

**QSITE CONFERENCE 2007
INFORMATION PROCESSING AND TECHNOLOGY**

MINOR PROJECT – KNOWLEDGE DISCOVERY

Semester 2, 2007

Student's Name: _____

Submitted on: _____ **Teacher's Signature:** _____

Assessment Conditions

- Due Date: Friday November 2007 (3.00pm)
 Method: Full assignment must be submitted electronically as a zip file to BlackBoard on the Learning Place. Preparation in class and at home.
 Software: *ES-Builder3.0*

Assessment Criteria

A description of the criteria for assessment of this task is included on a separate page.

Statement of Authorship

I confirm that that all the ideas, content and wording of this project are my own unless where otherwise clearly stated.

Student's Name: _____

Student's Signature: _____

Teacher's Signature: _____ **Submitted on:** _____

Task

You have the task of designing an **Expert System** that can be used to **diagnose a problem** and **provide a suitable solution** to the problem. Some typical problems **might** include:

- Fault diagnosis on a computer, motor vehicle or some other piece of equipment
- Diagnosing a disease or ailment in plants or animals
- Choosing appropriate food, or music, or flowers, etc for a particular occasion
- Selecting an appropriate training schedule
- Choosing the right foods to correct a vitamin deficiency

You have responsibility for the choice of Universe of Discourse. You must research your topic and develop your expert system as an individual task. You may seek advice from your teacher to negotiate a suitable topic if you are unable to come up with one on your own.

You should use the **Design-Develop-Evaluate** cycle for expert systems as outlined below.

Note: Implementation of the design into a working expert system is a required aspect of this project and completed, working expert systems will be marked.

Required Elements

Your completed project must include reporting on all aspects of the **Expert System Design-Develop-Evaluate cycle** as outlined below:

1. Problem Definition and Situation Analysis

Write up a brief, but clear **outline** of the problem to be solved. Include an explanation of why there is a need for this particular expert system. This will include a detailed **explanation** of the conditions under which the expert system will be used. (*i.e. You must state who will use the system, with what equipment, under what conditions*). This outline is to be included in your expert system.

2. Solution Specification

Detail what the expert system is intended to do in plain English. A discussion of the particular needs of the intended user audience should be concluded with a clear statement of the objectives for your finished expert system. This design is to be included in your expert system.

3. Solution Design

Your design should demonstrate a logical design path to the development of your expert system. You should use a planned approach where you make some initial decisions about what attributes to test and in what order and then create a **Decision Tree**. This should be developed using *ES-Builder*. It should demonstrate the development of a priority of attributes so that individual conclusions may be reached by the most efficient path.

4. Implementation

Implement the design in *ES-Builder*, making sure that all aspects of the expert system are specified in a way that facilitates easy comprehension, including commenting on each attribute, value and conclusion as appropriate. Export the completed expert system to HTML. Enhance the resulting web site to make it more information-rich and user-friendly.

Each conclusion should include notes on how to solve the particular problem that has been diagnosed.

ES-Builder is available for installation on home computers. (See your teacher about this.)

5. Testing

You should arrange testing of your expert system by someone not doing Year 12 IPT. You should **include** a report on the outcomes of that testing including any comments made by the trial user/s in your expert system.

6. Evaluation

Write up an **evaluation** of your completed expert system, pointing out its strengths and where you see there might be weaknesses. Mention what improvements you would like to make to your expert system. This evaluation is to be included in your expert system.

7. Documentation

The documentation of the solution includes appropriate commenting, where possible, during the operation of the expert system so that the user can understand what to do. Each conclusion should be documented in as much detail as possible, with inclusion of hyperlinks to further information wherever possible.

