```
C:\Users\paney\anaconda3\envs\AI\python.exe C:\Users\paney\Documents\Studies\AI_Class\Assignment_3\environment.py
loading config.yaml file...

Choose one of the following options:
1. Print network
2. Reset evidence list to empty
3. Add evidence to the evidence list
4. Print the evidence list
5. Do probabilistic reasoning
6. Quit
Enter your choice: 1
WEATHER:
    P(mild) = 0.10
    P(stormy) = 0.30
    P(extreme) = 0.60

VERTEX 1:
    P(blocked|mild) = 0.10
    P(blocked|stormy) = 0.20
    P(blocked|extreme) = 0.30

    P(evacuees|not bv1, not bv2, not bv3, not bv4, not bv5) = 0.00
    P(evacuees|bv1, not bv2, not bv3, not bv4, not bv5) = 0.70
    P(evacuees|bv2, not bv1, not bv3, not bv4, not bv5) = 0.80
    P(evacuees|bv3, not bv1, not bv2, not bv4, not bv5) = 0.80
    P(evacuees|bv4, not bv1, not bv2, not bv3, not bv5) = 0.80
    P(evacuees|bv5, not bv1, not bv2, not bv3, not bv4) = 0.80
    P(evacuees|bv1, bv2, not bv3, not bv4, not bv5) = 0.94
    P(evacuees|bv1, bv3, not bv2, not bv4, not bv5) = 0.94
    P(evacuees|bv1, bv4, not bv2, not bv3, not bv5) = 0.94
```

```
31     P(evacuees|bv1, bv5, not bv2, not bv3, not bv4
   ) = 0.94
32     P(evacuees|bv2, bv3, not bv1, not bv4, not bv5
   ) = 0.96
33     P(evacuees|bv2, bv4, not bv1, not bv3, not bv5
   ) = 0.96
34     P(evacuees|bv2, bv5, not bv1, not bv3, not bv4
   ) = 0.96
35     P(evacuees|bv3, bv4, not bv1, not bv2, not bv5
   ) = 0.96
36     P(evacuees|bv3, bv5, not bv1, not bv2, not bv4
   ) = 0.96
37     P(evacuees|bv4, bv5, not bv1, not bv2, not bv3
   ) = 0.96
38     P(evacuees|bv1, bv2, bv3, not bv4, not bv5) = 0.
   99
39     P(evacuees|bv1, bv2, bv4, not bv3, not bv5) = 0.
   99
40     P(evacuees|bv1, bv2, bv5, not bv3, not bv4) = 0.
   99
41     P(evacuees|bv1, bv3, bv4, not bv2, not bv5) = 0.
   99
42     P(evacuees|bv1, bv3, bv5, not bv2, not bv4) = 0.
   99
43     P(evacuees|bv1, bv4, bv5, not bv2, not bv3) = 0.
   99
44     P(evacuees|bv2, bv3, bv4, not bv1, not bv5) = 0.
   99
45     P(evacuees|bv2, bv3, bv5, not bv1, not bv4) = 0.
   99
46     P(evacuees|bv2, bv4, bv5, not bv1, not bv3) = 0.
   99
47     P(evacuees|bv3, bv4, bv5, not bv1, not bv2) = 0.
   99
48     P(evacuees|bv1, bv2, bv3, bv4, not bv5) = 1.00
49     P(evacuees|bv1, bv2, bv3, bv5, not bv4) = 1.00
50     P(evacuees|bv1, bv2, bv4, bv5, not bv3) = 1.00
51     P(evacuees|bv1, bv3, bv4, bv5, not bv2) = 1.00
52     P(evacuees|bv2, bv3, bv4, bv5, not bv1) = 1.00
53     P(evacuees|bv1, bv2, bv3, bv4, bv5) = 1.00
54 VERTEX 2:
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```
    P(blocked|mild) = 0.30
    P(blocked|stormy) = 0.60
    P(blocked|extreme) = 0.90

    P(evacuees|not bv2, not bv1, not bv3, not bv5) =
  0.00
    P(evacuees|bv2, not bv1, not bv3, not bv5) = 0.70
    P(evacuees|bv1, not bv2, not bv3, not bv5) = 0.80
    P(evacuees|bv3, not bv2, not bv1, not bv5) = 0.60
    P(evacuees|bv5, not bv2, not bv1, not bv3) = 0.40
    P(evacuees|bv2, bv1, not bv3, not bv5) = 0.94
    P(evacuees|bv2, bv3, not bv1, not bv5) = 0.88
    P(evacuees|bv2, bv5, not bv1, not bv3) = 0.82
    P(evacuees|bv1, bv3, not bv2, not bv5) = 0.92
    P(evacuees|bv1, bv5, not bv2, not bv3) = 0.88
    P(evacuees|bv3, bv5, not bv2, not bv1) = 0.76
    P(evacuees|bv2, bv1, bv3, not bv5) = 0.98
    P(evacuees|bv2, bv1, bv5, not bv3) = 0.96
    P(evacuees|bv2, bv3, bv5, not bv1) = 0.93
    P(evacuees|bv1, bv3, bv5, not bv2) = 0.95
    P(evacuees|bv2, bv1, bv3, bv5) = 0.99
VERTEX 3:
    P(blocked|mild) = 0.30
    P(blocked|stormy) = 0.60
    P(blocked|extreme) = 0.90

    P(evacuees|not bv3, not bv1, not bv2, not bv4) =
  0.00
    P(evacuees|bv3, not bv1, not bv2, not bv4) = 0.70
    P(evacuees|bv1, not bv3, not bv2, not bv4) = 0.80
    P(evacuees|bv2, not bv3, not bv1, not bv4) = 0.60
    P(evacuees|bv4, not bv3, not bv1, not bv2) = 0.40
    P(evacuees|bv3, bv1, not bv2, not bv4) = 0.94
    P(evacuees|bv3, bv2, not bv1, not bv4) = 0.88
    P(evacuees|bv3, bv4, not bv1, not bv2) = 0.82
    P(evacuees|bv1, bv2, not bv3, not bv4) = 0.92
    P(evacuees|bv1, bv4, not bv3, not bv2) = 0.88
    P(evacuees|bv2, bv4, not bv3, not bv1) = 0.76
    P(evacuees|bv3, bv1, bv2, not bv4) = 0.98
    P(evacuees|bv3, bv1, bv4, not bv2) = 0.96
    P(evacuees|bv3, bv2, bv4, not bv1) = 0.93
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    P(evacuees|bv1, bv2, bv4, not bv3) = 0.95
    P(evacuees|bv3, bv1, bv2, bv4) = 0.99
VERTEX 4:
    P(blocked|mild) = 0.30
    P(blocked|stormy) = 0.60
    P(blocked|extreme) = 0.90

    P(evacuees|not bv4, not bv1, not bv3, not bv5
) = 0.00
    P(evacuees|bv4, not bv1, not bv3, not bv5) = 0.
70
    P(evacuees|bv1, not bv4, not bv3, not bv5) = 0.
80
    P(evacuees|bv3, not bv4, not bv1, not bv5) = 0.
40
    P(evacuees|bv5, not bv4, not bv1, not bv3) = 0.
60
    P(evacuees|bv4, bv1, not bv3, not bv5) = 0.94
    P(evacuees|bv4, bv3, not bv1, not bv5) = 0.82
    P(evacuees|bv4, bv5, not bv1, not bv3) = 0.88
    P(evacuees|bv1, bv3, not bv4, not bv5) = 0.88
    P(evacuees|bv1, bv5, not bv4, not bv3) = 0.92
    P(evacuees|bv3, bv5, not bv4, not bv1) = 0.76
    P(evacuees|bv4, bv1, bv3, not bv5) = 0.96
    P(evacuees|bv4, bv1, bv5, not bv3) = 0.98
    P(evacuees|bv4, bv3, bv5, not bv1) = 0.93
    P(evacuees|bv1, bv3, bv5, not bv4) = 0.95
    P(evacuees|bv4, bv1, bv3, bv5) = 0.99
VERTEX 5:
    P(blocked|mild) = 0.30
    P(blocked|stormy) = 0.60
    P(blocked|extreme) = 0.90

    P(evacuees|not bv5, not bv1, not bv4, not bv2
) = 0.00
    P(evacuees|bv5, not bv1, not bv4, not bv2) = 0.
70
    P(evacuees|bv1, not bv5, not bv4, not bv2) = 0.
80
    P(evacuees|bv4, not bv5, not bv1, not bv2) = 0.
60
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126     P(evacuees|bv2, not bv5, not bv1, not bv4) = 0.
    40
127     P(evacuees|bv5, bv1, not bv4, not bv2) = 0.94
128     P(evacuees|bv5, bv4, not bv1, not bv2) = 0.88
129     P(evacuees|bv5, bv2, not bv1, not bv4) = 0.82
130     P(evacuees|bv1, bv4, not bv5, not bv2) = 0.92
131     P(evacuees|bv1, bv2, not bv5, not bv4) = 0.88
132     P(evacuees|bv4, bv2, not bv5, not bv1) = 0.76
133     P(evacuees|bv5, bv1, bv4, not bv2) = 0.98
134     P(evacuees|bv5, bv1, bv2, not bv4) = 0.96
135     P(evacuees|bv5, bv4, bv2, not bv1) = 0.93
136     P(evacuees|bv1, bv4, bv2, not bv5) = 0.95
137     P(evacuees|bv5, bv1, bv4, bv2) = 0.99
138
139
140 Choose one of the following options:
141 1. Print network
142 2. Reset evidence list to empty
143 3. Add evidence to the evidence list
144 4. Print the evidence list
145 5. Do probabilistic reasoning
146 6. Quit
147 Enter your choice: 5
148 Choose one of the following query types:
149 1) What is the probability that each of the vertices
     contains evacuees?
150 2) What is the probability that each of the vertices
     is blocked?
151 3) What is the distribution of the weather variable?
152 4) What is the probability that a certain path (set
    of edges) is free from blockages?
153 Enter your choice: 1
154 Type vertices ids: 1
155 ->  The probability is: 0.947
156
157 Choose one of the following options:
158 1. Print network
159 2. Reset evidence list to empty
160 3. Add evidence to the evidence list
161 4. Print the evidence list
162 5. Do probabilistic reasoning
```

```
163 6. Quit
164 Enter your choice: 5
165 Choose one of the following query types:
166 1) What is the probability that each of the vertices
     contains evacuees?
167 2) What is the probability that each of the vertices
     is blocked?
168 3) What is the distribution of the weather variable?
169 4) What is the probability that a certain path (set
    of edges) is free from blockages?
170 Enter your choice: 1
171 Type vertices ids: 2, 3, 4, 5
172 ->  The probability is: 0.583
173
174 Choose one of the following options:
175 1. Print network
176 2. Reset evidence list to empty
177 3. Add evidence to the evidence list
178 4. Print the evidence list
179 5. Do probabilistic reasoning
180 6. Quit
181 Enter your choice: 5
182 Choose one of the following query types:
183 1) What is the probability that each of the vertices
     contains evacuees?
184 2) What is the probability that each of the vertices
     is blocked?
185 3) What is the distribution of the weather variable?
186 4) What is the probability that a certain path (set
    of edges) is free from blockages?
187 Enter your choice: 2
188 Type vertices ids: 1
189 ->  The probability is: 0.25
190
191 Choose one of the following options:
192 1. Print network
193 2. Reset evidence list to empty
194 3. Add evidence to the evidence list
195 4. Print the evidence list
196 5. Do probabilistic reasoning
197 6. Quit
```

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198 Enter your choice: 5
199 Choose one of the following query types:
200 1) What is the probability that each of the vertices
     contains evacuees?
201 2) What is the probability that each of the vertices
     is blocked?
202 3) What is the distribution of the weather variable?
203 4) What is the probability that a certain path (set
    of edges) is free from blockages?
204 Enter your choice: 2
205 Type vertices ids: 2, 3, 4, 5
206 ->  The probability is: 0.433
207
208 Choose one of the following options:
209 1. Print network
210 2. Reset evidence list to empty
211 3. Add evidence to the evidence list
212 4. Print the evidence list
213 5. Do probabilistic reasoning
214 6. Quit
215 Enter your choice: 5
216 Choose one of the following query types:
217 1) What is the probability that each of the vertices
     contains evacuees?
218 2) What is the probability that each of the vertices
     is blocked?
219 3) What is the distribution of the weather variable?
220 4) What is the probability that a certain path (set
    of edges) is free from blockages?
221 Enter your choice: 3
222 ->  The distribution is:  {('mild',): 0.1, ('stormy
    ',): 0.3, ('extreme',): 0.6}
223
224 Choose one of the following options:
225 1. Print network
226 2. Reset evidence list to empty
227 3. Add evidence to the evidence list
228 4. Print the evidence list
229 5. Do probabilistic reasoning
230 6. Quit
231 Enter your choice: 5
```

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232 Choose one of the following query types:
233 1) What is the probability that each of the vertices
     contains evacuees?
234 2) What is the probability that each of the vertices
     is blocked?
235 3) What is the distribution of the weather variable?
236 4) What is the probability that a certain path (set
    of edges) is free from blockages?
237 Enter your choice: 4
238 Type edges ids: 2, 3, 4, 5
239 ->  The probability is: 0.028
240
241 Choose one of the following options:
242 1. Print network
243 2. Reset evidence list to empty
244 3. Add evidence to the evidence list
245 4. Print the evidence list
246 5. Do probabilistic reasoning
247 6. Quit
248 Enter your choice: 3
249
250 Enter a variable and its value to add to the
    evidence list
251 Example: BV1, not bv1
252 Enter empty string to exit
253 Enter: BV1, not bv1
254 ->  Added (BV1, not bv1) to the evidence list
255
256 Enter a variable and its value to add to the
    evidence list
257 Example: BV1, not bv1
258 Enter empty string to exit
259 Enter: EV2, ev2
260 ->  Added (EV2, ev2) to the evidence list
261
262 Enter a variable and its value to add to the
    evidence list
263 Example: BV1, not bv1
264 Enter empty string to exit
265 Enter: EV4, ev4
266 ->  Added (EV4, ev4) to the evidence list
```

```
267
268 Enter a variable and its value to add to the
    evidence list
269 Example: BV1, not bv1
270 Enter empty string to exit
271 Enter:
272
273 Choose one of the following options:
274 1. Print network
275 2. Reset evidence list to empty
276 3. Add evidence to the evidence list
277 4. Print the evidence list
278 5. Do probabilistic reasoning
279 6. Quit
280 Enter your choice: 4
281 ->  The evidence list is: [EV4 = ev4, BV1 = not bv1
    , EV2 = ev2]
282
283 Choose one of the following options:
284 1. Print network
285 2. Reset evidence list to empty
286 3. Add evidence to the evidence list
287 4. Print the evidence list
288 5. Do probabilistic reasoning
289 6. Quit
290 Enter your choice: 5
291 Choose one of the following query types:
292 1) What is the probability that each of the vertices
     contains evacuees?
293 2) What is the probability that each of the vertices
     is blocked?
294 3) What is the distribution of the weather variable?
295 4) What is the probability that a certain path (set
    of edges) is free from blockages?
296 Enter your choice: 1
297 Type vertices ids: 1
298 ->  The probability is: 0.988
299
300 Choose one of the following options:
301 1. Print network
302 2. Reset evidence list to empty
```

```
3. Add evidence to the evidence list
4. Print the evidence list
5. Do probabilistic reasoning
6. Quit
Enter your choice: 5
Choose one of the following query types:
1) What is the probability that each of the vertices contains evacuees?
2) What is the probability that each of the vertices is blocked?
3) What is the distribution of the weather variable?
4) What is the probability that a certain path (set of edges) is free from blockages?
Enter your choice: 2
Type vertices ids: 1
->  The probability is: 0.0

Choose one of the following options:
1. Print network
2. Reset evidence list to empty
3. Add evidence to the evidence list
4. Print the evidence list
5. Do probabilistic reasoning
6. Quit
Enter your choice: 5
Choose one of the following query types:
1) What is the probability that each of the vertices contains evacuees?
2) What is the probability that each of the vertices is blocked?
3) What is the distribution of the weather variable?
4) What is the probability that a certain path (set of edges) is free from blockages?
Enter your choice: 3
->  The distribution is:  {('mild',): 0.043, ('stormy',): 0.266, ('extreme',): 0.691}

Choose one of the following options:
1. Print network
2. Reset evidence list to empty
3. Add evidence to the evidence list
```

```
4. Print the evidence list
5. Do probabilistic reasoning
6. Quit
Enter your choice: 5
Choose one of the following query types:
1) What is the probability that each of the vertices
 contains evacuees?
2) What is the probability that each of the vertices
 is blocked?
3) What is the distribution of the weather variable?
4) What is the probability that a certain path (set
of edges) is free from blockages?
Enter your choice: 4
Type edges ids: 2, 3, 4, 5
->  The probability is: 0.0

Choose one of the following options:
1. Print network
2. Reset evidence list to empty
3. Add evidence to the evidence list
4. Print the evidence list
5. Do probabilistic reasoning
6. Quit
Enter your choice: 6

Bye!

Process finished with exit code 0

```