

```
"C:\Program Files\Python39\python.exe" "D:/6th sem books/labs/ML Lab/Lab-5.2-BayesianNetwork/prog_smoker_cancer.py"
"
```

Bayesian network models are :

```
['Pollution', 'Cancer', 'Smoker', 'Xray', 'Dyspnoea']
```

Bayesian edges are:

```
[('Pollution', 'Cancer'), ('Cancer', 'Xray'), ('Cancer', 'Dyspnoea'), ('Smoker', 'Cancer')]
```

All local independecies are as follows

Displaying CPDs

```
+-----+
| Pollution(0) | 0.9 |
+-----+
| Pollution(1) | 0.1 |
+-----+
```

```
+-----+
| Smoker(0) | 0.3 |
+-----+
| Smoker(1) | 0.7 |
+-----+
```

```
+-----+
| Smoker      | Smoker(0)      | Smoker(0)      | Smoker(1)      | Smoker(1)      |
+-----+
| Pollution   | Pollution(0)   | Pollution(1)   | Pollution(0)   | Pollution(1)   |
+-----+
| Cancer(0)   | 0.03           | 0.05           | 0.001          | 0.02           |
+-----+
| Cancer(1)   | 0.97           | 0.95           | 0.999          | 0.98           |
+-----+
```

```
+-----+
| Cancer      | Cancer(0)      | Cancer(1)      |
+-----+
```

```
| Xray(0) | 0.9           | 0.2           |
+-----+
```

```
| Xray(1) | 0.1           | 0.8           |
+-----+
```

```
+-----+
| Cancer      | Cancer(0)      | Cancer(1)      |
+-----+
```

File - prog_smoker_cancer

Dyspnoea(0)	0.65	0.3	
+-----+			
Dyspnoea(1)	0.35	0.7	
+-----+			

Probablity of Cancer given smoker

+-----+		
Cancer		phi(Cancer)
+=====+		
Cancer(0)	0.0029	
+-----+		
Cancer(1)	0.9971	
+-----+		

Probablity of Cancer given smoker

+-----+

Finding Elimination Order: : 0%| | 0/3 [00:00<?, ?it/s]

0%| | 0/3 [00:00<?, ?it/s]

Eliminating: Pollution: 0%| | 0/3 [00:00<?, ?it/s]

Eliminating: Dyspnoea: 0%| | 0/3 [00:00<?, ?it/s]

Eliminating: Xray: 100%|██████████| 3/3 [00:00<00:00, 1503.87it/s]

0%| | 0/2 [00:00<?, ?it/s]

Finding Elimination Order: : 0%| | 0/2 [00:00<?, ?it/s]

0%| | 0/2 [00:00<?, ?it/s]

Eliminating: Dyspnoea: 0%| | 0/2 [00:00<?, ?it/s]

Eliminating: Xray: 100%|██████████| 2/2 [00:00<00:00, 2003.49it/s]

Cancer		phi(Cancer)
+=====+		
Cancer(0)	0.0200	
+-----+		
Cancer(1)	0.9800	
+-----+		

Finding Elimination Order: : 100%|██████████| 3/3 [00:00<00:00, 48.43it/s]