



AlSpace Tool for Bayesian Networks

 AIspace

www.aispace.org/downloads.shtml



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Belief and Decision Networks

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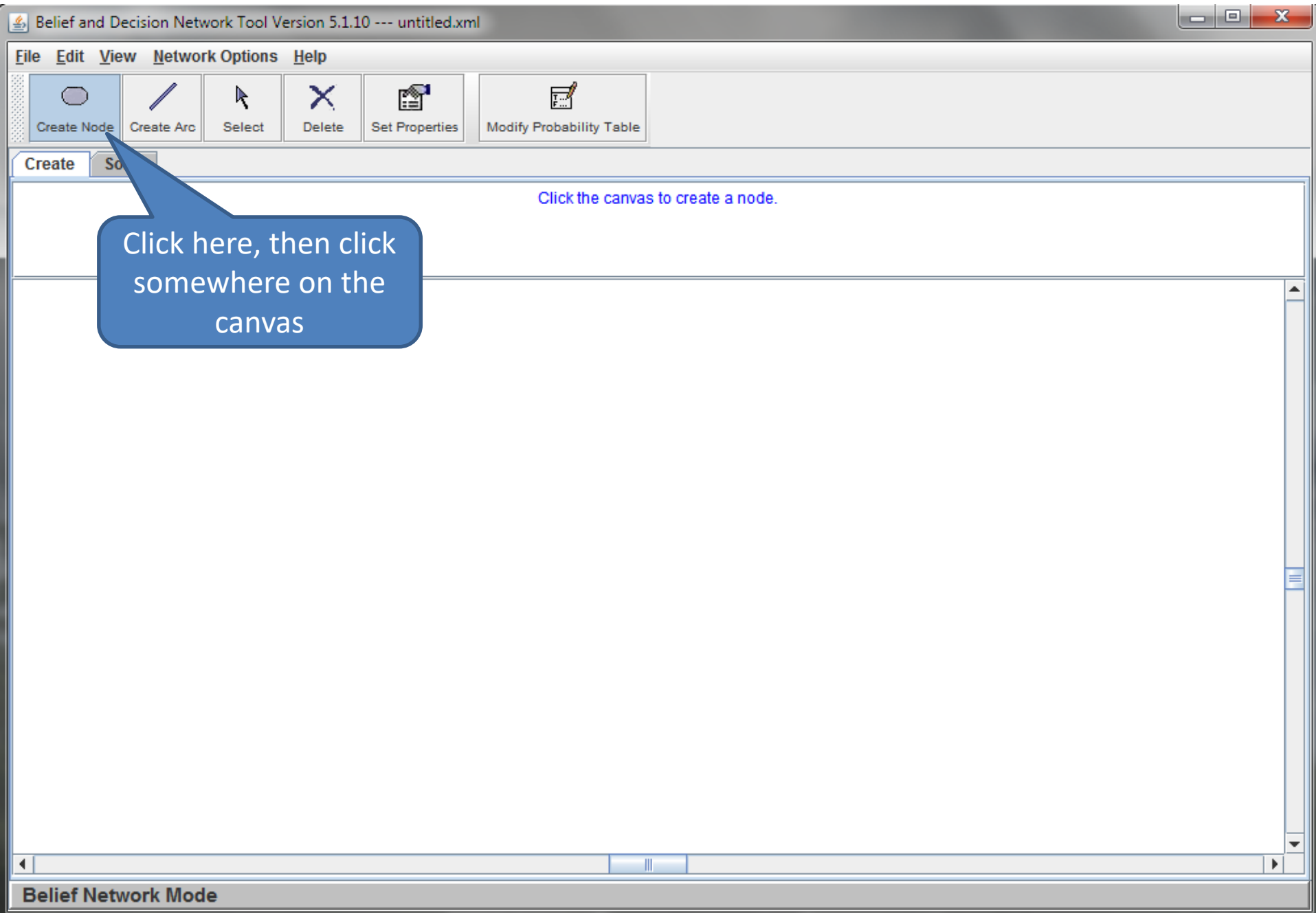
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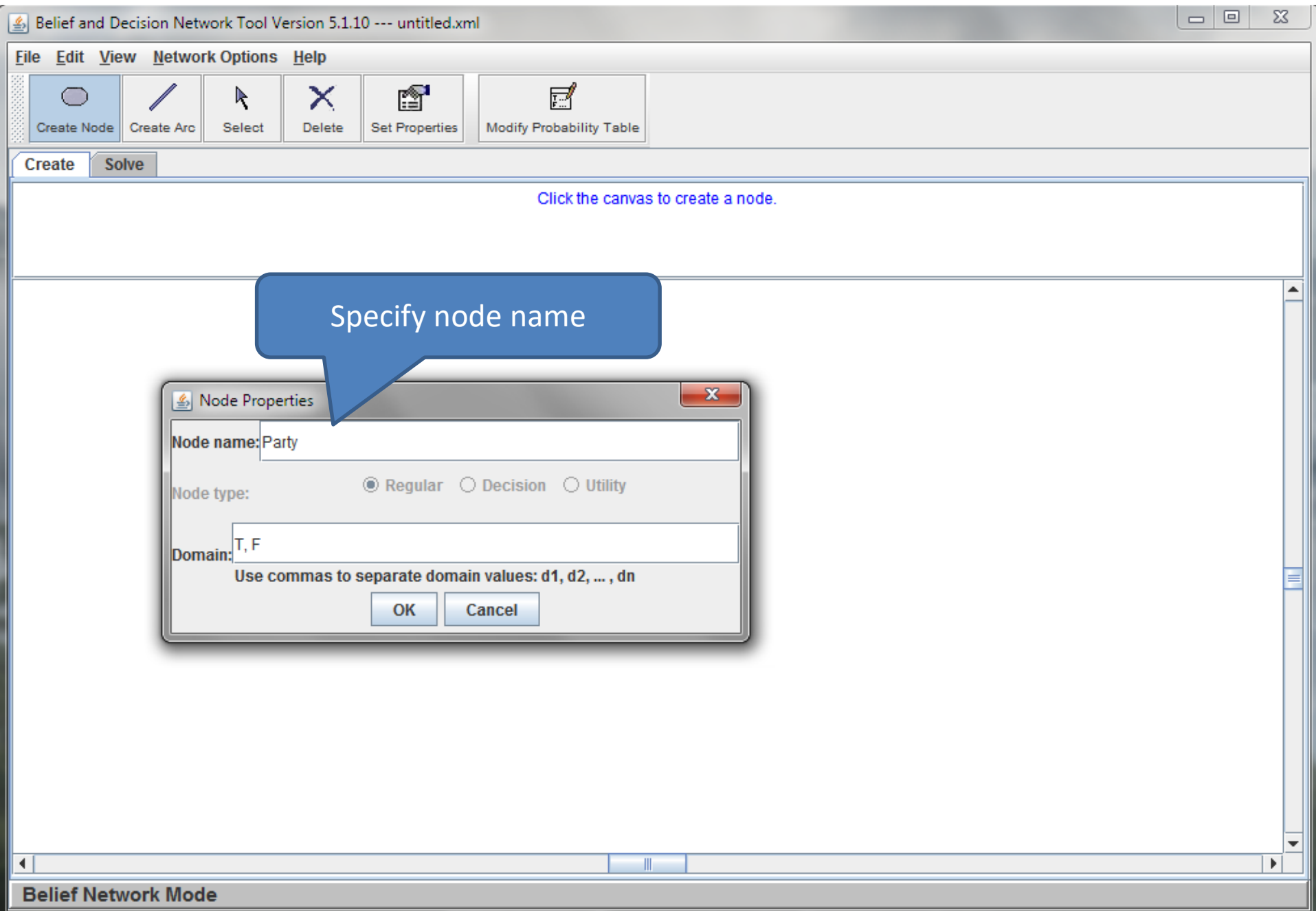


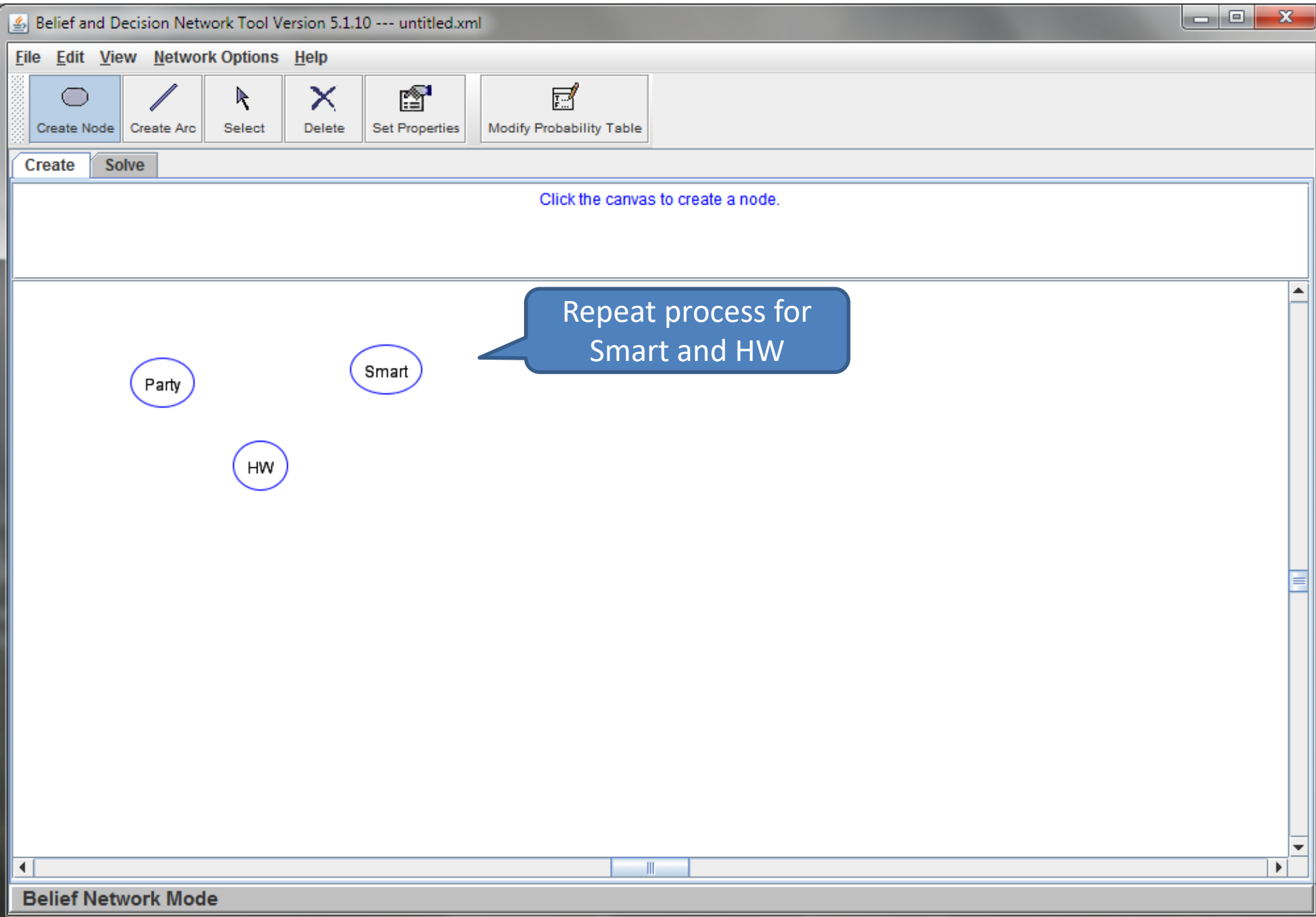
Download jar file

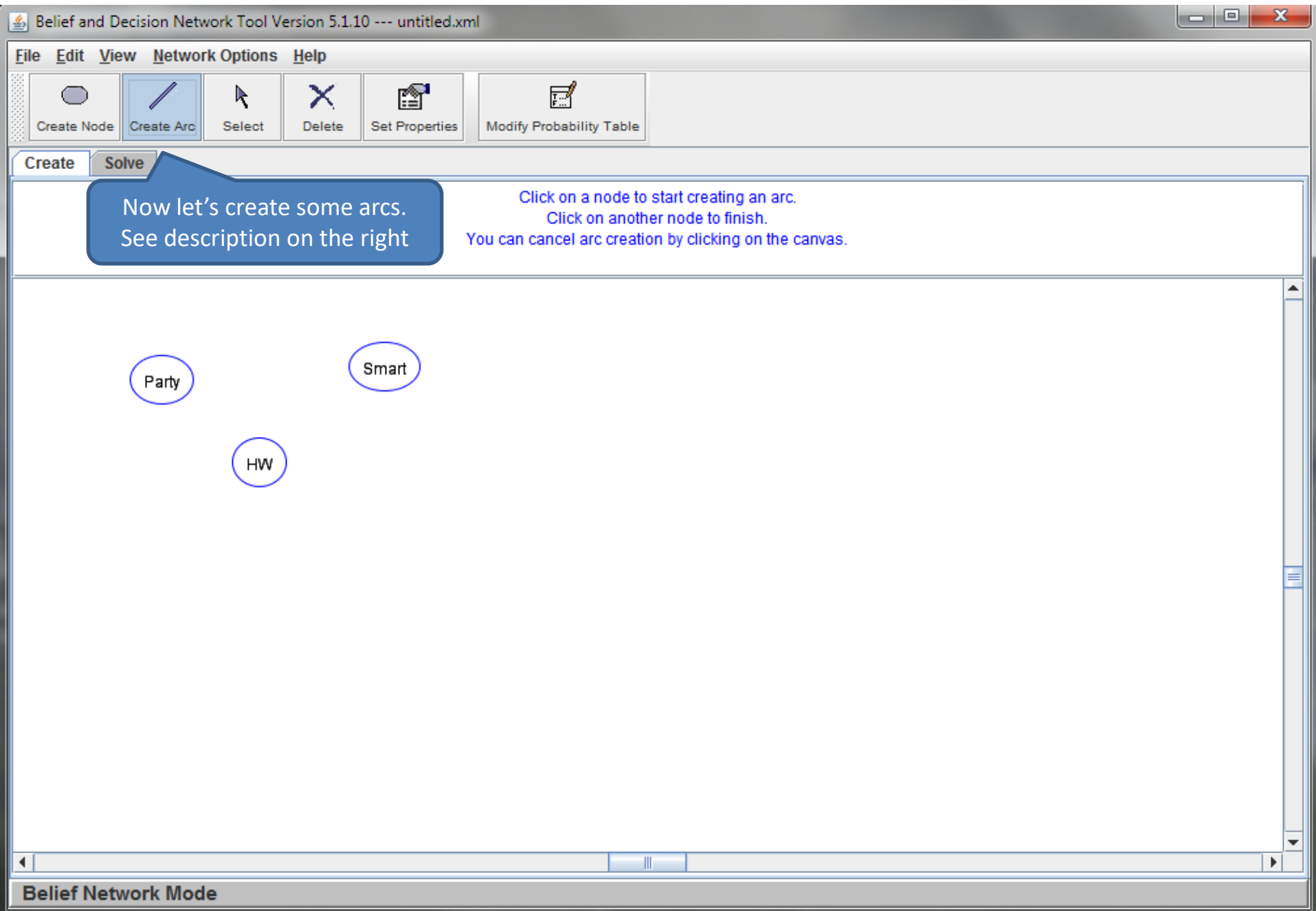
Run from command prompt (terminal)

java -jar bayes.jar









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File Edit View Network Options Help

Create Node Create Arc Select Delete Set Properties Modify Probability Table

Create Solve

Now let's specify the probability tables

Click on a regular node to change its probability table.

```
graph TD; Party((Party)) --> HW((HW)); Smart((Smart)) --> HW;
```

Probability Table for Party

	$P(\text{Party}=T)$	$P(\text{Party}=F)$
Prior Probability	0.6022	0.3978

No observed value for this node.

OK Cancel

Belief Network Mode

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File Edit View Network Options Help

Create Node

Create Arc

Select

Delete

Set Properties

Modify Probability Table

CreateSolve

Click on a regular node to change its probability table.

```
graph TD; Party((Party)) --> HW((HW)); Smart((Smart)) --> HW;
```

Probability Table for Smart

	$P(\text{Smart}=T)$	$P(\text{Smart}=F)$
Prior Probability	0.7048	0.2952

No observed value for this node.

OKCancel

Belief Network Mode

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FileEditViewNetwork OptionsHelp

Create Node

Create Arc

Select

Delete

Set Properties

Modify Probability Table

CreateSolve

Click on a regular node to change its probability table.

```
graph TD; Party((Party)) --> HW((HW)); Smart((Smart)) --> HW;
```

Probability Table for HW

Party	Smart	$P(HW=T)$	$P(HW=F)$
T	T	0.803	0.197
T	F	0.094	0.906
F	T	0.898	0.102
F	F	0.305	0.695

No observed value for this node.

OKCancel

Belief Network Mode

File Edit View Network Options Help

Create Node

Create Arc

Select

Delete

Set Properties

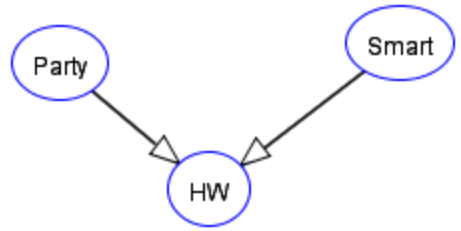
Modify Probability Table

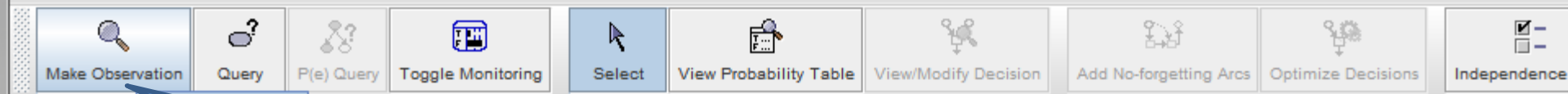
Create Solve

Click to change to Solve mode

Click on a regular node to change its probability table.

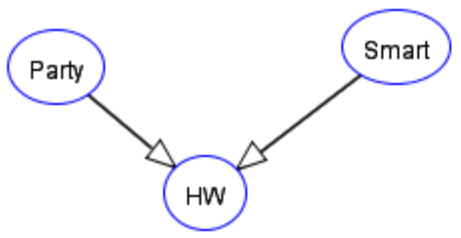
Select the "Solve" tab.





Let's specify some evidence (observation). E.g. suppose we want $P(HW=T \mid \text{Party}=T, \text{Smart}=T)$. The evidence is $\text{Party}=T, \text{Smart}=T$.

on a regular node to change its probability table.



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File Edit View Network Options Help

Make Observation

Query

P(e) Query

Toggle Monitoring

Select

View Probability Table

View/Modify Decision

Add No-forgetting Arcs

Optimize Decisions

Independence Quiz

CreateSolve

Click on a node to make an observation about its value.

```
graph TD; Party((Party)) --> HW((HW)); Smart((Smart)) --> HW;
```

Observ...

<none>

T

F

OK

Belief Network Mode

Belief and Decision Network Tool Version 5.1.10 --- untitled.xml

FileEditViewNetwork OptionsHelp

Make Observation

Query

P(e) Query

Toggle Monitoring

Select

View Probability Table

View/Modify Decision

Add No-forgetting Arcs

Optimize Decisions

Independence Quiz

CreateSolve

Click on a node to make an observation about its value.

Party
Observed Value: T

Smart

HW

Observ...

<none>

T

F

OK

Belief Network Mode

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FileEditViewNetwork OptionsHelp

Make Observation

Query

P(e) Query

Toggle Monitoring

Select

View Probability Table

View/Modify Decision

Add No-forgetting Arcs

Optimize Decisions

Independence Quiz

CreateSolve

Click on a node to make an observation about its value.

```
graph TD; Party([Party  
Observed Value: T]) --> HW((HW)); Smart([Smart  
Observed Value: T]) --> HW;
```

Belief Network Mode

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File Edit View Network Options Help

Make Observation Query P(e) Query Toggle Monitoring Select View Probability Table View/Modify Decision Add No-forgetting Arcs Optimize Decisions Independence Quiz

Create Solve

Now select Query a node to query its probability or utility.

```
graph TD; A([Party Observed Value: T]) --> C((HW)); B([Smart Observed Value: T]) --> C;
```

Party Observed Value: T

Smart Observed Value: T

HW

Belief Network Mode

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File Edit View Network Options Help

Make Observation Query P(e) Query Toggle Monitoring Select View Probability Table View/Modify Decision Add No-forgetting Arcs Optimize Decisions Independence Quiz

Create Solve

Click on a node to query its probability or utility.

Party
Observed Value: T

Smart
Observed Value: T

HW

Query Mode

Please Select a Query Mode

Brief

(brief mode selects the elimination order)

Verbose

(verbose mode allows the user to eliminate variables one-by-one and view derivation information)

☒ Always Prompt ☐ Always Brief ☐ Always Verbose

Click on HW, then "Brief"

Belief Network Mode

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File Edit View Network Options Help

Make Observation Query P(e) Query Toggle Monitoring Select View Probability Table View/Modify Decision Add No-forgetting Arcs Optimize Decisions Independence Quiz

Create Solve

Click on a node to query its probability or utility.

```
graph TD; Party([Party Observed Value: T]) --> HW((HW)); Smart([Smart Observed Value: T]) --> HW;
```

Query Results

Query Results for Variable HW [Party=T] [Smart=T]

$P(HW = T) = 0.803$

$P(HW = F) = 0.197$

OK

Remark: this is only a small part of the network.

Belief Network Mode