

**Department of Information and Communication Technology**

**Faculty of Technology**

**UCT31021 – Practical for Artificial Intelligence**

**In-course Assessment -II**

**Date: 14.08.2024**

**Time Allowed: 02 hours**

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**Instructions:**

- Create a folder on the desktop with your Registration Number (**e.g. SEU/IS/19/ICT/XXX**) and save your answer scripts inside the Folder.
  - Write a separate Prolog(.pl) for each of the main Questions.
  - Save screenshots of the each of the infer/queries and their corresponding answer within the same folder.
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**1.** Consider the following scenario and write a Prolog program to answer the following questions. Create facts and rules where necessary.

"A male and female can marry themselves if they are not the offspring of the same parents. Parents can inherit a boy or a girl in childbirth. Parents can have one child or more. A child's parent or grandparent of a child is called an ancestor. Moreover, children can have a parent and an ancestor as their ancestor. **Johil** and **Johana** have been good friends since their childhood. They got married and had two male children, **John** and **Peter**, and two female children, **Samila** and **Rose**. **Paul** is parents of **Johil**, **Nayana**, **Amala**, and **Sana**. **Pranav** is the parents of **Paul**, **Sakthi**, **Yathav**, and **Kiran**."

**a.** Create a knowledge base with basic facts based on the given family descriptions.

**b.** Write rules for each of the following and infer the answers for the given queries.

- Find the father and mother of a given person and query the father and mother of **Rose**.
- How many ancestors does **Peter** have?
- Does **Paul** have any ancestors? And who is that?
- How many **Males** and **Females** have? And list males and females.
- Show all the possible ancestor relationships.

**[Total Marks 60]**

2. Followings are examples of fruits. Create a knowledge base with suitable facts and rules to answer the questions below.

**Sri Lanka, Turkey, India, Singapore, Maldives and Pakistan.**

- a. Create a list of countries called '**countryList**' and print the list.
- b. Order the list into ascending order.
- c. Update knowledgebase to check whether '**India**' and '**Tokyo**' is a country or not.
- d. Add '**Japan**' at the beginning of the list.
- e. Create a new rule to calculate the members of the list.

**[Total Marks 40]**