**Purpose**

Students will create Bayesian Networks and use them to perform inferences. Students will gain hands-on experience with BN inferences. This project provides an excellent opportunity to gain further exposure to relevant topics and applications (including problem diagnosis and monitoring and filtering). The successful completion of this project will challenge students to develop applications that use Bayesian Networks.

**Objectives**

Students will be able to:

* Create Bayesian Networks.
* Determine inferences from Bayesian Networks.
* Model real-world problems in Bayesian Networks.

**Technology Requirements**

Linux (windows user may install virtual machines) **<<<< Not valid anymore. You can install, import pgmpy if you have python installed in your windows>>>**

Python 3.4 or higher

Download and install pip and then install pgmpy:

* $ git clone https://github.com/pgmpy/pgmpy
* $ cd pgmpy/
* $ sudo pip install -r requirements.txt
* $ sudo python setup.py install

\***Note**​: if you encountered problems installing pip or pgmpy, refer to the ​pgmpy Installation Page​.

\*\*You can find the documents for pgmpy on the ​[pgmpy Documentation Page​](http://pgmpy.org/" \o "pgmpy documentation page" \t "_blank).

**Project Description**

Refer to "CSE571\_Project\_Bayesian Networks\_Overview Document" for a step-by-step project description with supporting images. (This can be found in the “CSE 571\_Bayesian Networks\_Project Templates and Resources” on this page.)

**Submission Directions for Deliverables**

Submission templates and resources for this project can be found in the “CSE 571\_Bayesian Networks\_Project Templates and Resources” on this page for you to download.

**Some Useful Points**: (This will be updated as students suggests points in the discussion forums. So revisit here ( and the discussion forum) often if you are facing troubles)

1. Read the Discussion Forum first before starting the project.
2. You can use do it in any system. If you can run python in your system, then you can do it in your system. ( use "**python -m pip install pgmpy**" to install pgmpy package).You can use the free google colab too. But your need to upload as instructed (upload the .py files)
3. Use '**bn\_modified\_v2.py**' and '**dbn\_modified.py**' instead of '**bn.py**' and '**dbn.py**'
4. It is recommended to remove or comment out print statements in your submissions.
5. The autograder always outputs (only the) "**Grader Error: Malformed feedback**", if it doesn't get the expected output from the code.

It can be due to

1. using **print** statements

2. Code is wrong.

If you get "Grader Error: Malformed feedback" in spite of commenting out the print statements, then most probably your code is wrong.

As this project does not involve much work other than constructing the correct CPD table with correct values and correct format, you need to look at them.

**CSE 571\_Bayesian Networks\_Project Templates and Resources**

**CSE 571\_U3\_ Bayesian Networks\_Project Overview Document\_v2.pdf**PDF File

[Open file](https://d3c33hcgiwev3.cloudfront.net/MEHk3xsSQlOB5N8bEuJTmg_88b5006eefa541b4862311ea35cc3bf1_CSE-571_U3_-Bayesian-Networks_Project-Overview-Document_v2.pdf?Expires=1639353600&Signature=UzaACONnz-wwCvYJ9oXAYjq2zebyqvCVnnStwworE6qVQWxa1bIucwdUJ~Bz0lEcHOywDlZ7cHuYWLc7~slhUwmoJFO4NXoLXNLiDjwFtiwUzyDGnFL~PfGIxzdx33CHJf34ZNl37EBWUbShvmZ4Xctk9cfWxJWuBrqnFEnSvoQ_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

**bn\_modified\_v2**PY File

[Download file](https://d3c33hcgiwev3.cloudfront.net/w2IAEmlyRFqiABJpchRatw_fe1e5add202247fa991ecd768eb83cf1_bn_modified_v2.py?Expires=1639353600&Signature=QoMEVkQC-SY2UE2UyYSdOnLJcJG0jdaZ3aJxVLPuQOdGwOK8F2Vk3aDD~mV7822Bckz8Ox9VdVLlaPx37ZjCiL-r5pC4JzhIZ1SGEd2kffk1N64OVvaE9UwjWNkVxws6GFlEvDVbNW3i-97t5K~qmajxZc0XGNfirhkkL-0l98Q_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

**burglary**PY File

[Download file](https://d3c33hcgiwev3.cloudfront.net/uYVRuc_NQBGFUbnPzcARXg_92463838742844afaa7c5bea421638a6_burglary.py?Expires=1639353600&Signature=BnlqPt1JDvHkjj6mOy-VwXEI7j9ezyQNptKSnmro9Ejx5BTBts8wz-DP0nTLWFVDn9H1NjAYXuAwvyvtWhhU91BRGdv1lAz-BfEi5nho4rzqS9Lw5R8HCE6vBxM8KL8Bwt~pL~uXMW-XpIicRLVtLu5vPEOM1Yp8FusU~pOF5fs_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

**agent**PY File

[Download file](https://d3c33hcgiwev3.cloudfront.net/yrTDxGAQSSO0w8RgEAkjqg_4cab01b8cd1e4cfbb3c69dc960e3cda9_agent.py?Expires=1639353600&Signature=lWV1FluRaJCeyxM5XXdIja8kwsqwgr5UjIGQU1DtYCAbzjHWhzDJuipAPbBzReoB4XSG~9giu2OG3mASH3MDKDiMTa9XKZd4y5TgqTw9D9sHWXWbfm9ZZqy6gyF0miEQ2E0CmbsTU7Eo6n6FhnutnasS8CXsgNiVhWZsA2FqtY4_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

**dbn\_modified**PY File

[Download file](https://d3c33hcgiwev3.cloudfront.net/HWCd8MtqTDqgnfDLaow6IQ_fe2abfb0469442d3a262574c4fe5aecd_dbn_modified.py?Expires=1639353600&Signature=GSJiXFyrZkcqBsgy6F8Pab1HHmyk7Cco5DHMsc~qQ1fZdLHA56FU0HiMJgNsouYiuUvtc0yF8HIQeUCGDajU9o4WJohTsJHbXAK60jTmk5FD9JoGjxxVEj-l2NdYcuwfAEHRLwudW8GXpvMVMY1APKdG5QKL5OFxOyEONvxQdF8_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)