UNIVERSITI SAINS MALAYSIA

PUSAT PENGAJIAN SAINS KOMPUTER

SCHOOL OF COMPUTER SCIENCES

CPT342 – Knowledge Management and Engineering
Semester 1, Academic Session 2019/2020

Assignment 1

Build a simple expert system to identify either:
1. Cat breeds
2. Dog breeds
3. Malaysian birds
4. Malaysian flowers

The expert system is designed for those who are new to the domain, e.g. novice animal lovers or gardeners. Therefore, the system should ask questions in layman terms.

Tasks that you need to carry out:
1. Obtain necessary knowledge about the domain
2. Consolidate the knowledge into decision tree(s).
3. Based on the decision tree, extract decision rules (this will be the knowledge base)
4. Develop an inference engine that accepts inputs from users (e.g. yes/no or multiple choice answers to system generated questions), performs reasoning using the rules, and produces outputs in the form of an identification.

Submission details:
1. This assignment is to be carried out in groups of 2-3 persons.
2. The expert system can be developed in any language/platform. Consider data structures/storage issues for rules and inferencing before programming.
3. Include a hardcopy report outlining the following:
   - A brief introduction to the domain.
   - How have you carried out knowledge acquisition?
   - How have you carried out knowledge representation? Show the decision tree(s) and decision rules.
   - How have you carried out inferencing? Explain your strategy.
   - Discussion: How is the performance of your expert system? Any problems with the system?
   - Conclusion
4. Submit a softcopy of your report, executable files, and source codes online via http://elearning.usm.my/.
5. Evaluation will be carried out based on your hardcopy report and an informal system demo.

Examples and resources:
- www.exsys.com/demomain.html
- www.expertise2go.com

Grading criteria:

1. Introduction (5%)
2. Knowledge acquisition (20%)
3. Knowledge representation (20%)
4. Inferencing (20%)
5. Discussion (10%)
6. Conclusion (5%)
7. System (20%)

Note: Plagiarism is a serious academic offence. Offenders would be awarded grade F.

Percentage of total marks: 15%
Date assigned: 23 September 2019 (Monday)
Due date: 25 October 2019 (Friday), latest by 5.00pm