Python for Bayesian Networks and Causal Modelling

The primary Python package used in this module for Bayesian networks and causal modelling is **pyAgrum**. It can be used either in a local Python environment or through online platforms such as **Google Colab**.

4.1 Local Installation

1. **Python Setup:**
   - Ensure you have a Python 3 environment installed.
   - Download Python from python.org or use a distribution like Anaconda.
2. **Package Management:**
   - If not using Conda, install `pip` as your package manager: pip installation guide.
   - Use `pip` or `conda` to install necessary Python packages.
3. **Recommended Environment:**
   - It is recommended to use **Jupyter Notebook** for working with the code. Lab exercises will also be provided in this format.
4. **Installing Jupyter Notebook:**
   - To install Jupyter Notebook, use:
     pip install notebook
     or if using Conda:
     conda install jupyter
   - Launch Jupyter Notebook using:
     jupyter notebook
5. **Installing pyAgrum:**
   - pyAgrum documentation: pyAgrum Documentation.
   - To install pyAgrum, use one of the following commands:
     pip install pyagrum
     or
     conda install pyagrum
6. **Usage:**
   - Once installed, you can import pyAgrum in your Python code and use its functionalities:
     import pyAgrum as gum

4.2 Google Colab

An alternative to a local installation is using the online Python environment provided by **Google Colab**.

1. **Accessing Google Colab:**
   - Log into Google Colab with your Google account.

    - Upload the course's Python notebooks or create a new notebook directly on the platform.
2. **Pre-installed Packages:**
    - Google Colab comes with many Python packages pre-installed, but **pyAgrum** is not included.
3. **Installing pyAgrum in Colab:**
    - To install pyAgrum, use the exclamation mark (!) to run a shell command in a Colab cell:

      ```
      !pip install pyagrum
      ```

4. **Usage:**
    - After installation, you can import pyAgrum and use its functionalities: import pyAgrum as gum

---

Other Python Packages for Bayesian Networks and Causal Modelling

Though not used in this module, the following packages are also available for Bayesian networks and causal modelling:

- **pomegranate:** pomegranate documentation
- **pgmpy:** pgmpy documentation
- **pymc3:** pymc3 documentation
- **pyagena:** pyagena documentation

This guide covers both local and cloud-based setups for using pyAgrum in Bayesian network modelling.