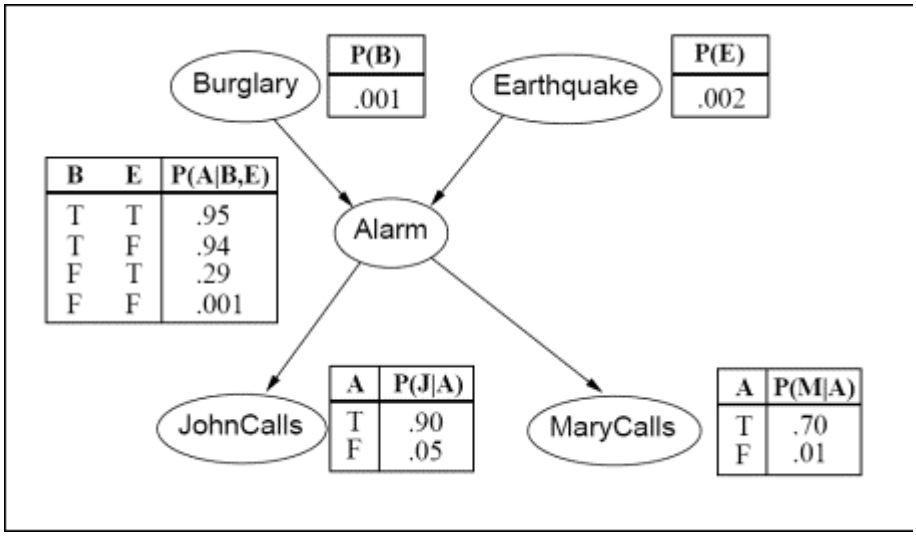
Bayesian network

program that computes and prints out the probability of any combination of events given any other combination of events.



1. To print out the probability P(Burglary=true and Alarm=false | MaryCalls=false).

   ```
   Python bnet.py Bt Af given Mf
   ```

2. To print out the probability P(Alarm=false and Earthquake=true).

   ```
   Python bnet.py Af Et
   ```

3. To print out the probability P(JohnCalls=true and Alarm=false | Burglary=true and Earthquake=false).

   ```
   Python bnet.py Jt Af given Bt Ef
   ```

4. To print out the probability P(Burglary=true and Alarm=false and MaryCalls=false and JohnCalls=true and Earthquake=true).

   ```
   Python bnet.py Bt Af Mf Jt Et
   ```

In general, bnet takes 1 to 6(no more, no fewer) command line arguments, as follows:

- First, there are one to five arguments, each argument specifying a variable among Burglary, Earthquake, Alarm, JohnCalls, and MaryCalls and a value equal to true or

false. Each of these arguments is a string with two letters. The first letter is B (for Burglary), E (for Earthquake), A (for Alarm), J (for JohnCalls) or M (for MaryCalls). The second letter is t (for true) or f (for false). These arguments specify a combination C1 of events whose probability we want to compute. For example, in the first example above, C1 = (Burglary=true and Alarm=false), and in the second example above C1 = (Alarm=false and Earthquake=true).

- Then, optionally, the word "given" follows, followed by one to four arguments. Each of these one to four arguments is again a string with two letters, where, as before the first letter is B (for Burglary), E (for Earthquake), A (for Alarm), J (for JohnCalls) or M (for MaryCalls). The second letter is t (for true) or f (for false). These last arguments specify a combination of events C2 such that we need to compute the probability of C1 given C2. For example, in the first example above C2 = (MaryCalls=false), and in the second example there is no C2, so we simply compute the probability of C1, i.e., P(Alarm=false and Earthquake=true).