connect to the Internet” or “I can’t print” are suitable tasks. As a guide your decision tree should contain approximately 10 decision nodes.
If you cannot develop a decision tree of your own you may use the decision tree below that diagnoses why a car will not start (note: you will loose 2 marks for not creating your own decision tree).

Using your decision tree as your knowledge model create a simple rule-based expert system in CLIPS to implement your diagnostic system.

Input and output should be via the CLIPS console only (i.e., no marks will be given for the interface)



MAKE SURE YOUR CODE WORKS CORRECTLY!

Submit your decision tree and assignment code via the Computer Science Assignment Dropbox before the deadline.
https://adb.ec.auckland.ac.nz/adb/

Marking Gudelines (marked out of 10)

1. Specify problem domain (0.5 mark)
- Can the marker tell what problem you're solving; without having to step through your decision tree. This could've been either on the tree diagram, or as a comment in the code, or in some form of banner displayed when running the code.

2. Produce a correct decision tree (1 mark)
- That is for at least one decision node, its children are also decision nodes.

3. Size of decision tree is adequate (4 marks)
- The briefing specified *about* 10 nodes, and gave an example with 8. So 0.5 marks for every node less than 8.

4. Do something "extra" (0.5 marks)
- If you had not just used the example tree.
- If you had coded the knowledge base in an "interesting" data structure
- If your decision tree was actually a graph (without infinite loops)
- If your decision tree didn't just have binary choices
- ...????

5. Created your own decision tree (2 marks)
- If you did not just use the example tree given.

6. Your expert system accurately reflectes your decision tree diagram (2 marks)
- Is every part of the knowledge base reachable?
- Do the tree diagram and knowledge base say (essentially) the same thing?

7. Failure to reference any sources that helped your code (-4 marks)
- Did you just take/use a example CLIPS code, and change it - without saying so. Comments in the code such: "Adapted from auto.clp", "Parts copied from stove.clp", "Modified from examples given" would all be sufficient, it just needs to be clear.
- No one should have to tell you to do this; refer (Section 2.1 & 3):
http://www.auckland.ac.nz/uoa/fms/default/uoa/about/teaching/policiesprocedures/docs/conductcoursework.pdf