

CompSci.367

KNOWLEDGE ENGINEERING

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 this assignment. Any code you reuse from the CLIPS sample code **MUST** be referenced.

Assignment

Due: Friday 21st October 2020 11.59 pm
Worth: 7.5% of total CS.367 marks

Aim of the assignment

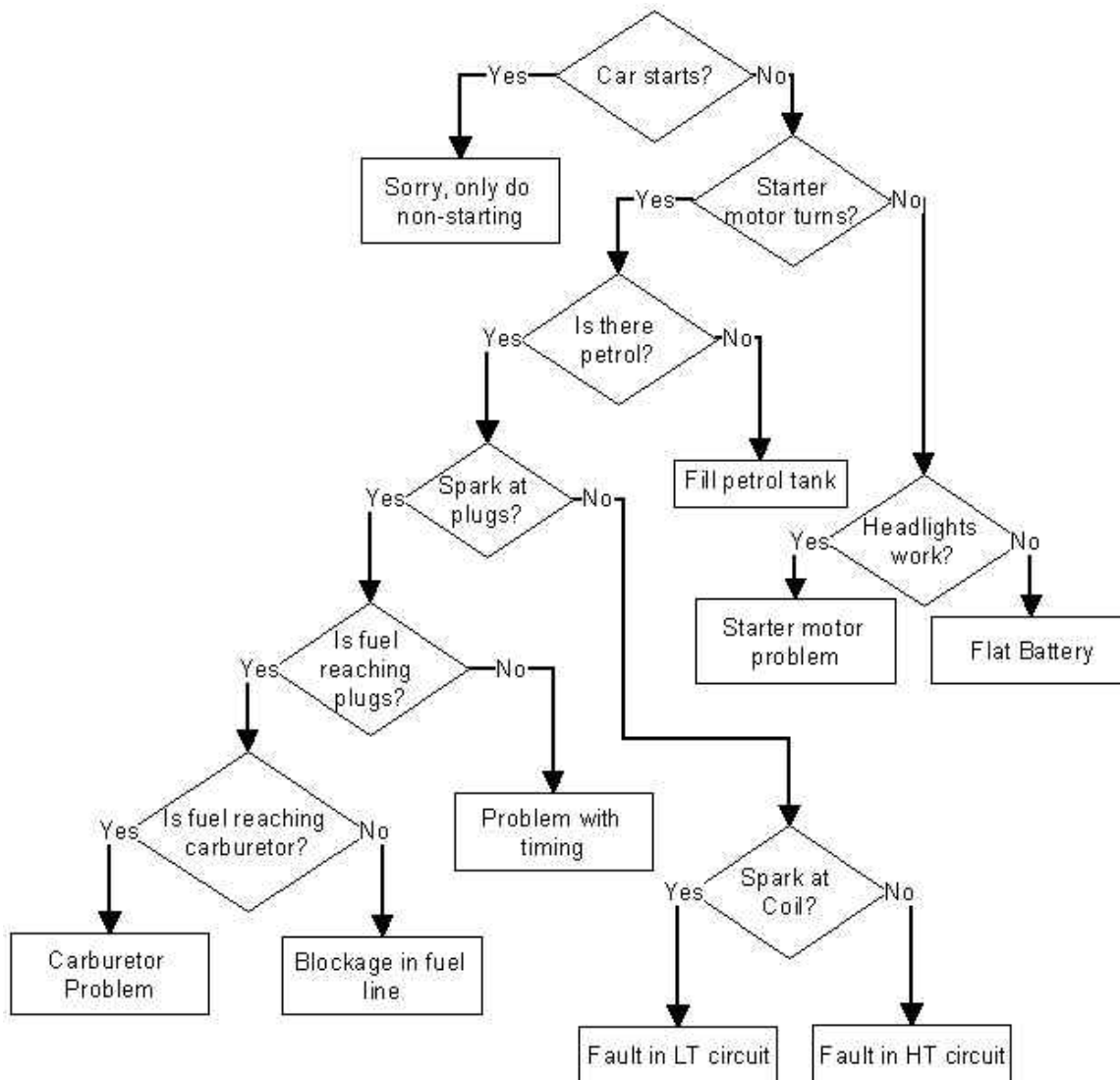
This assignment is intended for you to model knowledge using an intermediate knowledge level representation (decision trees) and gain knowledge of a declarative rule-based programming language (CLIPS) commonly used for business intelligence applications. Additionally, this assignment is aimed at solving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

You should create a small decision tree for a simple diagnostic task of your own choice. Simple computer diagnostics such as: "*I can't connect to the Internet*" or "*I can't print*" are very suitable tasks. As a guide your decision tree should contain approximately about 10 decision nodes. Your decision tree may contain more nodes but will not earn extra marks.

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 lose 1 mark for not creating your own decision tree).

Using your decision tree as your knowledge-level model create a simple rule-based expert system in CLIPS to implement your diagnostic system. CLIPS and its documentation can be downloaded from the AI Resources section of the 367 Canvas website and from [the CLIPS website](#).

Input and output should be via the CLIPS console only (i.e., no marks will be given for creating an interface in Python or Java).



MAKE SURE YOUR CLIPS CODE WORKS CORRECTLY!

Submit your decision tree (as a pdf) and your CLIPS code in a single .zip file named with your UPI via the Canvas Dropbox before the deadline.

Marking Guidelines (marked out of 7.5)

1. Created your own decision tree (1 mark) if you did not just use the example tree given above. Can the marker tell what problem you're solving; without having to step through your decision tree. This could either be a comment on the decision tree diagram, or as a comment in the code, or in of banner displayed when running your code (or preferably all of the above).
2. Size of decision tree is adequate (1 mark)
The briefing specified *about* 10 nodes, and gave an example with 8. So you'll loose 0.25 marks for every node less than 8 to a maximum of -1 mark.
3. Do something "extra" (0.5 mark)
If your decision tree is actually a graph (but without infinite loops),
If your decision tree doesn't just have binary (yes/no) choices.
4. Your CLIPS expert system accurately reflects your decision tree diagram (5 marks).
Is every part of the knowledge base reachable? Do the tree diagram and knowledge-base say (essentially) the same thing?

Failure to reference any sources that helped your code (-4 marks)

Did you just take/use an example CLIPS code, and change it - without saying so. Comments in the code such: "Adapted from auto.clp", "Parts copied from stove.clp", would be sufficient, it just needs to be clear.

No one should have to tell you to do this; refer to:

<https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/academic-integrity-copyright.html>