UNIVERSITY OF TECHNOLOGY JAMAICA

Prolog/Python Group Project

Group Size: 3

**Given: January 2021 Due: Week of April 26, 2021**

The Ministry of Health (MOH) has embarked on some programs/initiatives aimed at identifying and controlling illnesses such as the Corona virus COVID-19. The Director of the MOH highlighted the need to educate the public about these illnesses and has made the move to partner with the school of computing at the University of Technology Jamaica (UTECH) to create an Expert system that could assist the MOH in its efforts.

The proposed Expert System (ES) should be populated with the details of various factors that will determine if a person is at risk of having (or possibly has) COVID-19. Also, the steps that are required both in the short term and long term. The information will be gathered by a team of three computer science students with skills in knowledge acquisition and representation. The team will interview domain experts and use the data gathered to design and implement the system prototype.

The expert system should provide an interface to allow the MOH to add knowledge to the system which will be used in performing diagnoses.

It should also provide an option that allows the stakeholders to query the expert system providing details of possible pending problems. This option should display the percentage of persons (based on the total persons diagnosed) who are at risk of having (or possibly have) COVID-19. *Two sets of statistics should be displayed by this option: The percentage of persons with mild symptoms and the percentage of persons with severe symptoms*.

The prototype should be able to accept the details of various contributory factors then make predictions based on the details provided along with the encoded expert knowledge base. The details captured should include the patient’s temperature which should be captured in degrees Celsius (°C) and converted to degrees Fahrenheit (°F). The system should also ascertain if the patient has experienced dizziness, fainting or blurred vision. If any of these symptoms are experienced the system should capture the systolic and diastolic values (mm Hg) for the patient to ascertain if the patient has low blood pressure A systolic reading lower than 90 mm Hg or a diastolic reading lower than 60 mm Hg indicates low blood pressure An option should be provided to allow the addition of other symptoms that require the blood pressure check.

The set of questions the expert system asks should be guided by the input of the Stakeholders and the information stored in the system’s knowledge base. Once the user has provided sufficient details the expert system should be able to determine if a person is at risk of having (or possibly has) **COVID-19**. The system should display the possible actions that are required both in the short term and long term based on the severity of symptoms.

The system should also provide the MOH with advice regarding the possible actions required and alert the authorities of any spike or usual increase in reports of persons prone to having (or possible has) COVID-19.

**The expert system’s knowledge base should be a prolog database that is accessed via Python.**

The ES is expected to retain all the data entered by the user therefore allowing it to grow and become an important asset to the MOH.

There will be a demonstration of the system which is scheduled for the week of April 26, 2021.

**Required:**

Students should work in groups of no more than three (3), as stated in the problem the group is expected to develop an Expert System using PROLOG/PYTHON to identify the problems and make suggestions in relation to the measures that can be employed. The group should present the completed program along with commented code and project documentation.

You are required to submit the complete source code, and documentation. The documentation should include the following: **System Design**, **User Manual** and **Project Group Report** (highlighting the contribution of each member and lessons learnt) on a storage medium such as a CD by **April 26, 2021**.

**Marking Scheme:**

Marks will be awarded as follows:

- Facts (10%)

- Rules (15%)

- Persistence (10%)

- Functionality (30%)

o Proper use facts and rules [5%]

o Proper use of prolog search mechanisms [5%]

o Storing of User Response [5%]

o Use of User Response in arriving at conclusion / solution [5%]

o Robustness [5%]

o Correctness [5%]

- Documentation (15%)

o Internal : comments, indentation and naming conventions

o External: hardcopy – formatting, neatness, sample run, group report and declaration of authorship (one per member)

- User Interface & Ease of Use (10%)

- Originality & Ingenuity (10%)

**There will be an additional 10% for groups who provide a graphical user interface (GUI) for this system. Marks will be subtracted for late assignments at a rate of 7.5% per day. Assignments more than one week late will not be accepted.**