
 Chance

 **Player 1**




 **Player 2**



This tutorial illustrates how to build a simple strategic form game in Gambit, and to compute the principal branch of the quantal response equilibrium correspondence.

The game is drawn from "Ten Little Treasures of Game Theory and Ten Intuitive Contradictions," by Jacob K. Goeree and Charles A. Holt (American Economic Review, 2001). This paper illustrates how the change in the equilibrium selected by the principal QRE branch tracks the behavior of subjects in laboratory games.

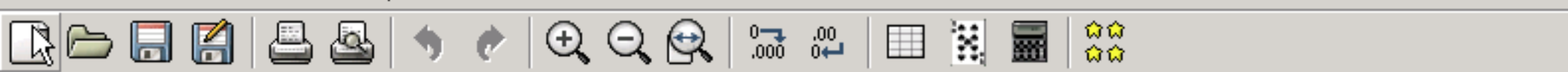



-  Chance
-  **Player 1**
-  **Player 2**





We begin by creating a new game
in strategic form.



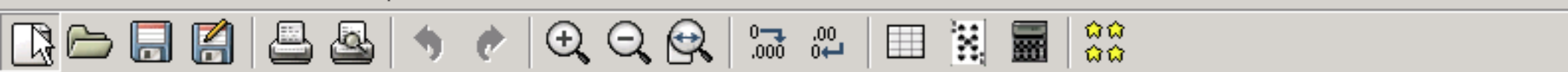



 Chance


 **Player 1**


 **Player 2**

 (w)

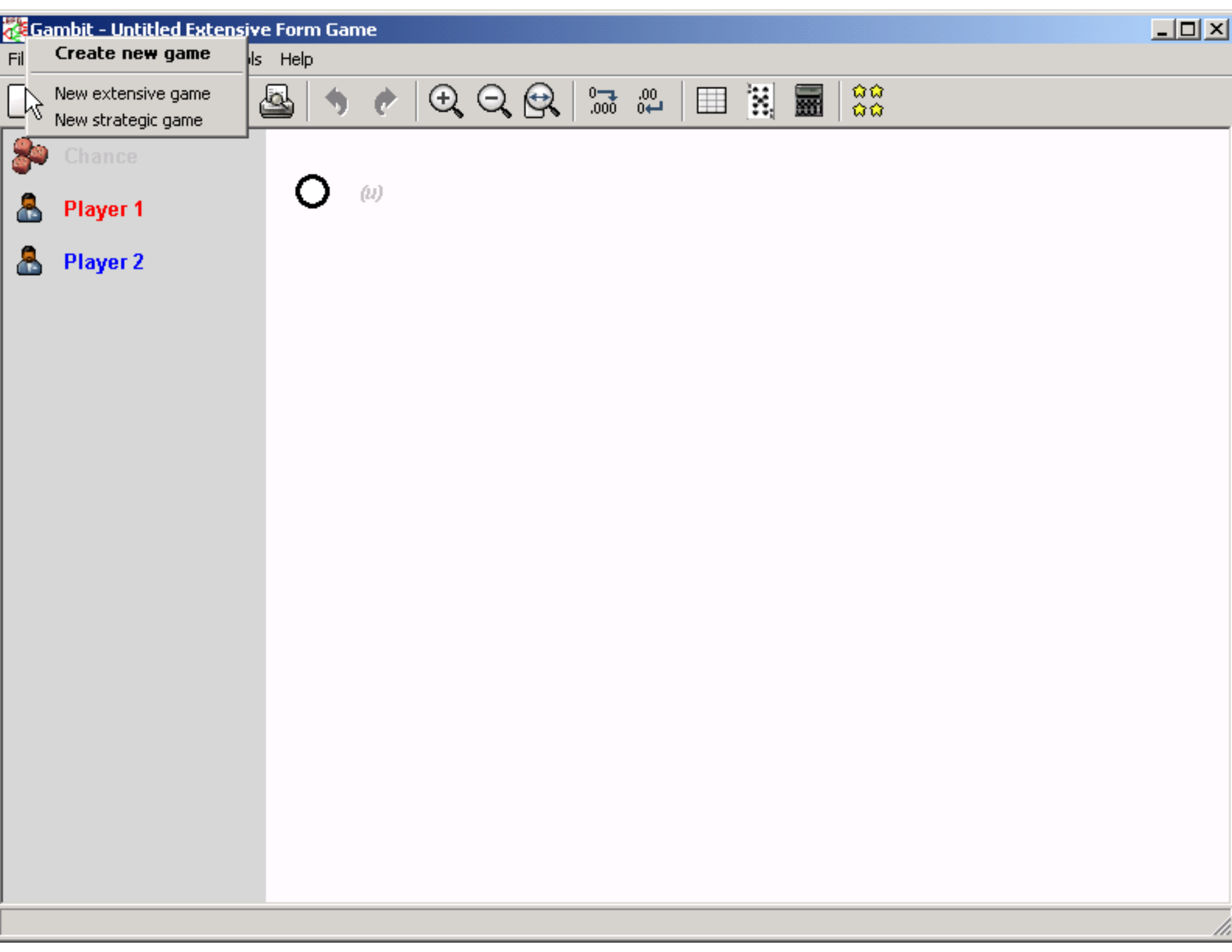


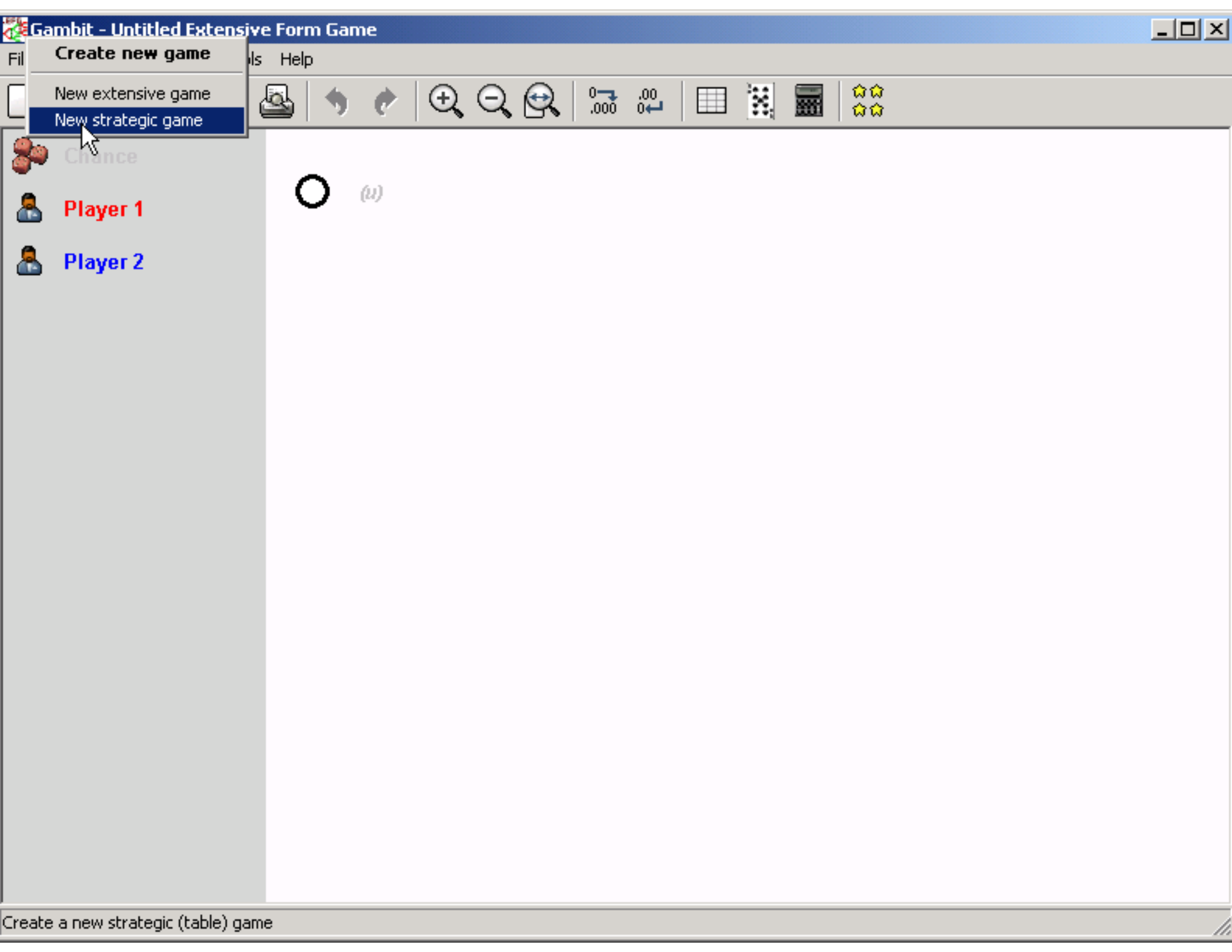
 **Chance**

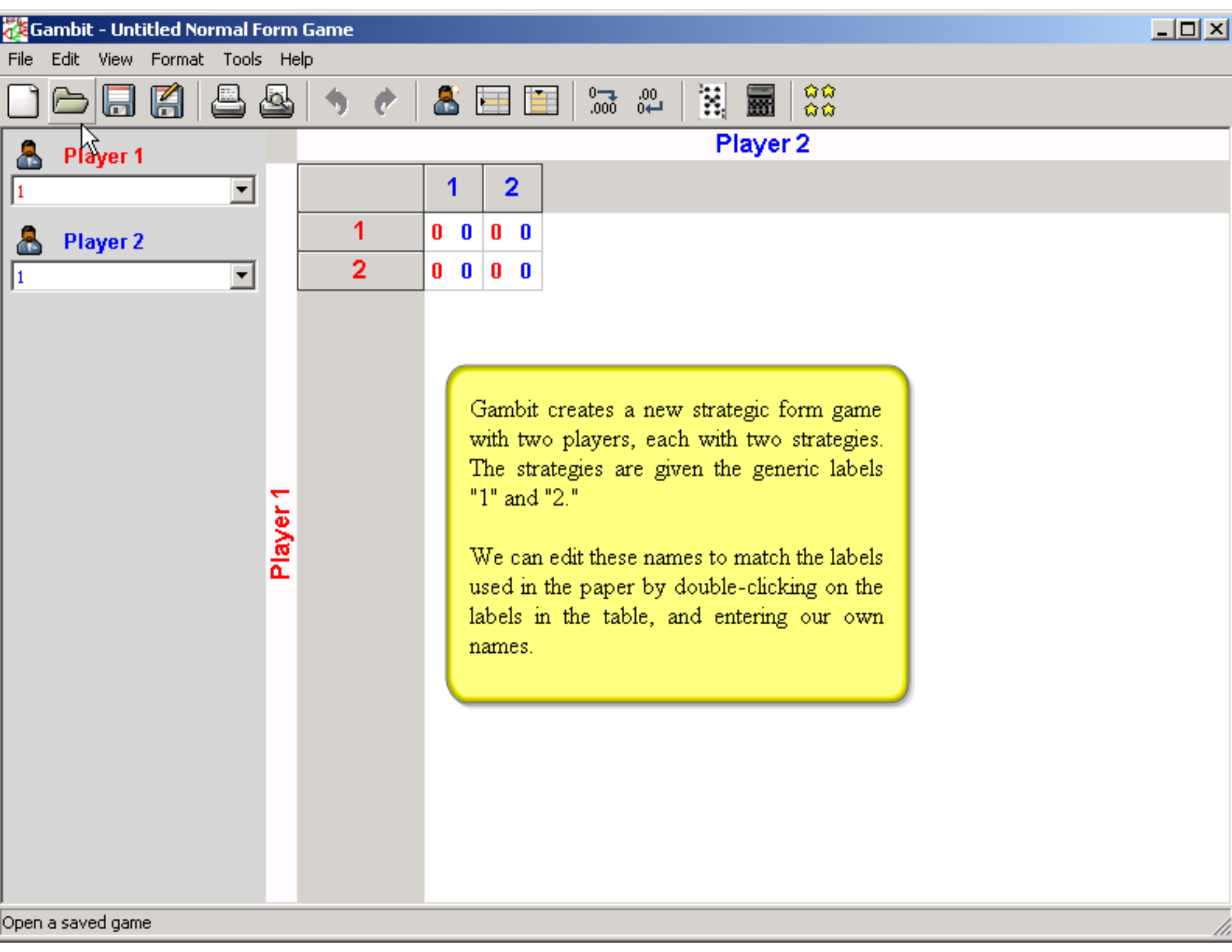
 **Player 1**

 **Player 2**

 (w)





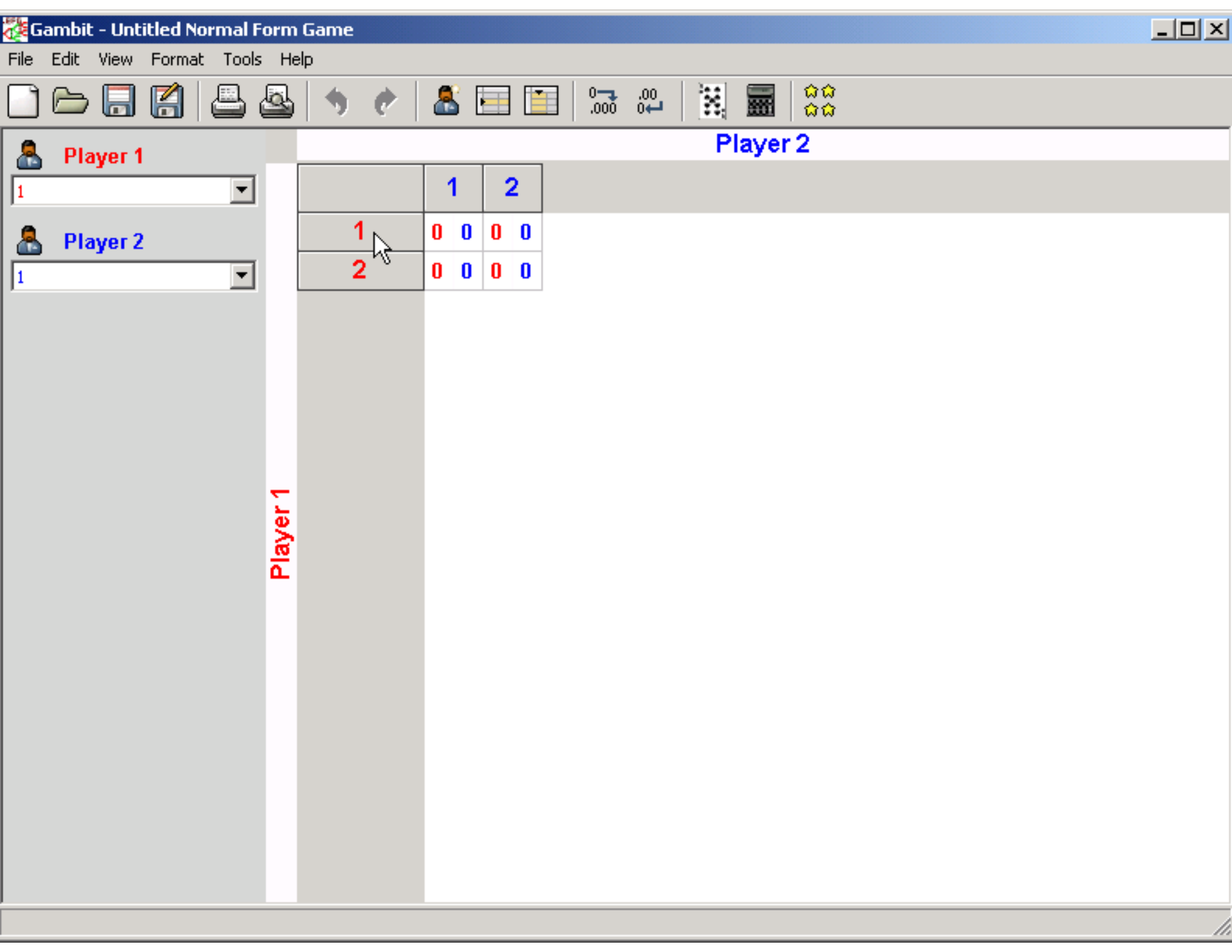


1	1	2
1	0 0	0 0
2	0 0	0 0

Player 1

Gambit creates a new strategic form game with two players, each with two strategies. The strategies are given the generic labels "1" and "2."

We can edit these names to match the labels used in the paper by double-clicking on the labels in the table, and entering our own names.



Player 1

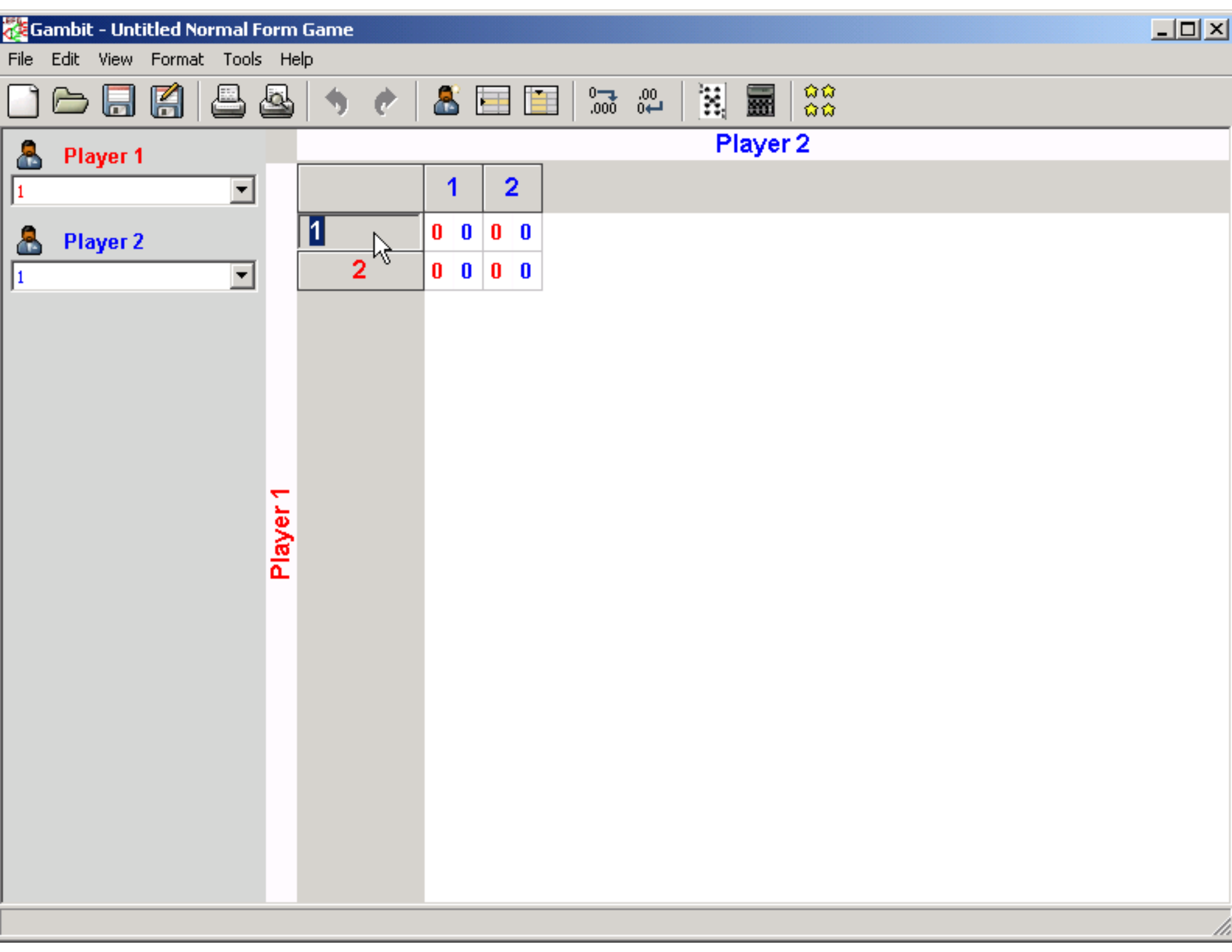
1

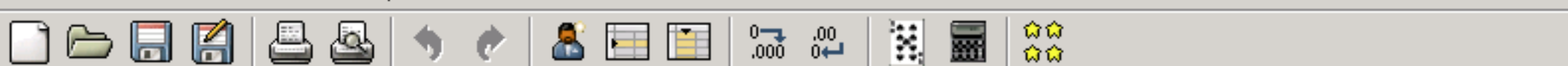
Player 2

1

	1	2
1	0 0	0 0
2	0 0	0 0

Player 2





Player 1

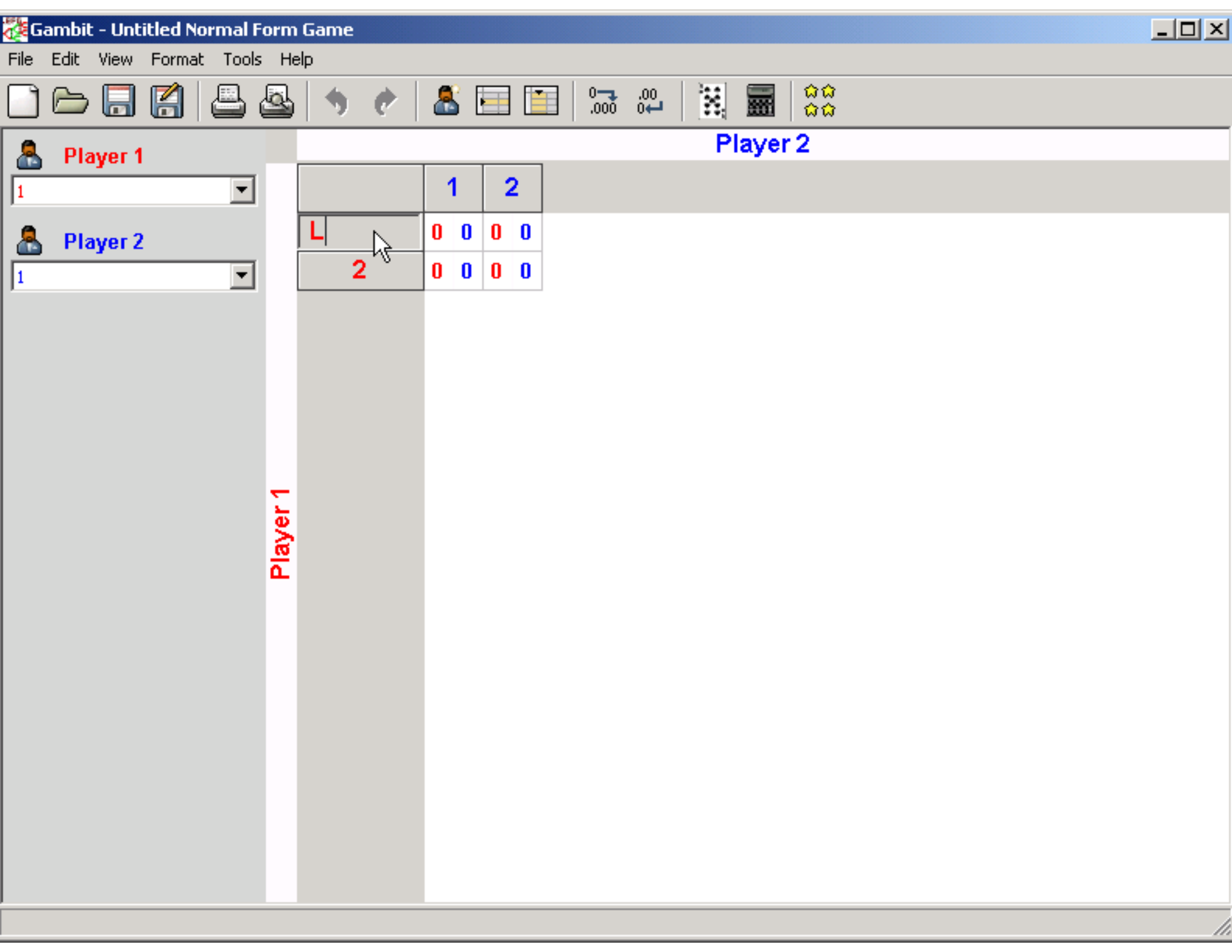
1

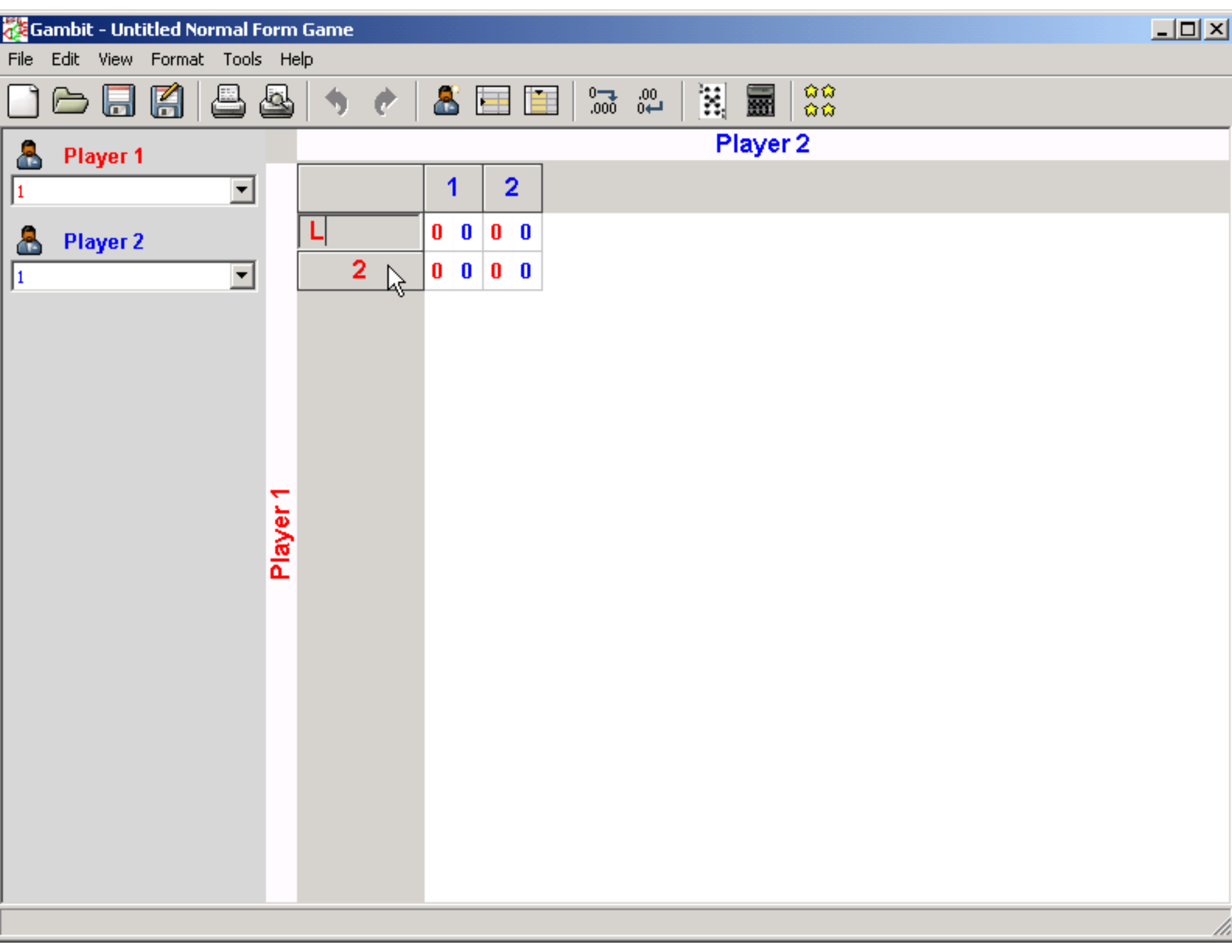
Player 2

1

Player 1

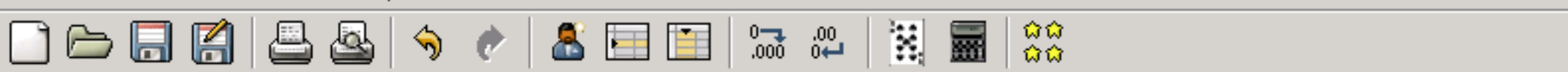
	1	2
1	0 0 0 0	0 0 0 0
2	0 0 0 0	0 0 0 0



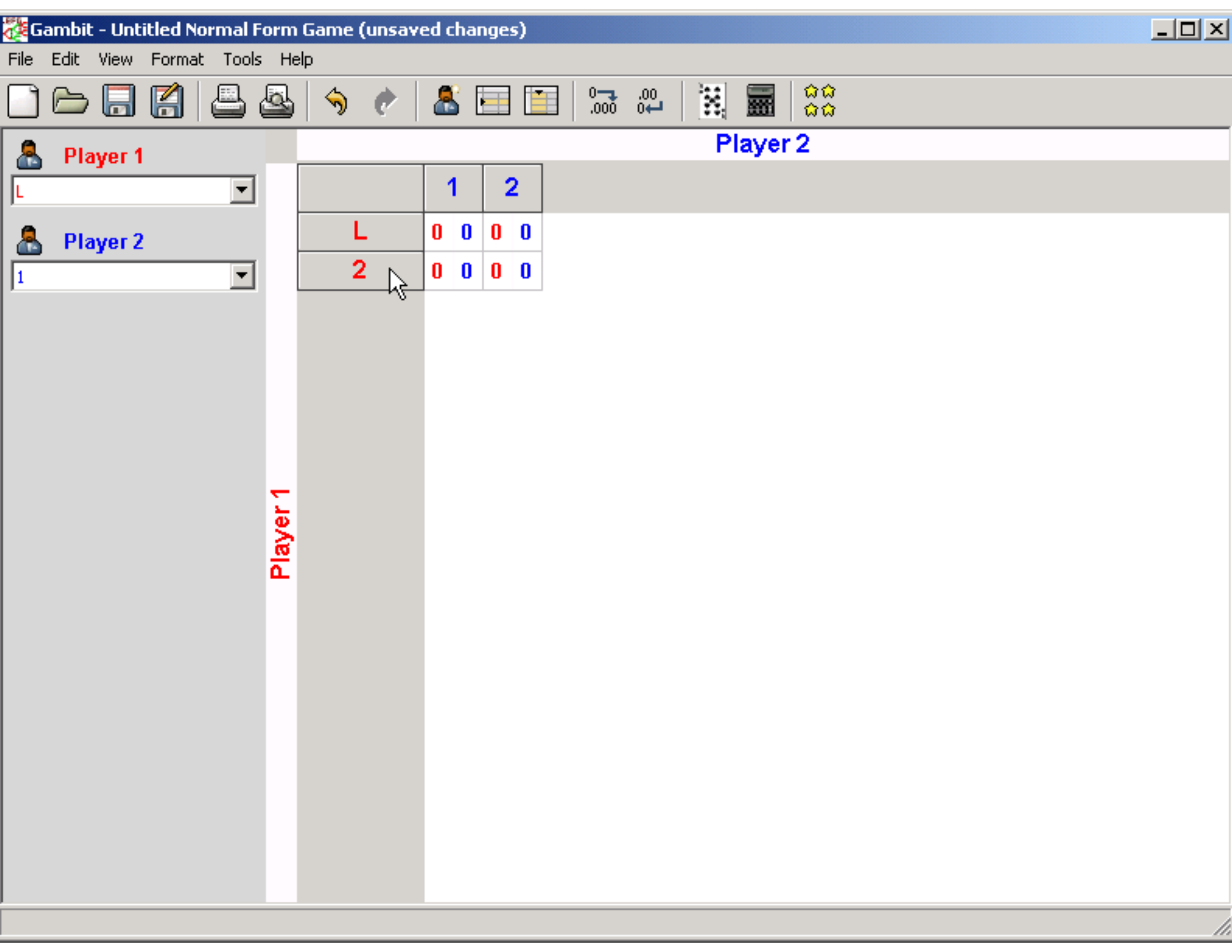


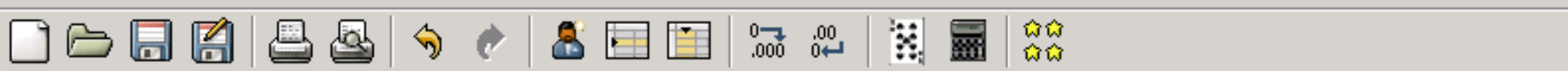
1		1	2
L		0 0	0 0
2		0 0	0 0

Player 1

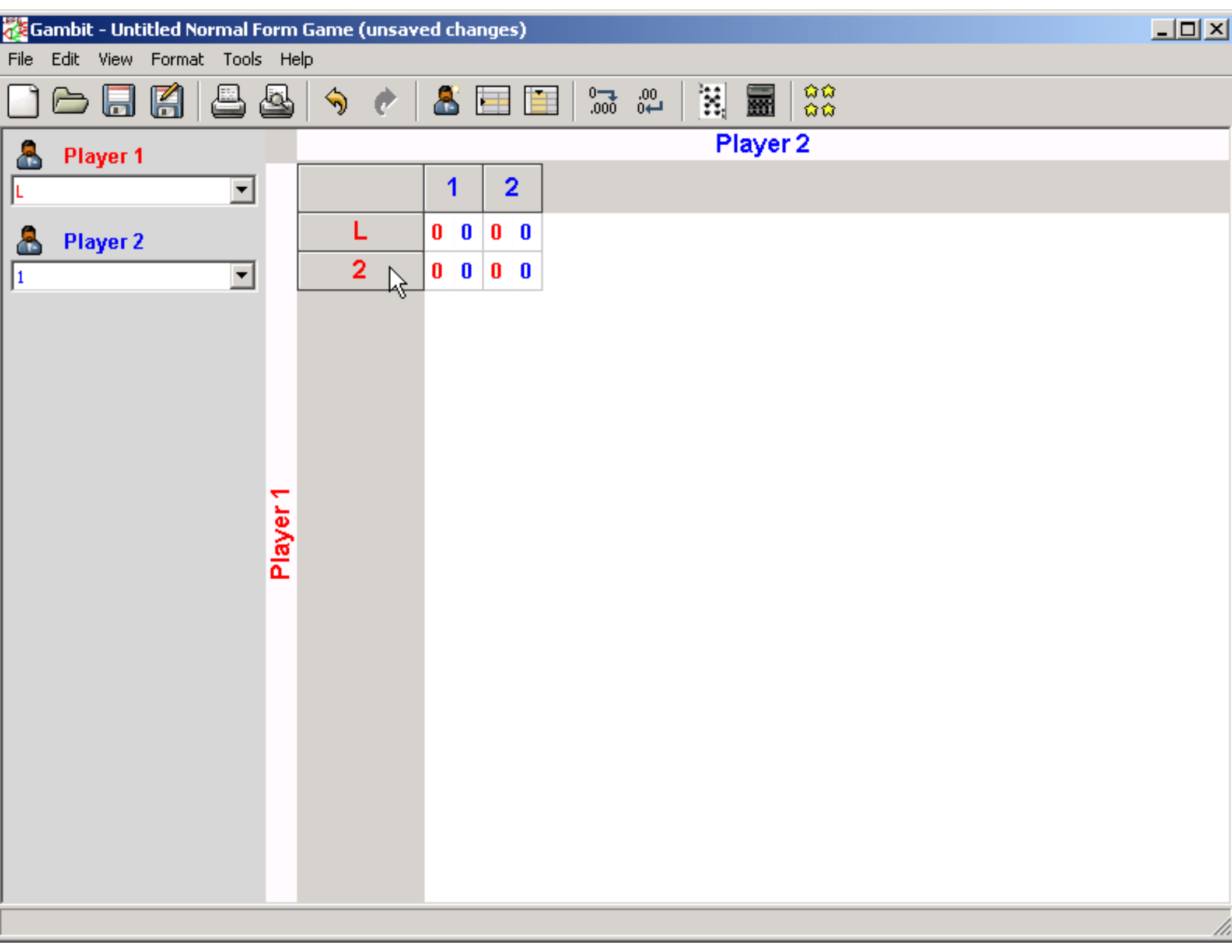


Player 1		Player 2			
Player 1	L		1	2	
	L	0	0	0	0
	2	0	0	0	0



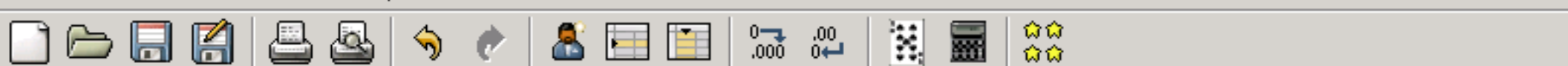


		Player 2			
Player 1		1	2		
	L	0 0	0 0		
	2	0 0	0 0		





		Player 2			
Player 1	L	1	2		
	L	0 0	0 0		
	2	0 0	0 0		



Player 1

L

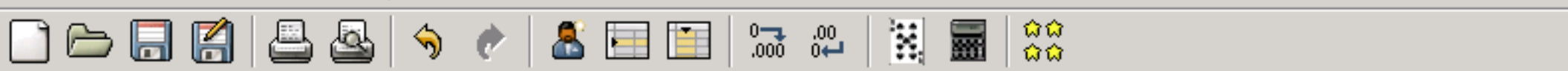
Player 2

1

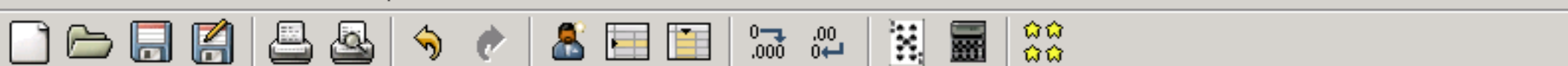
Player 1

	1	2
L	0 0	0 0
H	0 0	0 0

Player 2



Player 1		Player 2			
<div>Player 1</div> <div>L</div>		<div>1↔2</div>	2		
	L	0 0	0 0		
	H	0 0	0 0		



Player 1

L

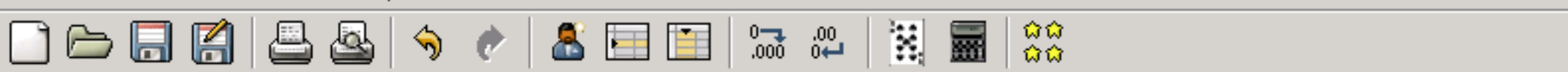
Player 2

1

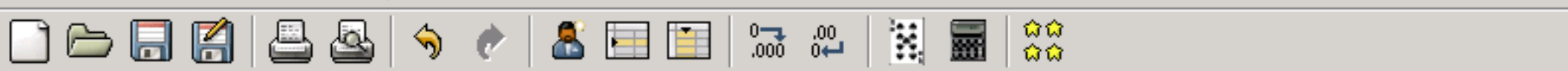
Player 1

	1	2
L	0 0 0 0	0 0 0 0
H	0 0 0 0	0 0 0 0

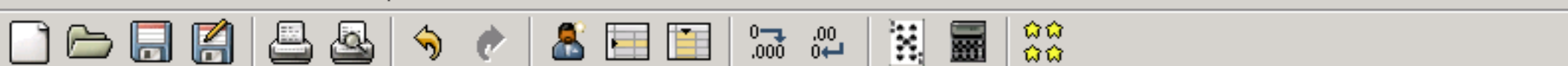
Player 2



		Player 2			
Player 1		1		2	
	L	0	0	0	0
	H	0	0	0	0



		Player 2			
Player 1		1		2	
	L	0	0	0	0
	H	0	0	0	0



Player 1

L

Player 2

1

1

L

0

0

0

0

H

0

0

0

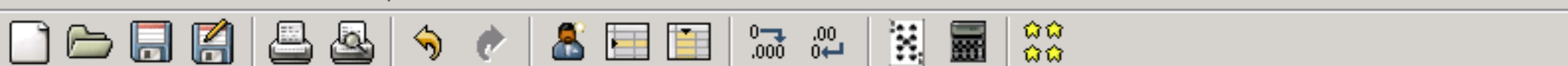
0

2

0

0

Player 1



Player 1

L

Player 2

1

L

2

L

0

0

0

0

H

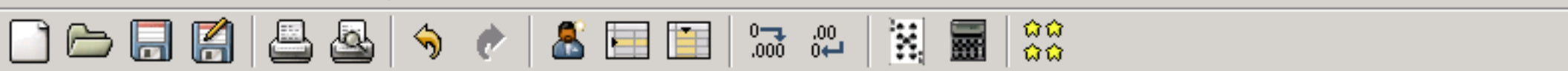
0

0

0

0

Player 1



Player 1

L

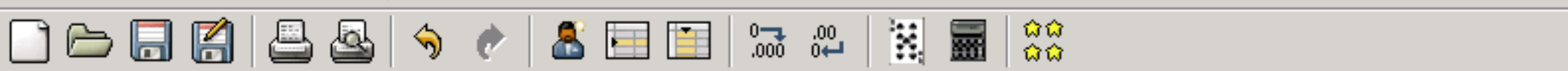
Player 2

1

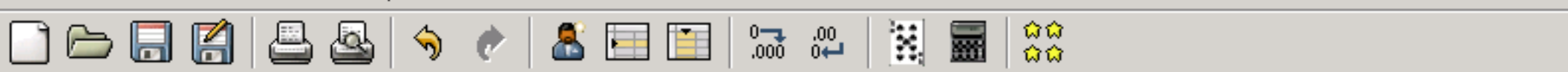
Player 1

	L	2
L	0 0	0 0
H	0 0	0 0

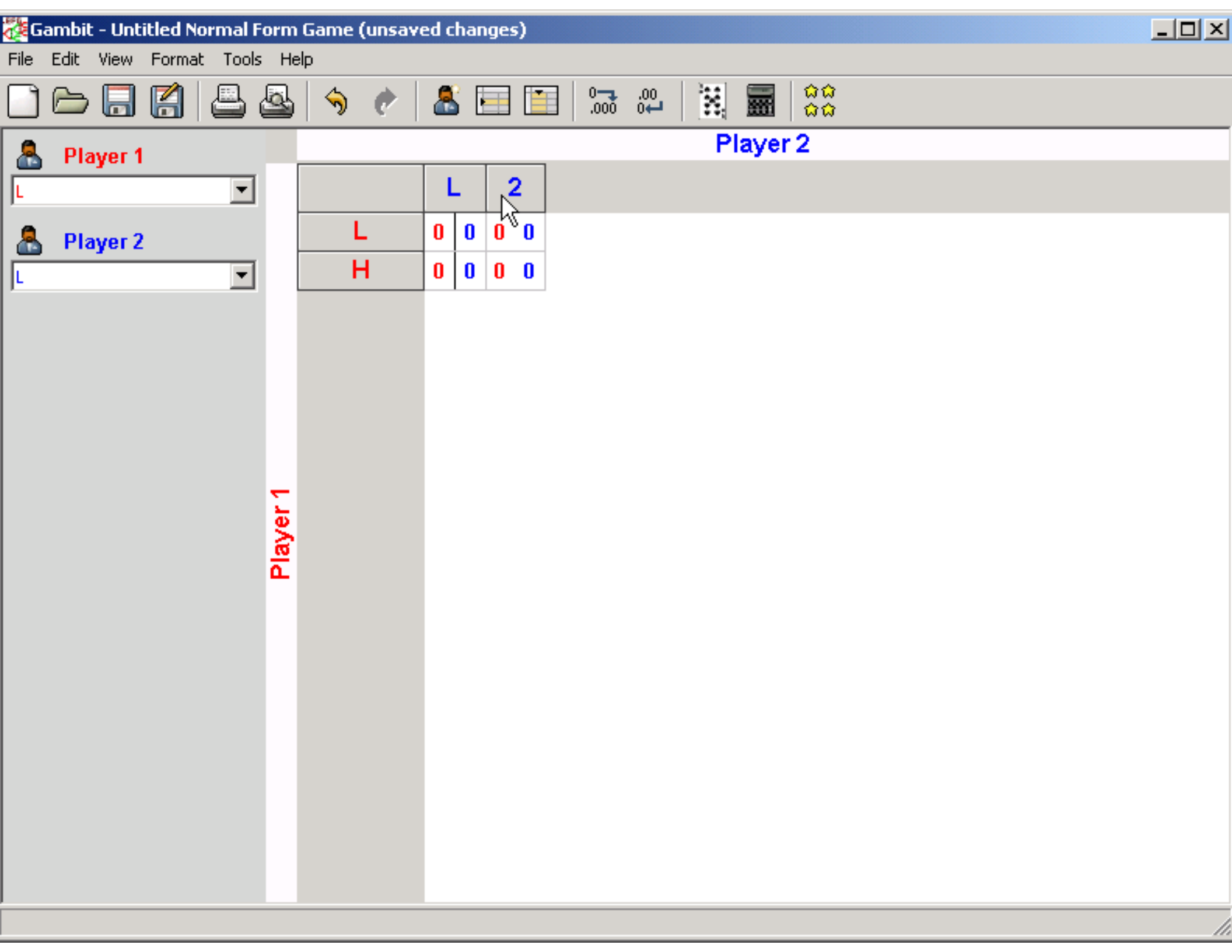
Player 2



Player 1		Player 2			
<div>Player 1</div> <div>L</div>		L	2		
	L	0	0	0	0
	H	0	0	0	0

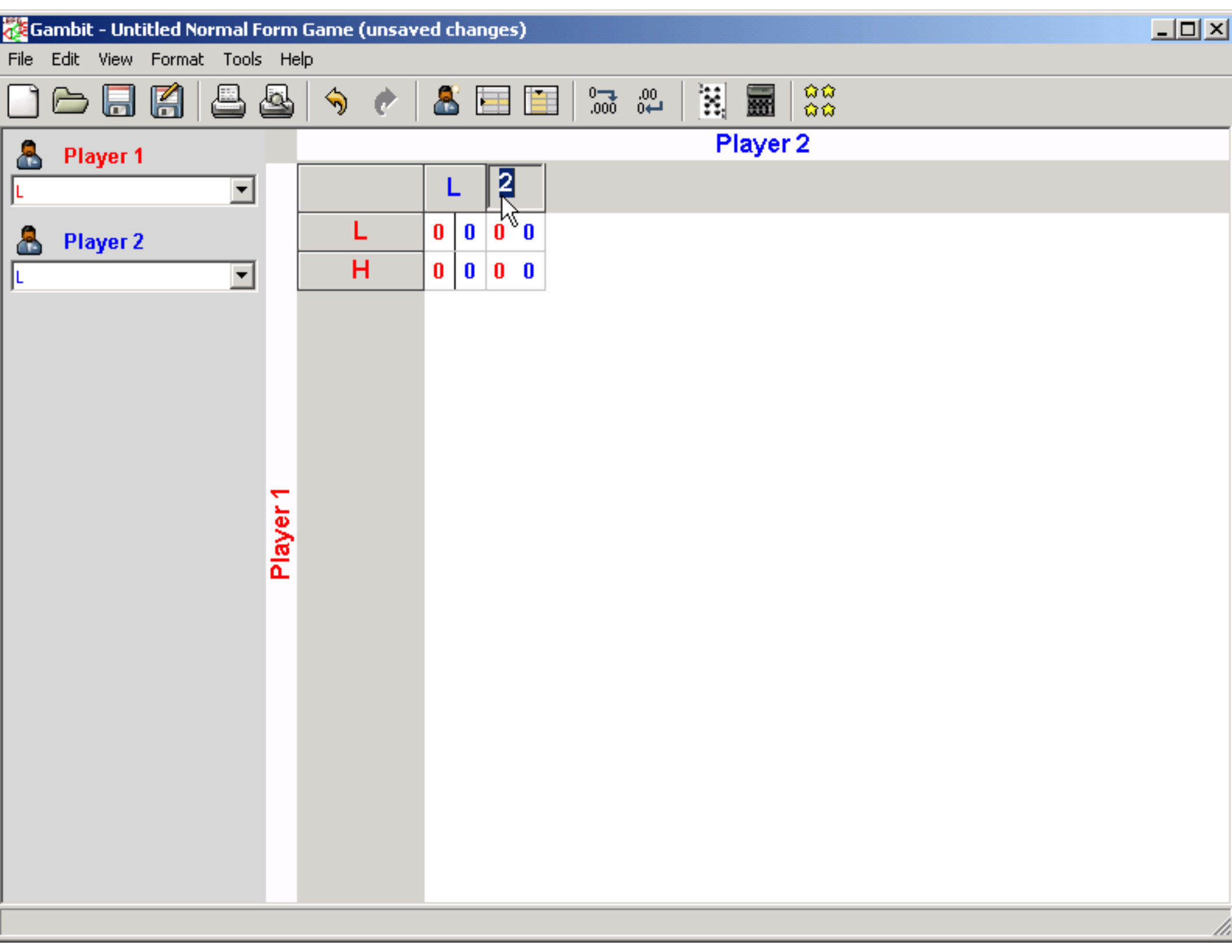


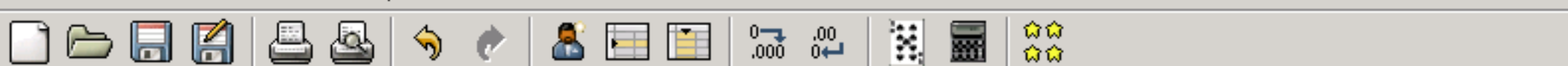
Player 1		Player 2			
<div>Player 1</div> <div>L</div>		L	2		
	L	0	0	0	0
	H	0	0	0	0



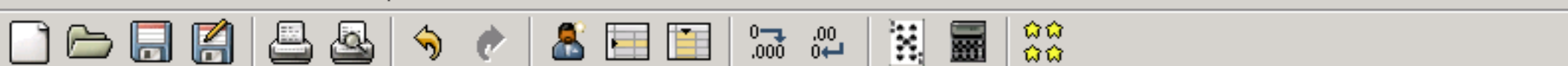
L		L	2
L	0	0	0
H	0	0	0

Player 1

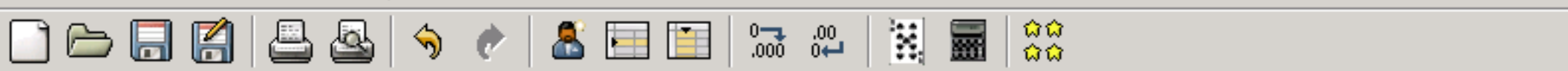




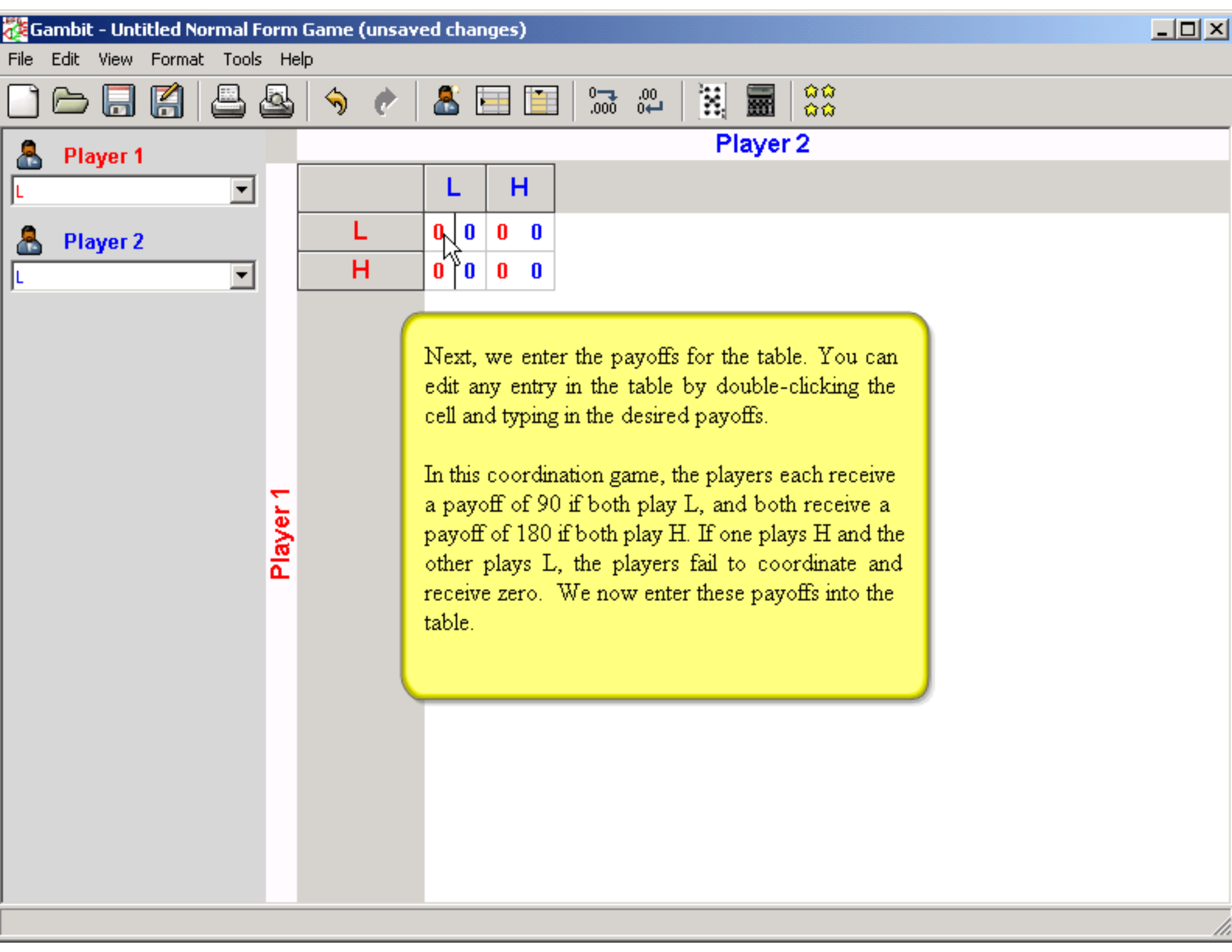
Player 1		Player 2			
Player 1	L		L	2	
	L	0	0	0	0
	H	0	0	0	0



		Player 2			
Player 1		L	H		
	L	0	0	0	0
	H	0	0	0	0



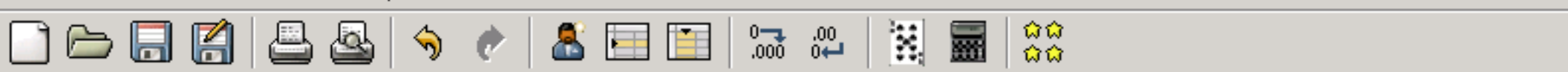
		Player 2			
Player 1		L	H		
	L	0	0	0	0
	H	0	0	0	0



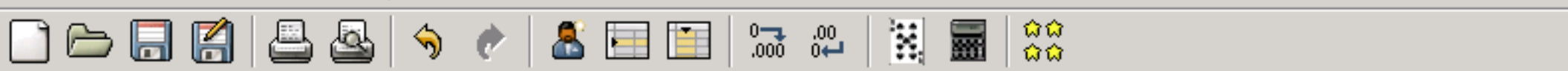
	L	H
L	0 0	0 0
H	0 0	0 0

Next, we enter the payoffs for the table. You can edit any entry in the table by double-clicking the cell and typing in the desired payoffs.

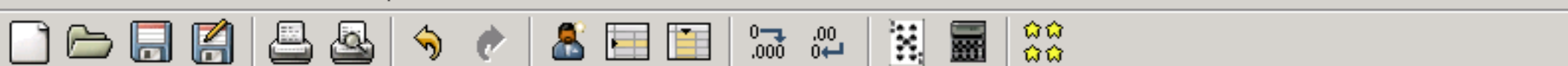
In this coordination game, the players each receive a payoff of 90 if both play L, and both receive a payoff of 180 if both play H. If one plays H and the other plays L, the players fail to coordinate and receive zero. We now enter these payoffs into the table.



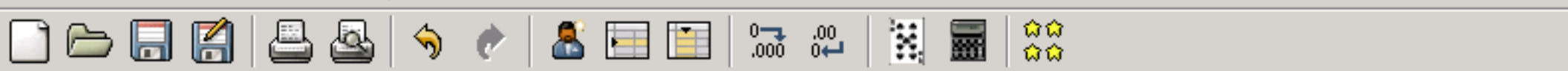
		Player 2			
Player 1		L	H		
	L	0	0	0	0
	H	0	0	0	0



		Player 2			
Player 1		L	H		
	L	0 0	0 0		
	H	0 0	0 0		



		Player 2			
Player 1		L		H	
	L	0	0	0	0
	H	0	0	0	0



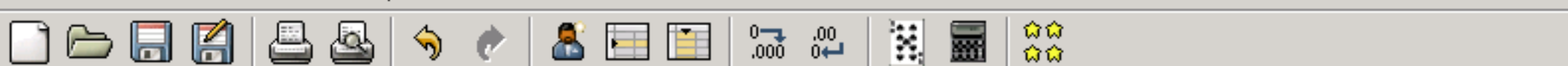
Player 1

Player 2

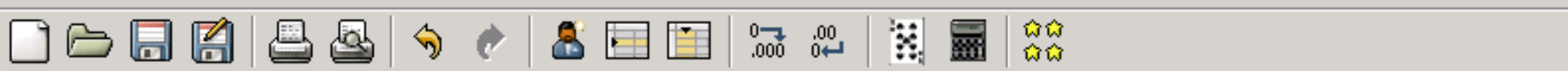
	L	H
L		0 0
H	0 0	0 0

Player 1

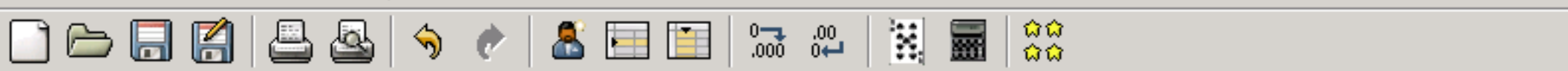
Player 2



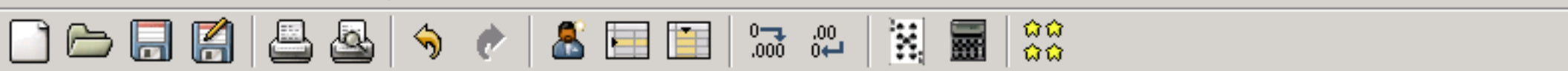
Player 1		Player 2			
Player 1		L	H		
	L	9	0	0	
	H	0	0	0	



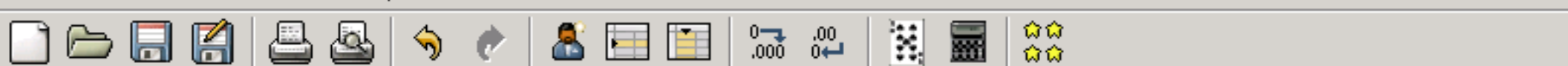
Player 1		Player 2			
Player 1	L	L		H	
	L	90	0	0	0
	H	0	0	0	0



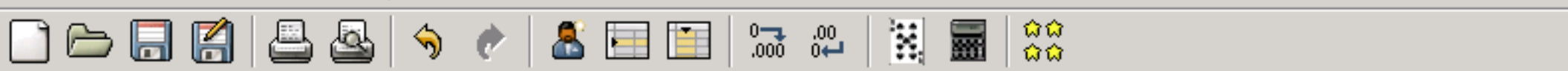
Player 1		Player 2			
Player 1		L	H		
	L	90	0	0	
	H	0	0	0	



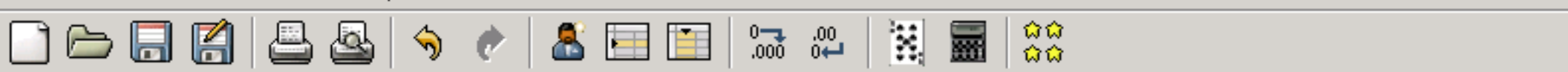
Player 1		Player 2			
Player 1		L	H		
	L	90	0	0	
	H	0	0	0	



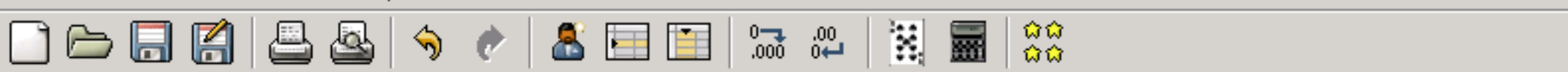
		Player 2			
Player 1		L		H	
	L	90 0	0 0	0 0	
	H	0 0	0 0	0 0	



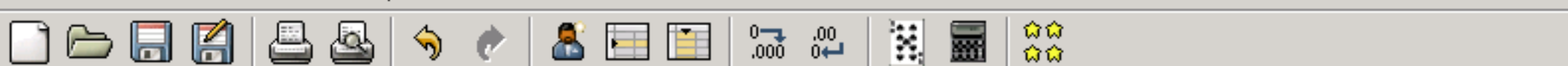
		Player 2			
Player 1		L	H		
	L	90 0	0 0		
	H	0 0	0 0		



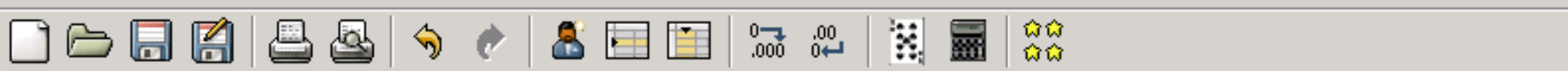
Player 1		Player 2			
Player 1		L	H		
	L	90	0	0	0
	H	0	0	0	0



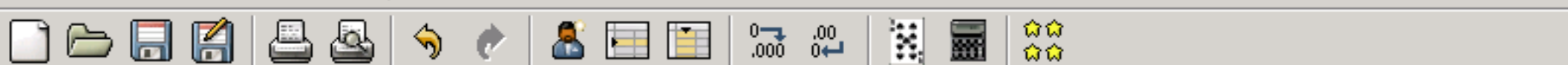
Player 1		Player 2			
Player 1		L	H		
	L	90	9	0	0
	H	0	0	0	0



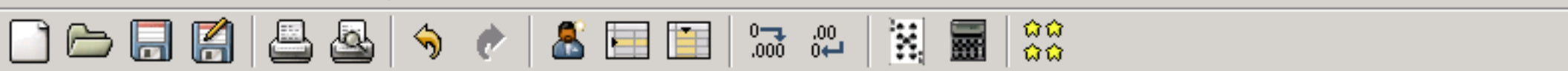
Player 1		Player 2			
Player 1		L	H		
	L	90	90	0	
	H	0	0	0	0



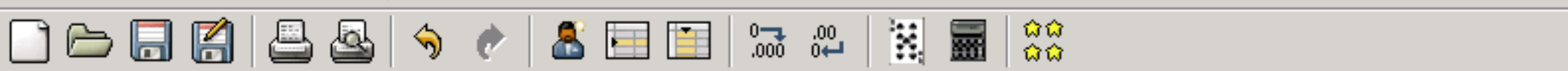
Player 1		Player 2			
Player 1		L		H	
	L	90	90	0	0
	H	0	0	0	0



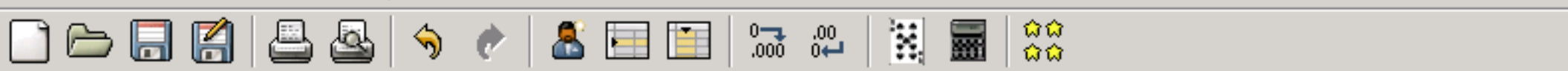
		Player 2			
Player 1		L	H		
	L	90 90	0 0		
	H	0 0	0 0		



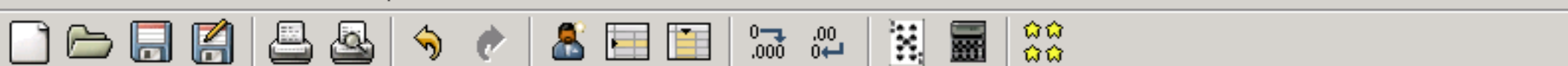
		Player 2			
Player 1	L	L		H	
	L	90	90	0	0
	H	0	0	0	0



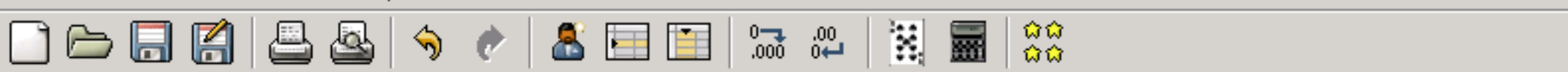
		Player 2			
Player 1		L	H		
	L	90 90	0 0		
	H	0 0	0 0		



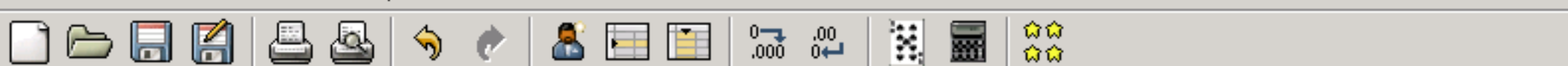
		Player 2			
Player 1	L		L	H	
	L	90	90	0	0
	H	0	0	1	



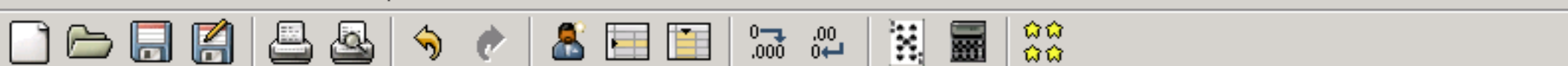
		Player 2			
Player 1	L		L	H	
	L	90	90	0	0
	H	0	0	18	



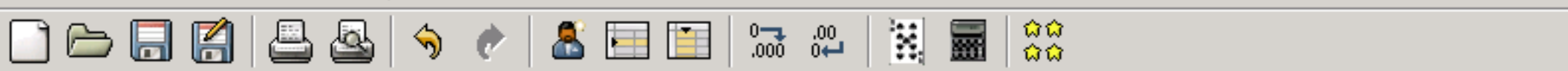
Player 1		Player 2	
Player 1	L		
	L	90 90	0 0
	H	0 0	180



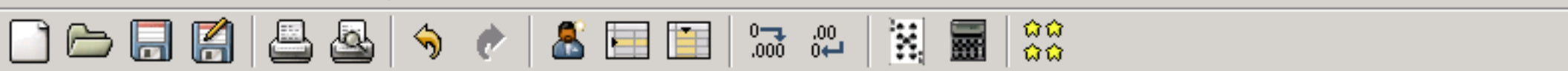
Player 1		Player 2			
Player 1		L	H		
	L	90 90	0 0		
	H	0 0	180 0		



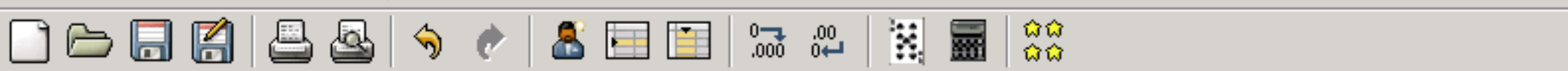
		Player 2			
Player 1		L	H		
	L	90 90	0 0		
	H	0 0	180 0		



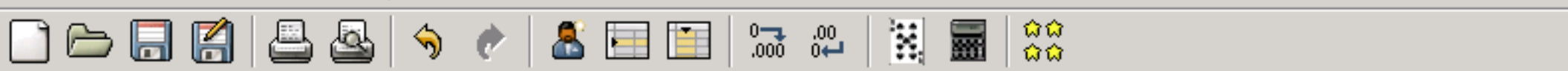
Player 1		Player 2	
Player 1	L	L	H
	L	90 90	0 0
	H	0 0	180 0



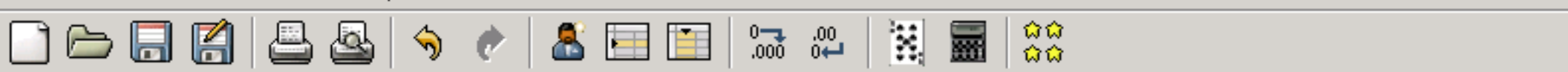
Player 1		Player 2	
Player 1	L	L	H
	L	90 90	0 0
	H	0 0	180 0



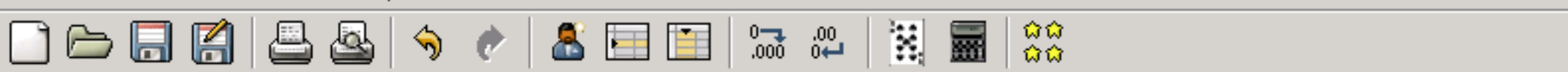
Player 1		Player 2	
Player 1	L		
	L	90 90	0 0
	H	0 0	180 0



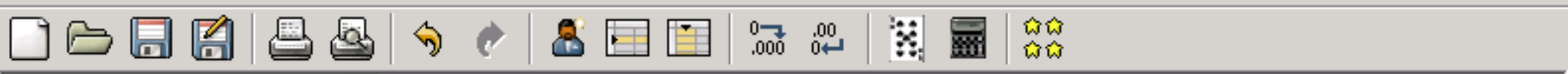
Player 1		Player 2	
Player 1	L	L	H
	L	90 90	0 0
	H	0 0	180 1



Player 1		Player 2	
Player 1	L	L	H
	L	90 90	0 0
	H	0 0	180 180



Player 1		Player 2	
Player 1		L	H
	L	90 90	0 0
	H	0 0	180 80



Player 1

L

Player 2

L

Player 1

		Player 2	
		L	H
L	L	90 90	0 0
	H	0 0	180 180

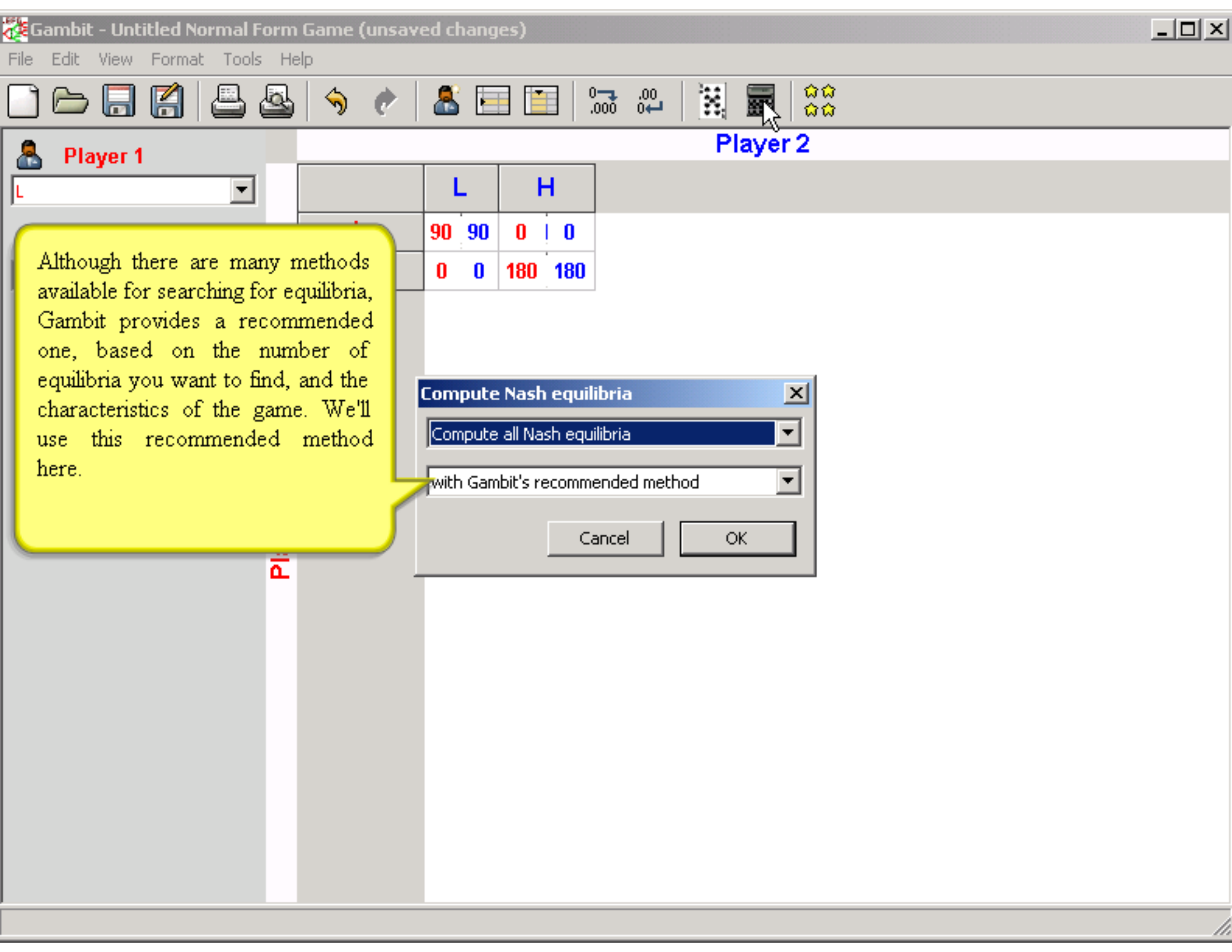
Let's now see what are the Nash equilibria of this game. Access the algorithms available for computing equilibria using the calculator button on the toolbar.



Player 1		Player 2			
Player 1	L	L		H	
	L	90 90	0 0	0 0	
	H	0 0	180 180		



Player 1		Player 2			
Player 1	L	L		H	
	L	90	90	0	0
	H	0	0	180	180



Player 1		Player 2	
L		L	H
		90 90	0 0
R		0 0	180 180

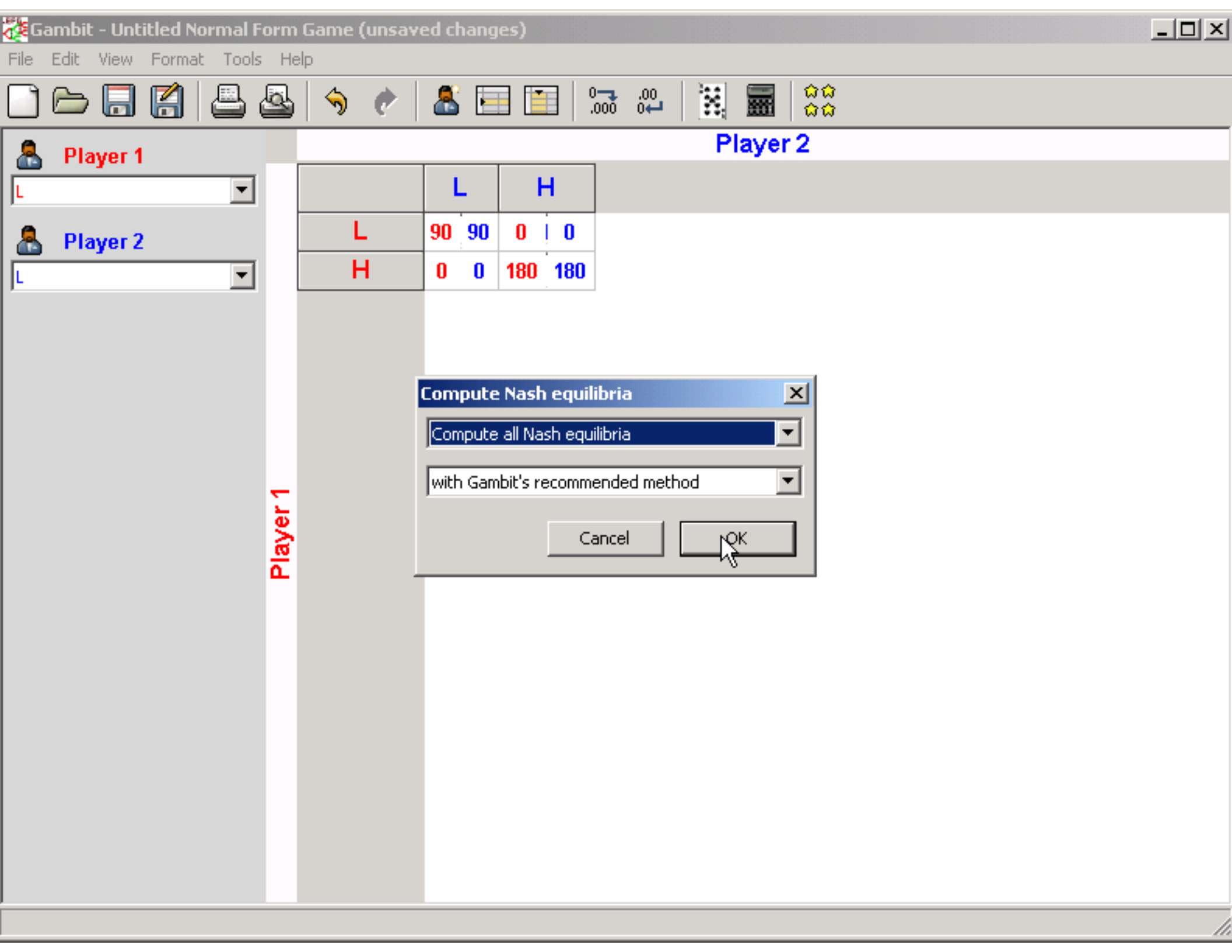
Although there are many methods available for searching for equilibria, Gambit provides a recommended one, based on the number of equilibria you want to find, and the characteristics of the game. We'll use this recommended method here.

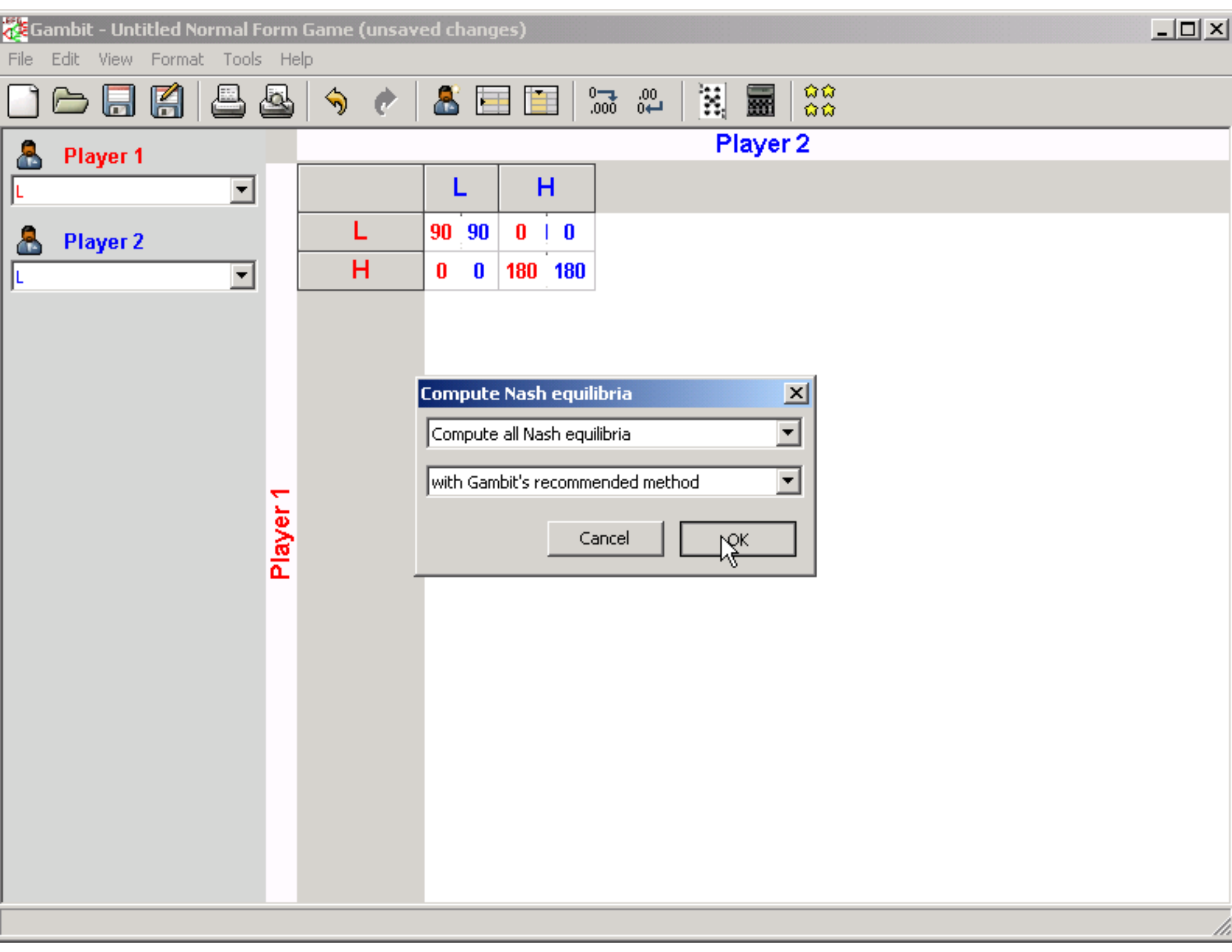
Compute Nash equilibria

Compute all Nash equilibria

with Gambit's recommended method

CancelOK





Player 1 (red) Player 2 (blue)

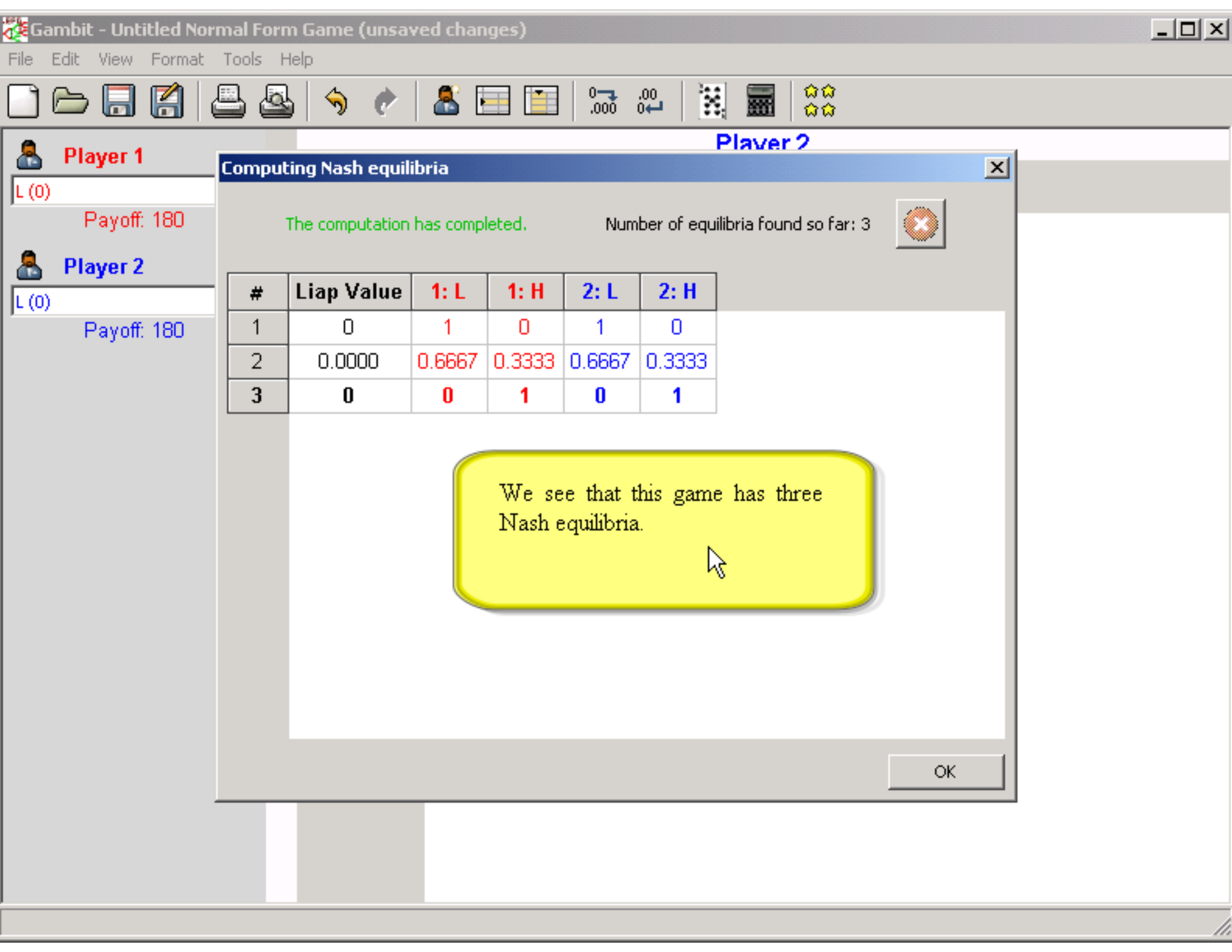
	L	H
L	90 90 0 0	0 0 180 180
H	0 0 180 180	

Compute Nash equilibria

Compute all Nash equilibria

with Gambit's recommended method

Cancel OK



Player 1

L (0)

Payoff: 180

Player 2

L (0)

Payoff: 180

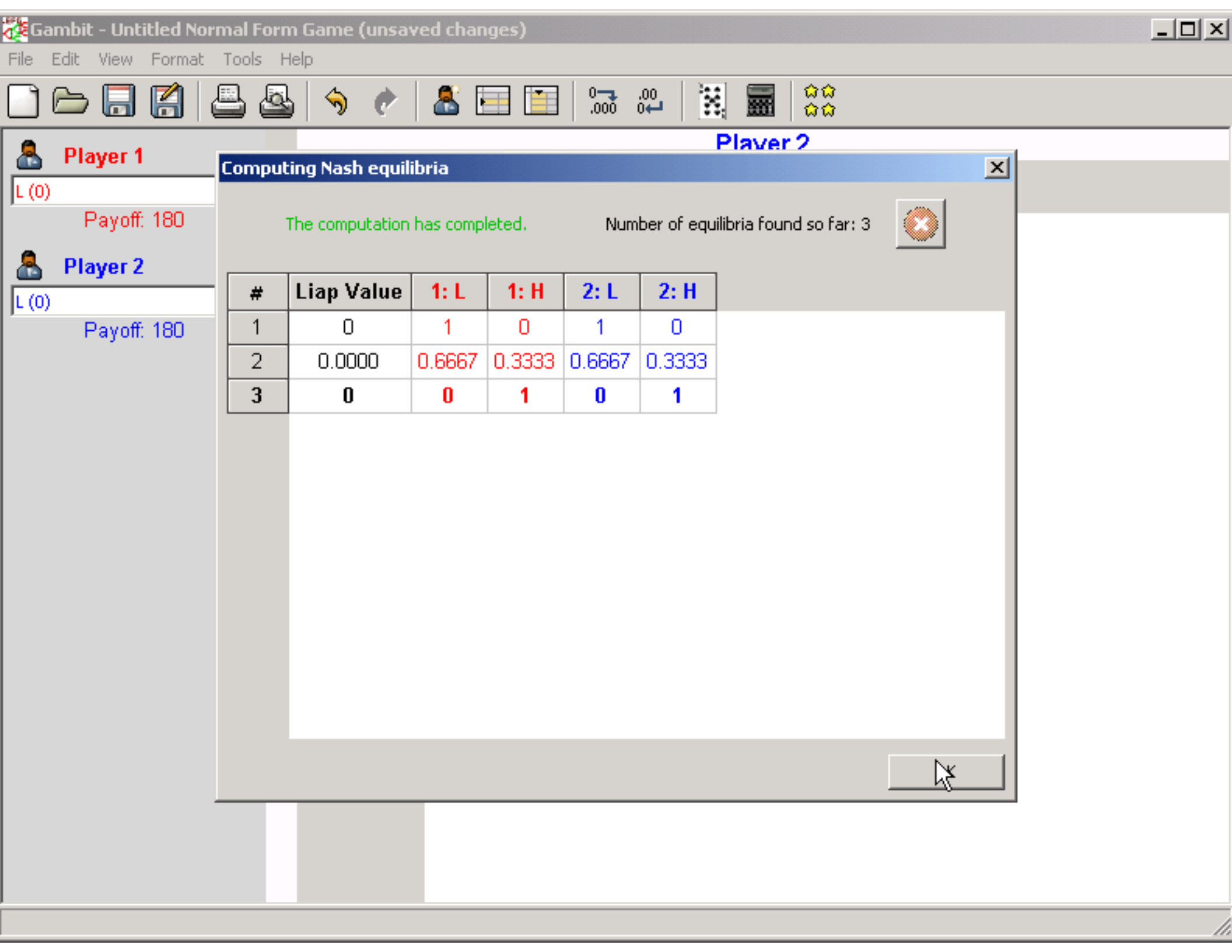
Computing Nash equilibria ✕

The computation has completed. Number of equilibria found so far: 3

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1

We see that this game has three Nash equilibria.

OK



L (0)

Payoff: 180

L (0)

Payoff: 180

Computing Nash equilibria

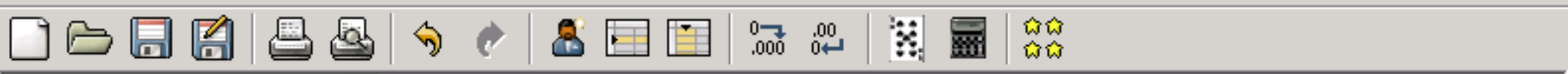
The computation has completed.

Number of equilibria found so far: 3



#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1





Player 1

L (0)

Payoff: 180

Player 2

L (0)

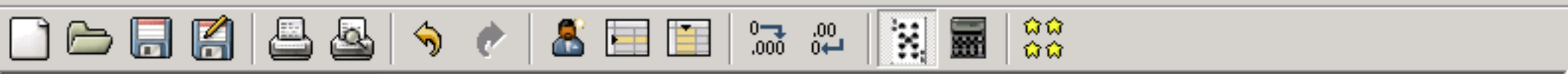
Payoff: 180

Player 2

Computing Nash equilibria

The computation has completed. Number of equilibria found so far: 3

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L (0)
Payoff: 180

Player 2

L (0)
Payoff: 180

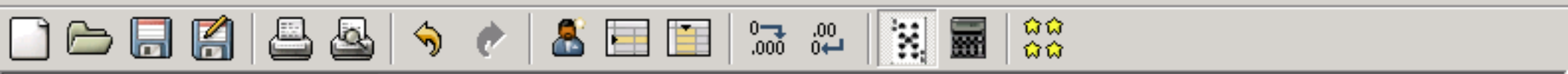
Player 2

Player 1

This panel lists the players in the game, and also information about their payoffs under each equilibrium. The payoffs shown correspond to the equilibrium highlighted in boldface below. This equilibrium, in which both players play H, gives both players a payoff of 180.

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1





Player 1

L (0) Payoff: 180

Player 2

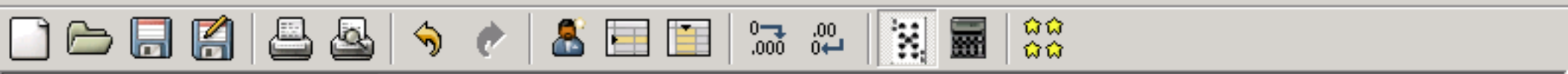
L (0) Payoff: 180

Player 2

	L	H
L	90 90	0 0
H	0 0	180 180

#	Liap
1	
2	0.
3	

We can change the equilibrium we are viewing by clicking on the corresponding row in the list of equilibria. Let's look at equilibrium 1 next.



Player 1

L (90)

Payoff: 90

Player 2

L (90)

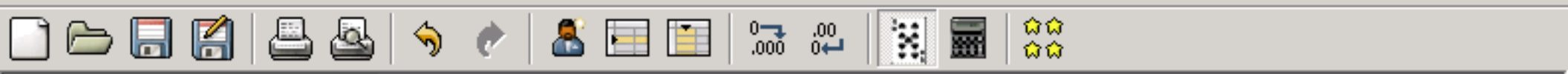
Payoff: 90

Player 1

		L	H
L	90 90	0 0	
H	0 0	180 180	

Player 2

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L (90)
Payoff: 90

Player 2

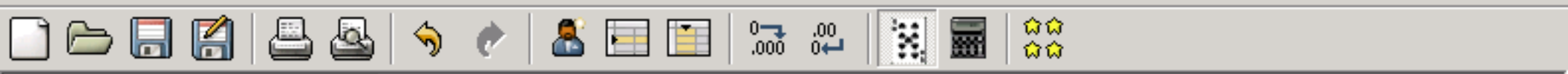
L (90)
Payoff: 90

Player 2

	L	H
L	90 90	0 0
H	0 0	180 180

#	Liap Value	1 · 1	1 · H	2 · L	2 · H
1					
2					
3					

Finally, let's investigate the last remaining equilibrium, in which the players randomize between their strategies.



Player 1

L (60.0000)
Payoff: 60.0000

Player 2

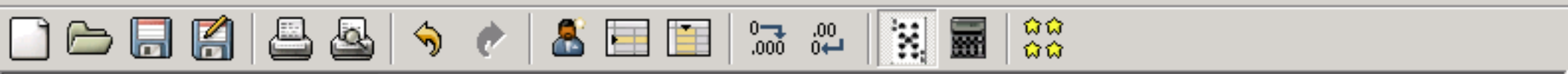
L (60.0000)
Payoff: 60.0000

Player 2

Player 1

Note that in this equilibrium, the players only attain an expected payoff of 60, which is inferior to both of the pure-strategy equilibria. This is typical in coordination games.

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L (60.0000)
Payoff: 60.0000

Player 2

L (60.0000)
Payoff: 60.0000

Player 1

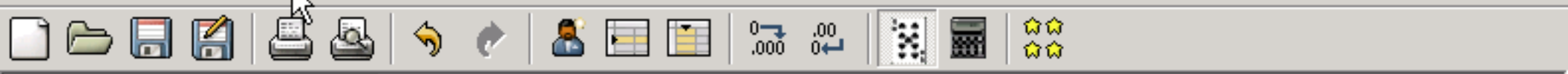
Player 2

	L	H
L	90, 90	0, 0
H	0, 0	180, 180

Now, let's investigate the quantal response equilibrium correspondence for this game. This correspondence can be computed using the Qre item on the Tools menu.

Now, let's investigate the quantal response equilibrium correspondence for this game. This correspondence can be computed using the Qre item on the Tools menu.

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L (60.0000) ▼

Payoff: 60.0000

Player 2

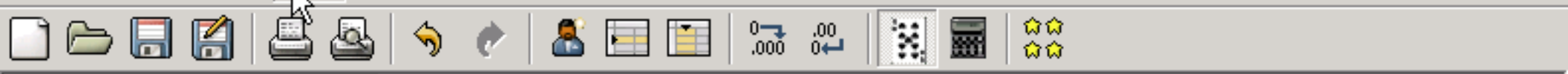
L (60.0000) ▼

Payoff: 60.0000

Player 2

	L	H
L	90 90	0 0
H	0 0	180 180

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L (60.0000) ▼

Payoff: 60.0000

Player 2

L (60.0000) ▼

Payoff: 60.0000

Player 2

	L	H
L	90 90	0 0
H	0 0	180 180

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1

Player 1

L (60.0000)
Payoff: 60.0000

Player 2

L (60.0000)
Payoff: 60.0000

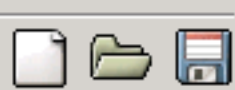
- Dominance
- Equilibrium
- Qre**

Player 1

Player 2

	L		H	
L	90	90	0	0
H	0	0	180	180

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Compute quantal response equilibria



The computation is currently in progress.



Player 1

L (60.0000)

Payoff: 6

Player 2

L (60.0000)

Payoff: 6

#

#	Liap V
1	0
2	0.000
3	0

Save correspondence to .csv file

OK

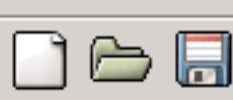


Payoff: 0

#	Lambda	1: L	1: H	2: L	2: H
168	87288.1000	0.0000	1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
			1.0000	0.0000	1.0000
181	301342.0000	0.0000	1.0000	0.0000	1.0000
182	331477.0000	0.0000	1.0000	0.0000	1.0000
183	364624.0000	0.0000	1.0000	0.0000	1.0000
184	401087.0000	0.0000	1.0000	0.0000	1.0000
185	441196.0000	0.0000	1.0000	0.0000	1.0000
186	485315.0000	0.0000	1.0000	0.0000	1.0000
187	533847.0000	0.0000	1.0000	0.0000	1.0000
188	587231.0000	0.0000	1.0000	0.0000	1.0000
189	645955.0000	0.0000	1.0000	0.0000	1.0000

The principal branch of the QRE correspondence selects the Pareto-superior equilibrium in which both players play H. In fact, this equilibrium is risk-dominant, and in 2x2 games, if a risk-dominant equilibrium exists, then it is always selected by the principal branch. (See Turocy, Games and Economic Behavior, 2005.)

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (60.0000)

Payoff: 60.0000

Player 2

L (60.0000)

Payoff: 60.0000

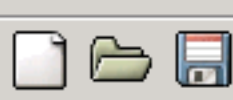
#	Liap V
1	0
2	0.0000
3	0

#	Lambda	1: L	1: H	2: L	2: H
168	87288.1000	0.0000	1.0000	0.0000	1.0000
169	96016.9000	0.0000	1.0000	0.0000	1.0000
170	105619.0000	0.0000	1.0000	0.0000	1.0000
171	116180.0000	0.0000	1.0000	0.0000	1.0000
172	127799.0000	0.0000	1.0000	0.0000	1.0000
173	140578.0000	0.0000	1.0000	0.0000	1.0000
174	154636.0000	0.0000	1.0000	0.0000	1.0000
175	170100.0000	0.0000	1.0000	0.0000	1.0000
176	187110.0000	0.0000	1.0000	0.0000	1.0000
177	205821.0000	0.0000	1.0000	0.0000	1.0000
178	226403.0000	0.0000	1.0000	0.0000	1.0000
179	249043.0000	0.0000	1.0000	0.0000	1.0000
180	273948.0000	0.0000	1.0000	0.0000	1.0000
181	301342.0000	0.0000	1.0000	0.0000	1.0000
182	331477.0000	0.0000	1.0000	0.0000	1.0000
183	364624.0000	0.0000	1.0000	0.0000	1.0000
184	401087.0000	0.0000	1.0000	0.0000	1.0000
185	441196.0000	0.0000	1.0000	0.0000	1.0000
186	485315.0000	0.0000	1.0000	0.0000	1.0000
187	533847.0000	0.0000	1.0000	0.0000	1.0000
188	587231.0000	0.0000	1.0000	0.0000	1.0000
189	645955.0000	0.0000	1.0000	0.0000	1.0000

You can save this output to a comma-separated values (CSV) file, suitable for importing into other programs for further analysis and/or plotting.

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (60.0000)

Payoff: 6

Player 2

L (60.0000)

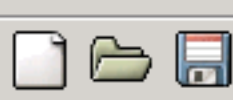
Payoff: 6

#	Liap V
1	0
2	0.000
3	0

#	Lambda	1: L	1: H	2: L	2: H
1	0.0012	0.4850	0.5150	0.4850	0.5150
2	0.0024	0.4685	0.5315	0.4685	0.5315
3	0.0034	0.4504	0.5496	0.4504	0.5496
4	0.0044	0.4304	0.5696	0.4304	0.5696
5	0.0053	0.4085	0.5915	0.4085	0.5915
6	0.0062	0.3843	0.6157	0.3843	0.6157
7	0.0070	0.3577	0.6423	0.3577	0.6423
8	0.0078	0.3285	0.6715	0.3285	0.6715
9	0.0086	0.2964	0.7036	0.2964	0.7036
10	0.0095	0.2610	0.7390	0.2610	0.7390
11	0.0104	0.2221	0.7779	0.2221	0.7779
12	0.0116	0.1793	0.8207	0.1793	0.8207
13	0.0130	0.1322	0.8678	0.1322	0.8678
14	0.0154	0.0805	0.9195	0.0805	0.9195
15	0.0214	0.0237	0.9763	0.0237	0.9763
16	0.0268	0.0084	0.9916	0.0084	0.9916
17	0.0330	0.0027	0.9973	0.0027	0.9973
18	0.0464	0.0002	0.9998	0.0002	0.9998
19	0.0503	0.0001	0.9999	0.0001	0.9999
20	0.0546	0.0001	0.9999	0.0001	0.9999
21	0.0594	0.0000	1.0000	0.0000	1.0000
22	0.0646	0.0000	1.0000	0.0000	1.0000

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (60.0000)

Payoff: 6

Player 2

L (60.0000)

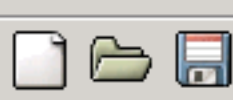
Payoff: 6

#	Liap V
1	0
2	0.000
3	0

#	Lambda	1: L	1: H	2: L	2: H
1	0.0012	0.4850	0.5150	0.4850	0.5150
2	0.0024	0.4685	0.5315	0.4685	0.5315
3	0.0034	0.4504	0.5496	0.4504	0.5496
4	0.0044	0.4304	0.5696	0.4304	0.5696
5	0.0053	0.4085	0.5915	0.4085	0.5915
6	0.0062	0.3843	0.6157	0.3843	0.6157
7	0.0070	0.3577	0.6423	0.3577	0.6423
8	0.0078	0.3285	0.6715	0.3285	0.6715
9	0.0086	0.2964	0.7036	0.2964	0.7036
10	0.0095	0.2610	0.7390	0.2610	0.7390
11	0.0104	0.2221	0.7779	0.2221	0.7779
12	0.0116	0.1793	0.8207	0.1793	0.8207
13	0.0130	0.1322	0.8678	0.1322	0.8678
14	0.0154	0.0805	0.9195	0.0805	0.9195
15	0.0214	0.0237	0.9763	0.0237	0.9763
16	0.0268	0.0084	0.9916	0.0084	0.9916
17	0.0330	0.0027	0.9973	0.0027	0.9973
18	0.0464	0.0002	0.9998	0.0002	0.9998
19	0.0503	0.0001	0.9999	0.0001	0.9999
20	0.0546	0.0001	0.9999	0.0001	0.9999
21	0.0594	0.0000	1.0000	0.0000	1.0000
22	0.0646	0.0000	1.0000	0.0000	1.0000

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (60.0000)

Payoff: 6

Player 2

L (60.0000)

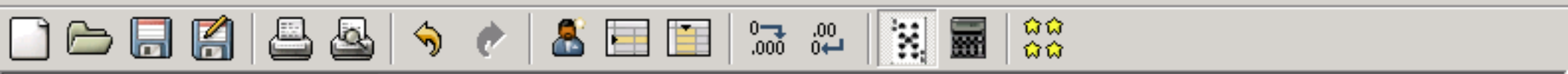
Payoff: 6

#	Liap V
1	0
2	0.000
3	0

#	Lambda	1: L	1: H	2: L	2: H
1	0.0012	0.4850	0.5150	0.4850	0.5150
2	0.0024	0.4685	0.5315	0.4685	0.5315
3	0.0034	0.4504	0.5496	0.4504	0.5496
4	0.0044	0.4304	0.5696	0.4304	0.5696
5	0.0053	0.4085	0.5915	0.4085	0.5915
6	0.0062	0.3843	0.6157	0.3843	0.6157
7	0.0070	0.3577	0.6423	0.3577	0.6423
8	0.0078	0.3285	0.6715	0.3285	0.6715
9	0.0086	0.2964	0.7036	0.2964	0.7036
10	0.0095	0.2610	0.7390	0.2610	0.7390
11	0.0104	0.2221	0.7779	0.2221	0.7779
12	0.0116	0.1793	0.8207	0.1793	0.8207
13	0.0130	0.1322	0.8678	0.1322	0.8678
14	0.0154	0.0805	0.9195	0.0805	0.9195
15	0.0214	0.0237	0.9763	0.0237	0.9763
16	0.0268	0.0084	0.9916	0.0084	0.9916
17	0.0330	0.0027	0.9973	0.0027	0.9973
18	0.0464	0.0002	0.9998	0.0002	0.9998
19	0.0503	0.0001	0.9999	0.0001	0.9999
20	0.0546	0.0001	0.9999	0.0001	0.9999
21	0.0594	0.0000	1.0000	0.0000	1.0000
22	0.0646	0.0000	1.0000	0.0000	1.0000

Save correspondence to .csv file

OK



Player 1

L (60.0000)
Payoff: 60.0000

Player 2

L (60.0000)
Payoff: 60.0000

Player 1

	L	H
L	90 90	0 0
H	0 0	180 180

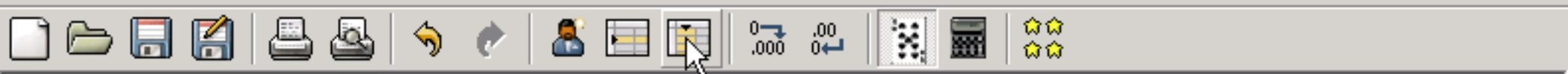
In the Goeree-Holt experiments, they add a third strategy for the column player. This is a "safe" strategy which gives that player a payoff of 40.

We can add a strategy for the column player by clicking on the add column button on the toolbar.

We now do this, give the new strategy a name ("S"), and assign the payoffs of 40 to the column player.

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1





Player 1

L (60.0000) ▼

Payoff: 60.0000

Player 2

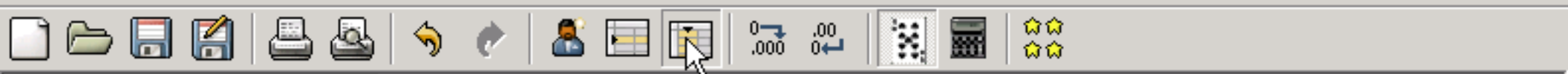
L (60.0000) ▼

Payoff: 60.0000

Player 1

		L	H
L	90 90	0 0	
H	0 0	180 180	

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L (60.0000) ▼

Payoff: 60.0000

Player 2

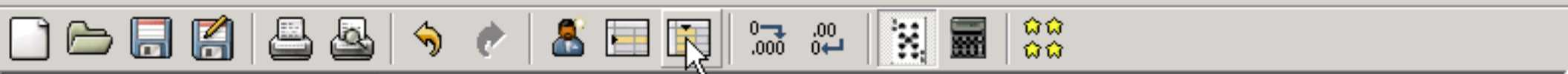
L (60.0000) ▼

Payoff: 60.0000

Player 2

	L	H
L	90 90	0 0
H	0 0	180 180

#	Liap Value	1: L	1: H	2: L	2: H
1	0	1	0	1	0
2	0.0000	0.6667	0.3333	0.6667	0.3333
3	0	0	1	0	1



Player 1

L

Player 2

L

Player 1

	L	H	3
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: 3
---	------------	------	------	------	------	------

--	--	--	--	--	--	--



Player 1

L

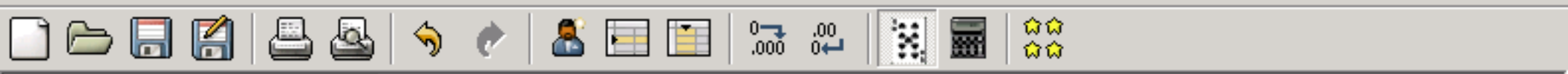
Player 2

L

Player 2

	L	H	3
L	90 90	0 0	0 0
H	0 0	180 180	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: 3



Player 1

L

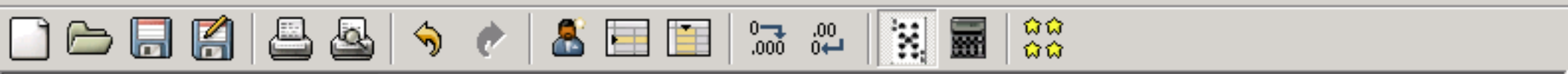
Player 2

L

Player 2

	L	H	3
L	90 90	0 0	0 0
H	0 0	180 180	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: 3



Player 1

L

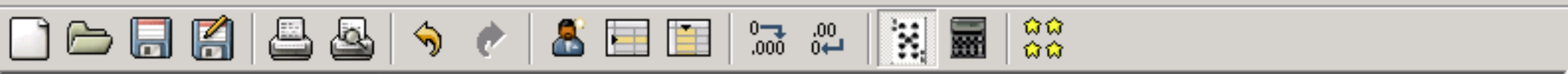
Player 2

L

Player 2

	L	H	3
L	90 90	0 0	0 0
H	0 0	180 180	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: 3



Player 1

L

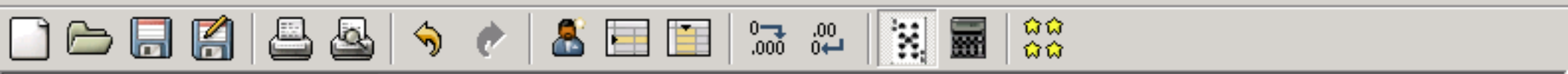
Player 2

L

Player 2

	L	H	3
L	90 90	0 0	0 0
H	0 0	180 180	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: 3



Player 1

L

Player 2

L

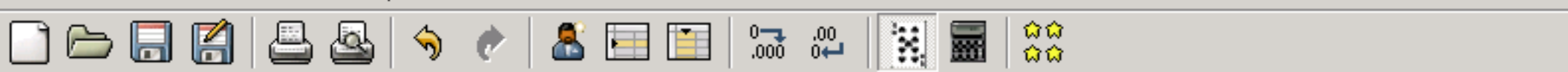
Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: 3
---	------------	------	------	------	------	------

--	--	--	--	--	--	--



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: 3



Player 1

L

Player 2

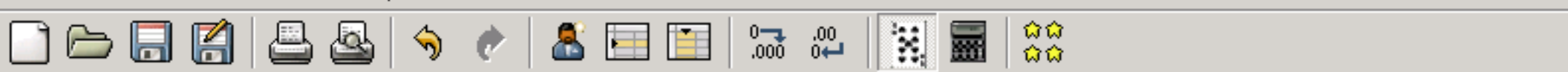
L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

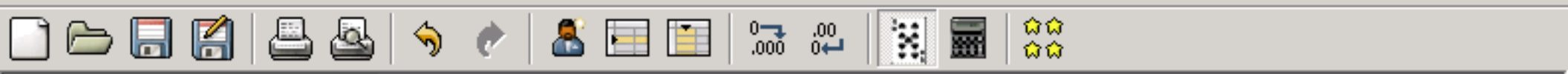
Player 2

L

Player 1

	L	H	S
L	90 90 0 0	0 0 0 0	
H	0 0 180 180	0 0	

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

Player 2

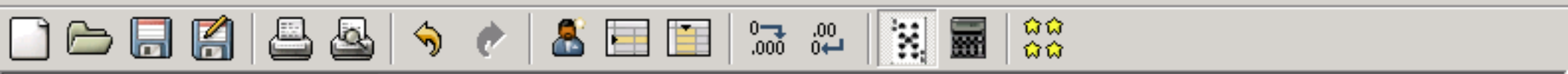
L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------

--	--	--	--	--	--	--



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 4
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 4
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

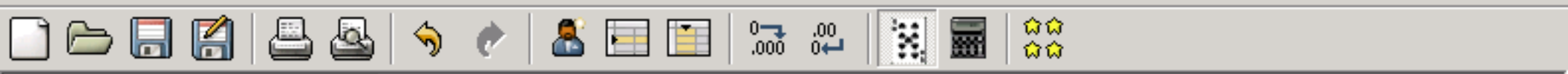
Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: S



		Player 2			
Player 1	L		L	H	S
	L	90 90	0 0	0 0	40 0
	H	0 0	180 180	0 0	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

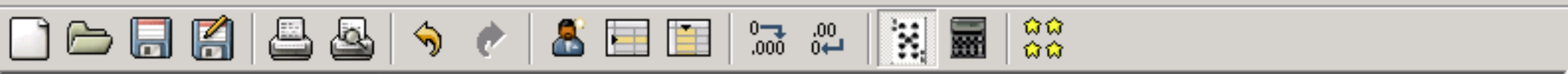
L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 2

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 0

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 0

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 4

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

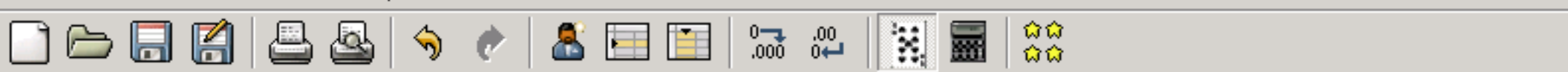
L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

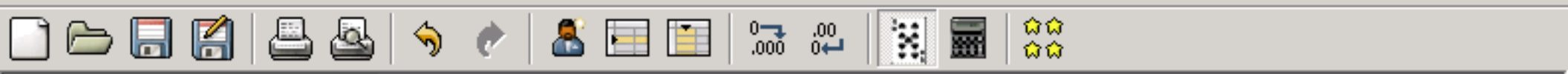
Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

Player 2

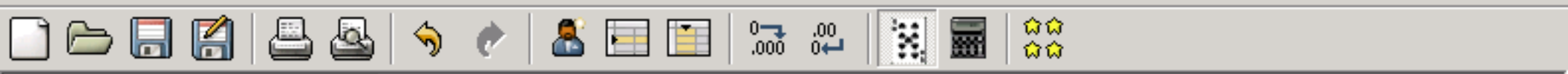
Player 1

Player 2

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	40 40

The treatment parameter in Goeree and Holt is the payoff to the row player when (L,S) is played. In one treatment, a payoff of 400 is assigned to this cell.

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

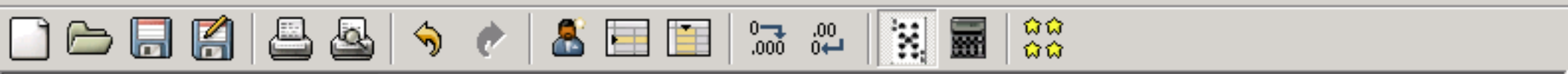
Player 2

L

Player 1

	L	H	S
L	90 90 0 0 0 40		
H	0 0 180 180 0 40		

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	4 4
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S

Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	400
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S



L



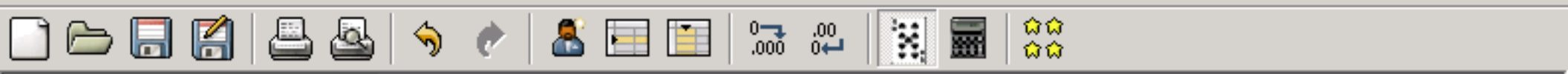
L

Player 1

Player 2

	L	H	S
L	90 90	0 0	400
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	400
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	400
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

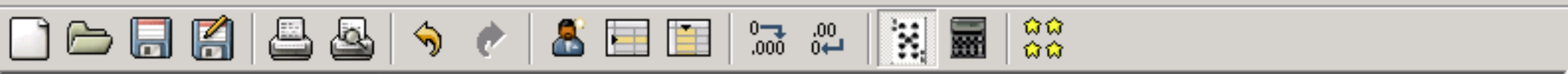
Player 2

L

Player 1

	L	H	S
L	90 90	0 0	400
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

Player 2

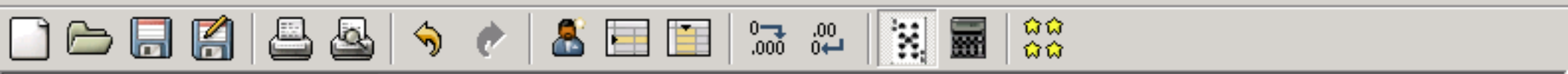
L

Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------

--



Player 1

L

Player 2

L

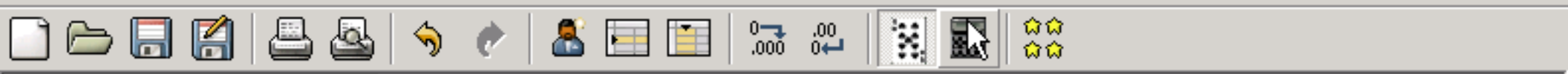
Player 1

Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

It turns out that the addition of this strategy does not change the set of Nash equilibria of this game. To verify this, we recompute the equilibria.

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------



Player 1

L

Player 2

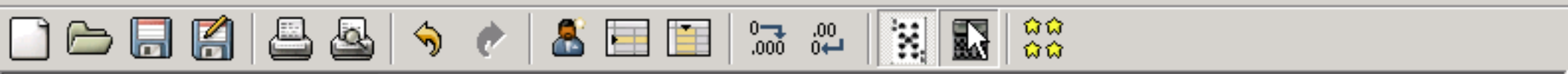
L

Player 1

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

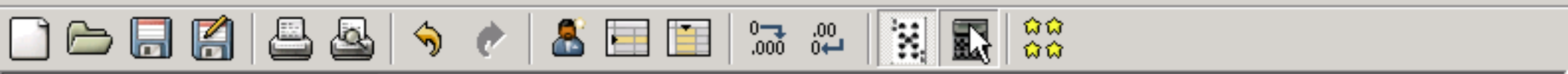
Player 2

L

Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

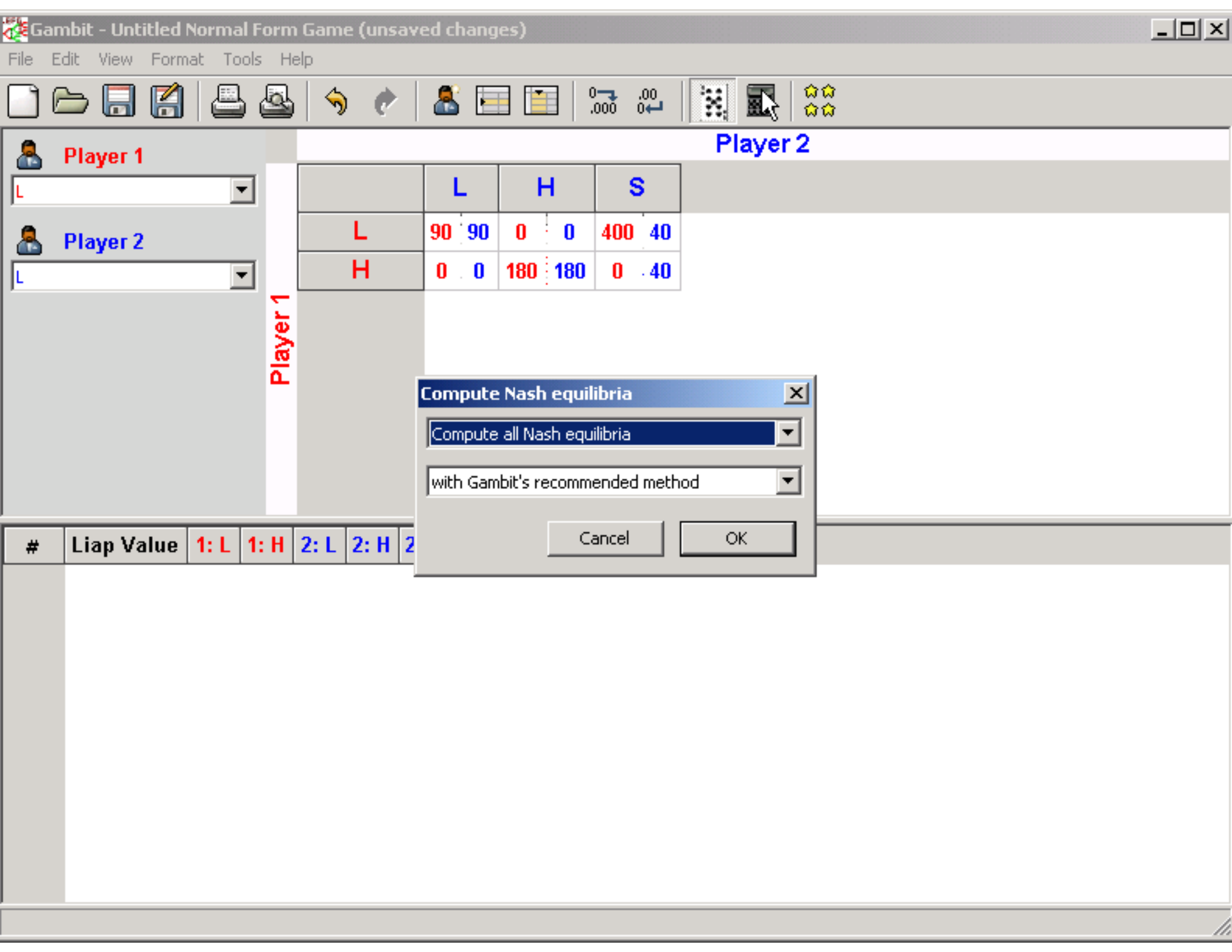
Player 2

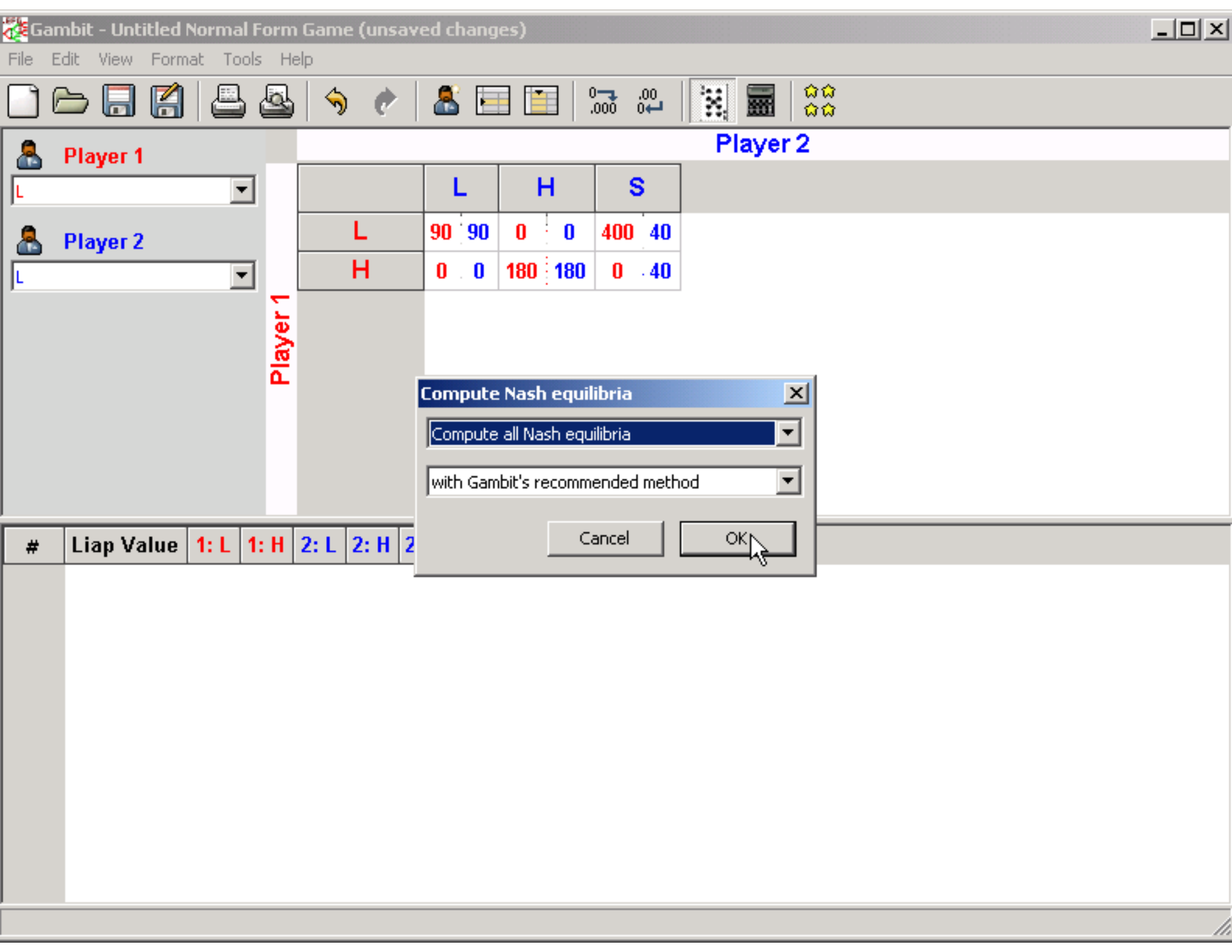
L

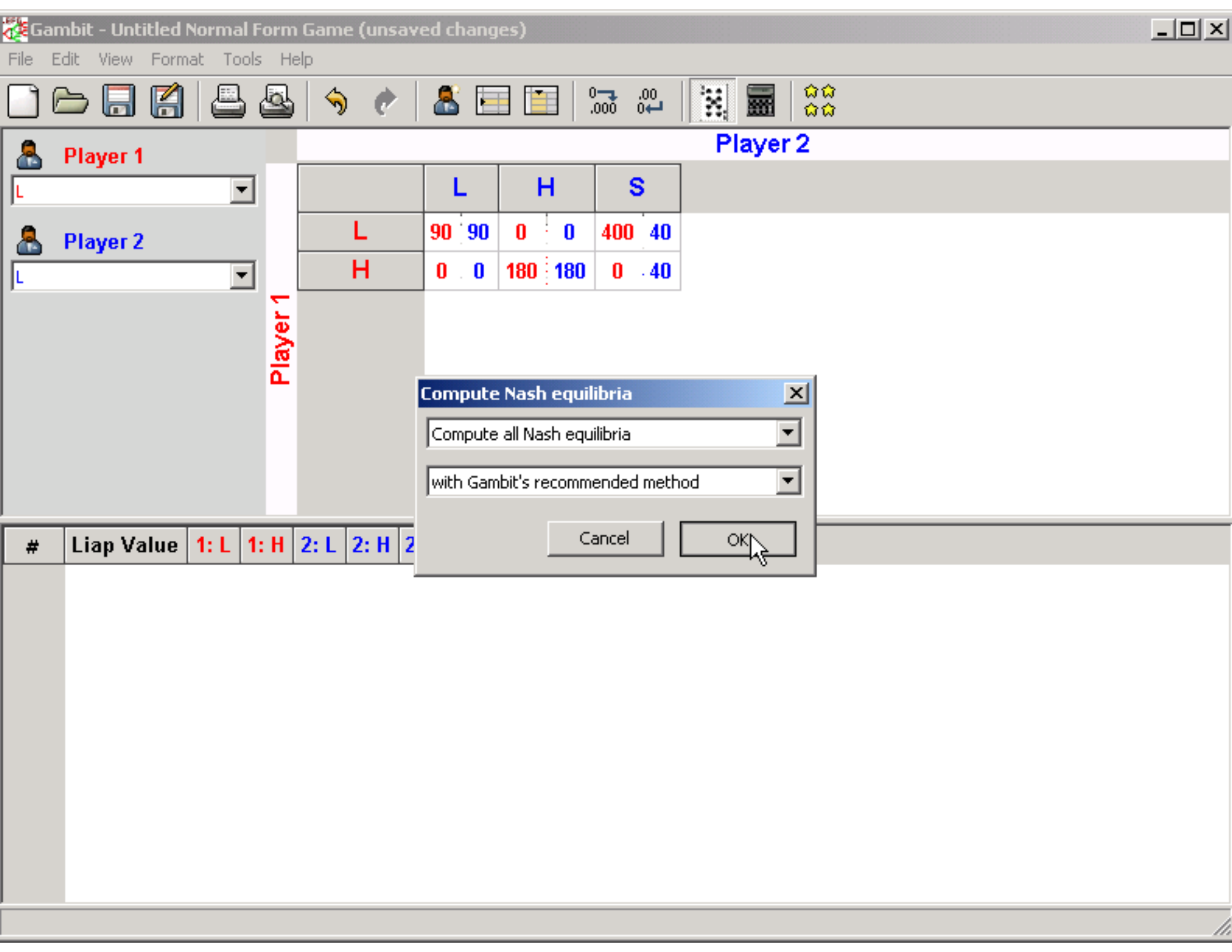
Player 2

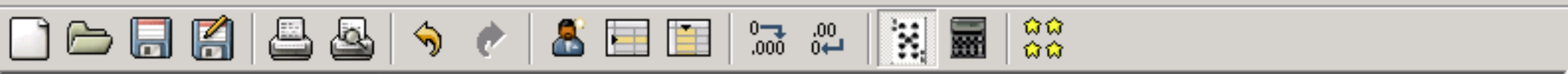
	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S









Player 1

L (0)

Payoff: 180

Player 2

L (0)

Payoff: 180

#	Liap Value	
1	0	
2	0.0000	0.6
3	0	

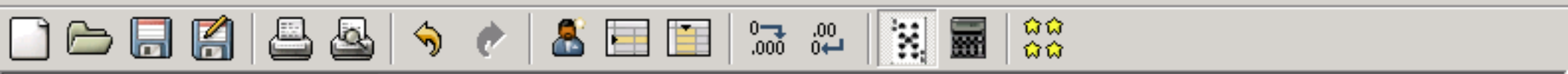
Player 2

Computing Nash equilibria

The computation has completed. Number of equilibria found so far: 3

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0

OK



Player 1
 L (0)
 Payoff: 180

Player 2
 L (0)
 Payoff: 180

#	Liap Value	
1	0	
2	0.0000	0.6
3	0	

Player 2

Computing Nash equilibria
×

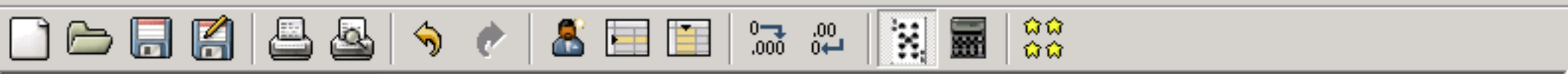
The computation has completed.

Number of equilibria found so far: 3

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0

Player 1
 L (0)
 Payoff: 180

Player 2
 L (0)
 Payoff: 180



Player 1

L (0)
 Payoff: 180

Player 2

L (0)
 Payoff: 180

#	Liap Value	
1	0	
2	0.0000	0.6
3	0	

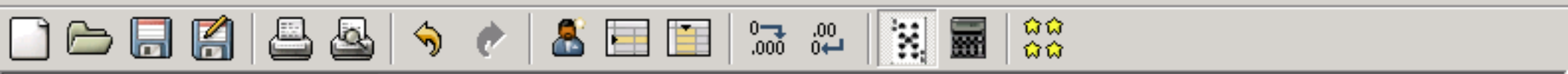
Player 2

Computing Nash equilibria
×

The computation has completed.

Number of equilibria found so far: 3

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Player 1

L (0)

Payoff: 180

Player 2

L (0)

Payoff: 180

Player 1

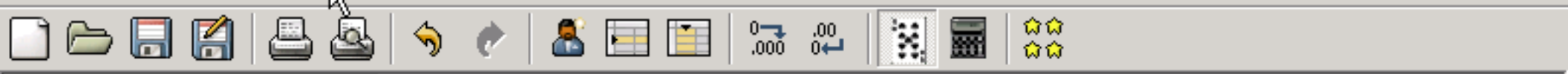
Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

Now, let's look at the quantal response correspondence for this modified game.

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0





Player 1

L (0) Payoff: 180

Player 2

L (0) Payoff: 180

Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0

Player 1

L (0)

Payoff: 180

Player 2

L (0)

Payoff: 180

Player 1

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0

Player 1

L (0)

Payoff: 180

Player 2

L (0)

Payoff: 180

		Player 2					
		L		H		S	
L	90	90	0	0	400	40	
H	0	0	180	180	0	40	

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0

Player 1

L (0) ▼

Payoff: 180

Player 2

L (0) ▼

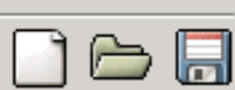
Payoff: 180

Dominance
Equilibrium
Qre

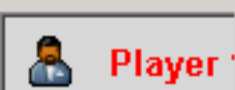
	Player 2					
	L		H		S	
L	90	90	0	0	400	40
H	0	0	180	180	0	40

Player 1

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Compute quantal response equilibria



Player 1

L (0)

Payoff



Player 2

L (0)

Payoff

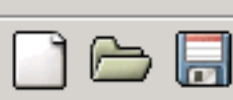
#	Liap V
1	0
2	0.000
3	0

The computation is currently in progress.



Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (0)

Payoff

Player 2

L (0)

Payoff

#	Liap V
1	0
2	0.000
3	0

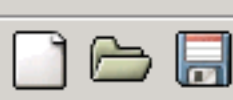
#	Lambda	1: L	1: H	2: L	2: H	2: S
189	140579.0000	1.0000	0.0000	1.0000	0.0000	0.0000
190	154637.0000	1.0000	0.0000	1.0000	0.0000	0.0000
191	170100.0000	1.0000	0.0000	1.0000	0.0000	0.0000
192	187110.0000	1.0000	0.0000	1.0000	0.0000	0.0000
193	205821.0000	1.0000	0.0000	1.0000	0.0000	0.0000
194	226403.0000	1.0000	0.0000	1.0000	0.0000	0.0000
195	249044.0000	1.0000	0.0000	1.0000	0.0000	0.0000
196	273948.0000	1.0000	0.0000	1.0000	0.0000	0.0000
197	301343.0000	1.0000	0.0000	1.0000	0.0000	0.0000
198	331477.0000	1.0000	0.0000	1.0000	0.0000	0.0000
199	364625.0000	1.0000	0.0000	1.0000	0.0000	0.0000
200	401087.0000	1.0000	0.0000	1.0000	0.0000	0.0000
201	441196.0000	1.0000	0.0000	1.0000	0.0000	0.0000
202	485316.0000	1.0000	0.0000	1.0000	0.0000	0.0000
203	533847.0000	1.0000	0.0000	1.0000	0.0000	0.0000
204	587232.0000	1.0000	0.0000	1.0000	0.0000	0.0000
205	645955.0000	1.0000	0.0000	1.0000	0.0000	0.0000
206	710550.0000	1.0000	0.0000	1.0000	0.0000	0.0000
207	781605.0000	1.0000	0.0000	1.0000	0.0000	0.0000
208	859766.0000	1.0000	0.0000	1.0000	0.0000	0.0000
209	945742.0000	1.0000	0.0000	1.0000	0.0000	0.0000
210	1040320.0000	1.0000	0.0000	1.0000	0.0000	0.0000

We see that now the principal branch selects the (L,L) equilibrium!

Thus, the addition of this strategy that is irrelevant for the Nash analysis affects the "logit solution" of the game. Goeree and Holt observe that the play of this game in the laboratory tends more towards (L,L) in this treatment.

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (0)

Payoff

Player 2

L (0)

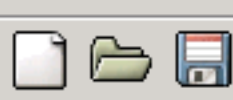
Payoff

#	Liap V
1	0
2	0.000
3	0

#	Lambda	1: L	1: H	2: L	2: H	2: S
1	0.0008	0.5201	0.4799	0.3304	0.3411	0.3286
2	0.0018	0.5424	0.4576	0.3283	0.3484	0.3232
3	0.0029	0.5673	0.4327	0.3279	0.3546	0.3175
4	0.0043	0.5949	0.4051	0.3300	0.3586	0.3114
5	0.0058	0.6251	0.3749	0.3359	0.3585	0.3056
6	0.0074	0.6576	0.3424	0.3466	0.3529	0.3005
7	0.0090	0.6920	0.3080	0.3625	0.3408	0.2966
8	0.0105	0.7281	0.2719	0.3838	0.3226	0.2937
9	0.0119	0.7657	0.2343	0.4104	0.2986	0.2910
10	0.0133	0.8048	0.1952	0.4429	0.2695	0.2876
11	0.0149	0.8451	0.1549	0.4826	0.2354	0.2820
12	0.0169	0.8854	0.1146	0.5314	0.1964	0.2722
13	0.0195	0.9235	0.0765	0.5916	0.1531	0.2553
14	0.0234	0.9556	0.0444	0.6654	0.1075	0.2271
15	0.0294	0.9784	0.0216	0.7531	0.0635	0.1834
16	0.0395	0.9916	0.0084	0.8519	0.0265	0.1215
17	0.0484	0.9956	0.0044	0.9056	0.0123	0.0821
18	0.0554	0.9973	0.0027	0.9341	0.0066	0.0592
19	0.0672	0.9988	0.0012	0.9640	0.0023	0.0337
20	0.0776	0.9994	0.0006	0.9788	0.0009	0.0203
21	0.0855	0.9997	0.0003	0.9858	0.0005	0.0137
22	0.0963	0.9999	0.0001	0.9918	0.0002	0.0081

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (0)

Payoff

Player 2

L (0)

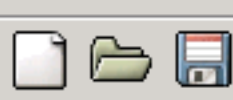
Payoff

#	Liap V
1	0
2	0.000
3	0

#	Lambda	1: L	1: H	2: L	2: H	2: S
1	0.0008	0.5201	0.4799	0.3304	0.3411	0.3286
2	0.0018	0.5424	0.4576	0.3283	0.3484	0.3232
3	0.0029	0.5673	0.4327	0.3279	0.3546	0.3175
4	0.0043	0.5949	0.4051	0.3300	0.3586	0.3114
5	0.0058	0.6251	0.3749	0.3359	0.3585	0.3056
6	0.0074	0.6576	0.3424	0.3466	0.3529	0.3005
7	0.0090	0.6920	0.3080	0.3625	0.3408	0.2966
8	0.0105	0.7281	0.2719	0.3838	0.3226	0.2937
9	0.0119	0.7657	0.2343	0.4104	0.2986	0.2910
10	0.0133	0.8048	0.1952	0.4429	0.2695	0.2876
11	0.0149	0.8451	0.1549	0.4826	0.2354	0.2820
12	0.0169	0.8854	0.1146	0.5314	0.1964	0.2722
13	0.0195	0.9235	0.0765	0.5916	0.1531	0.2553
14	0.0234	0.9556	0.0444	0.6654	0.1075	0.2271
15	0.0294	0.9784	0.0216	0.7531	0.0635	0.1834
16	0.0395	0.9916	0.0084	0.8519	0.0265	0.1215
17	0.0484	0.9956	0.0044	0.9056	0.0123	0.0821
18	0.0554	0.9973	0.0027	0.9341	0.0066	0.0592
19	0.0672	0.9988	0.0012	0.9640	0.0023	0.0337
20	0.0776	0.9994	0.0006	0.9788	0.0009	0.0203
21	0.0855	0.9997	0.0003	0.9858	0.0005	0.0137
22	0.0963	0.9999	0.0001	0.9918	0.0002	0.0081

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L (0)

Payoff

Player 2

L (0)

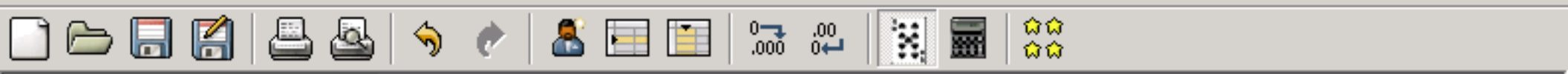
Payoff

#	Liap V
1	0
2	0.000
3	0

#	Lambda	1: L	1: H	2: L	2: H	2: S
1	0.0008	0.5201	0.4799	0.3304	0.3411	0.3286
2	0.0018	0.5424	0.4576	0.3283	0.3484	0.3232
3	0.0029	0.5673	0.4327	0.3279	0.3546	0.3175
4	0.0043	0.5949	0.4051	0.3300	0.3586	0.3114
5	0.0058	0.6251	0.3749	0.3359	0.3585	0.3056
6	0.0074	0.6576	0.3424	0.3466	0.3529	0.3005
7	0.0090	0.6920	0.3080	0.3625	0.3408	0.2966
8	0.0105	0.7281	0.2719	0.3838	0.3226	0.2937
9	0.0119	0.7657	0.2343	0.4104	0.2986	0.2910
10	0.0133	0.8048	0.1952	0.4429	0.2695	0.2876
11	0.0149	0.8451	0.1549	0.4826	0.2354	0.2820
12	0.0169	0.8854	0.1146	0.5314	0.1964	0.2722
13	0.0195	0.9235	0.0765	0.5916	0.1531	0.2553
14	0.0234	0.9556	0.0444	0.6654	0.1075	0.2271
15	0.0294	0.9784	0.0216	0.7531	0.0635	0.1834
16	0.0395	0.9916	0.0084	0.8519	0.0265	0.1215
17	0.0484	0.9956	0.0044	0.9056	0.0123	0.0821
18	0.0554	0.9973	0.0027	0.9341	0.0066	0.0592
19	0.0672	0.9988	0.0012	0.9640	0.0023	0.0337
20	0.0776	0.9994	0.0006	0.9788	0.0009	0.0203
21	0.0855	0.9997	0.0003	0.9858	0.0005	0.0137
22	0.0963	0.9999	0.0001	0.9918	0.0002	0.0081

Save correspondence to .csv file

OK



Player 1
 L (0)
 Payoff: 180

Player 2
 L (0)
 Payoff: 180

Player 1

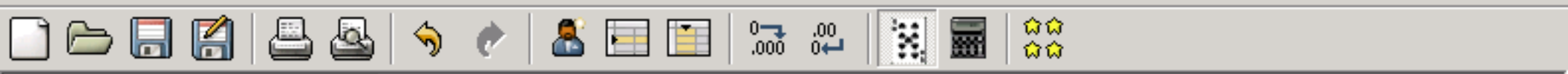
Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

In Goeree and Holt's second treatment, the 400 payoff is changed to zero. Let's repeat our investigation with this parameterization.

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0





Player 1

L (0) Payoff: 180

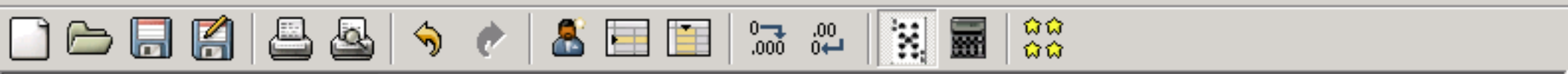
Player 2

L (0) Payoff: 180

Player 2

	L	H	S
L	90 90	0 0	400 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Player 1

L (0) Payoff: 180

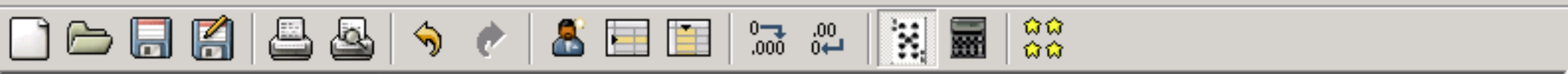
Player 2

L (0) Payoff: 180

Player 2

	L	H	S
L	90 90	0 0	40 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Player 1

L (0) Payoff: 180

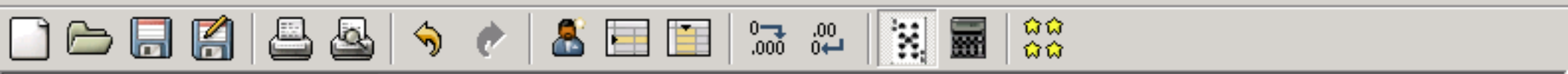
Player 2

L (0) Payoff: 180

Player 2

	L	H	S
L	90 90	0 0	00 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Player 1

L (0) Payoff: 180

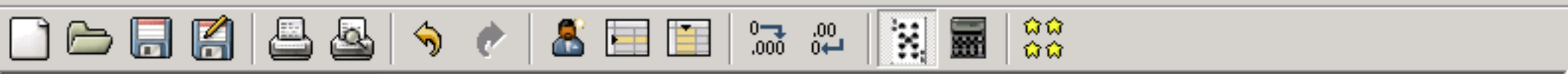
Player 2

L (0) Payoff: 180

Player 2

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Player 1

L (0) Payoff: 180

Player 2

L (0) Payoff: 180

Player 2

	L	H	S
L	90 90	0 0	0 0
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
1	0	1	0	1	0	0
2	0.0000	0.6667	0.3333	0.6667	0.3333	0
3	0	0	1	0	1	0



Player 1

L

Player 2

L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



Player 1

L

Player 2

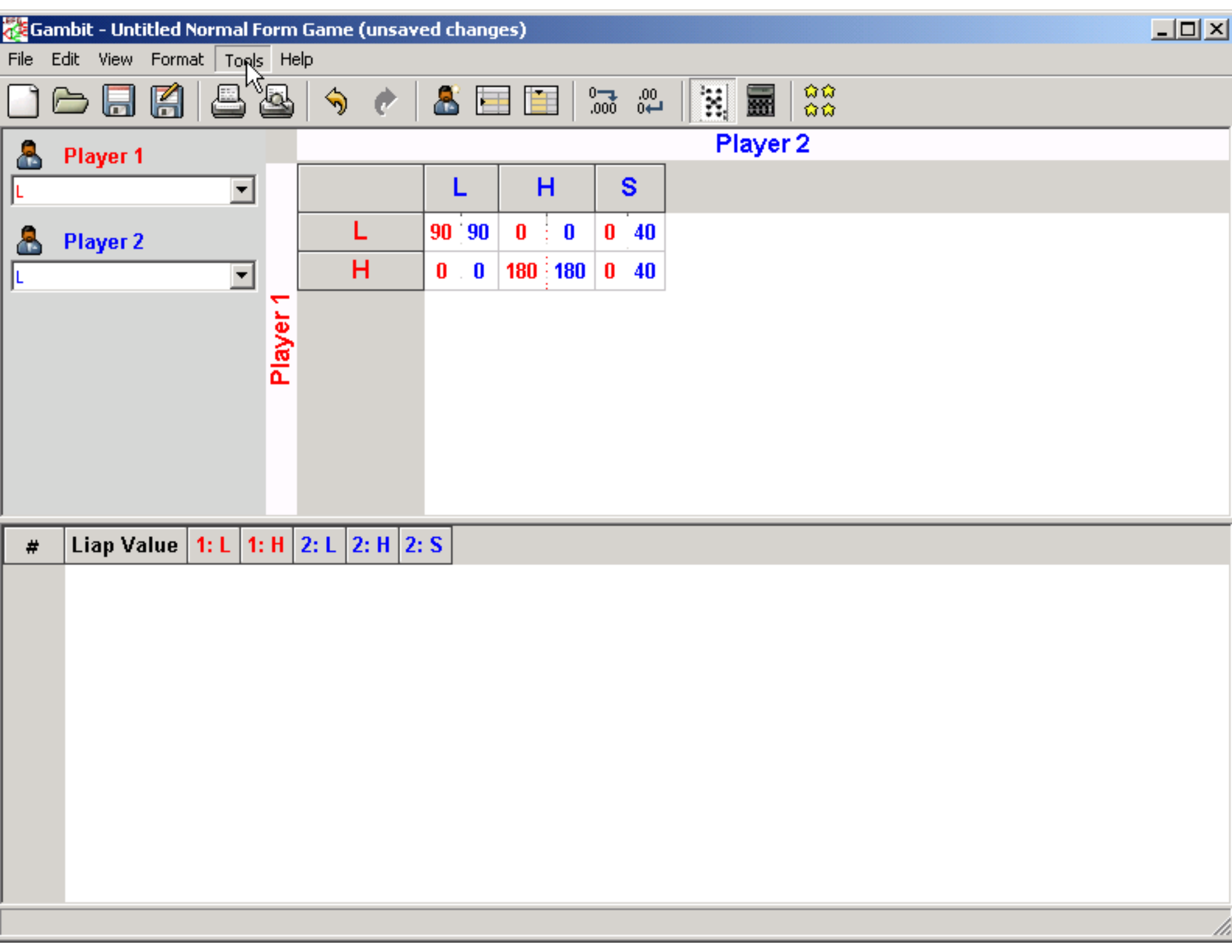
L

Player 1

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

Player 2

#	Liap Value	1: L	1: H	2: L	2: H	2: S



 **Player 1**

 **Player 2**

L

L

- Dominance
- Equilibrium
- Qre

Player 1

Player 2

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
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Player 1

L

Player 2

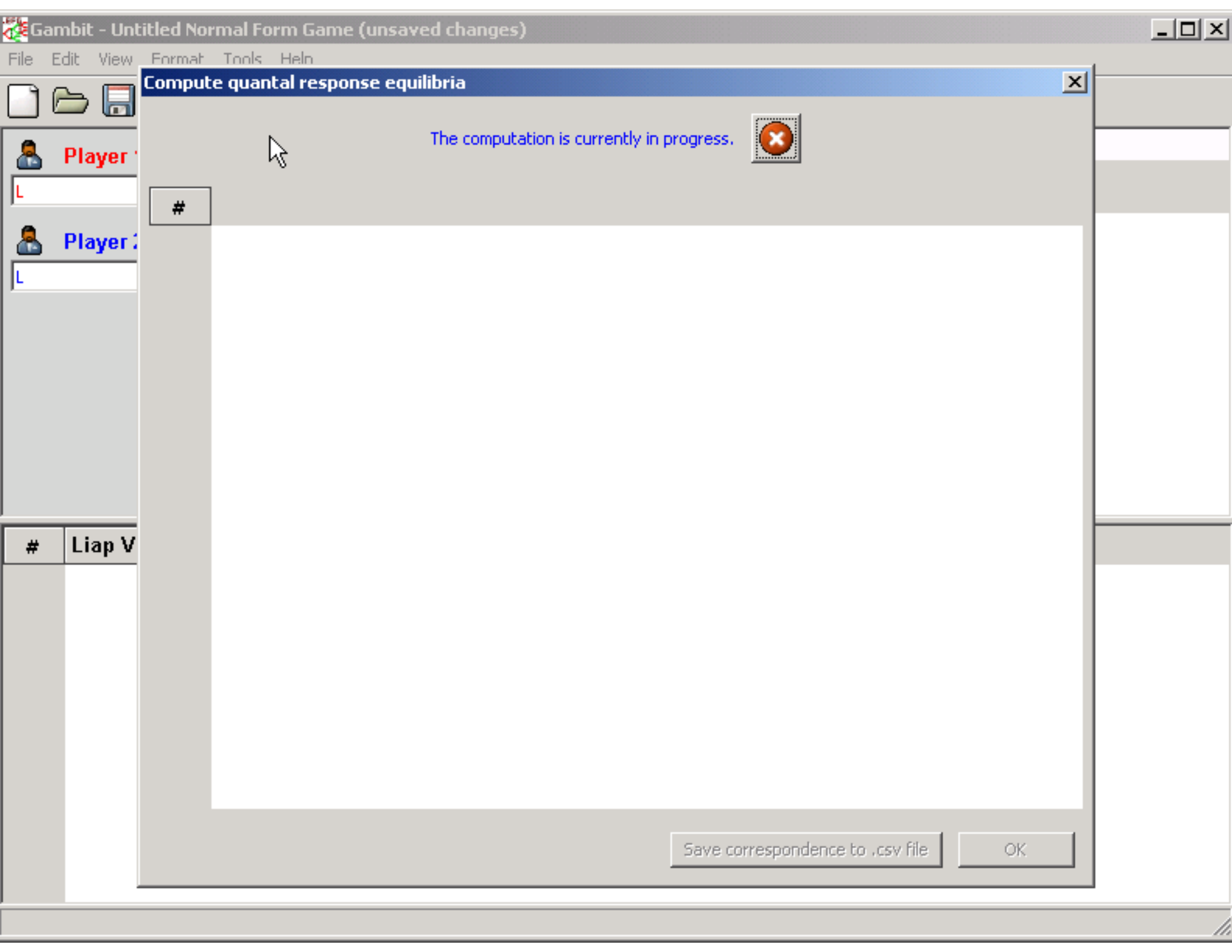
L

Player 2

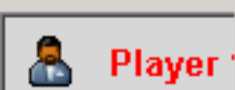
	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

#	Liap Value	1: L	1: H	2: L	2: H	2: S
---	------------	------	------	------	------	------

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Compute quantal response equilibria



Player 1

L



Player 2

L

#

The computation is currently in progress.



Liap V

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L

Player 2

L

#	Lambda	1: L	1: H	2: L	2: H	2: S
182	140578.0000	0.0000	1.0000	0.0000	1.0000	0.0000
183	154636.0000	0.0000	1.0000	0.0000	1.0000	0.0000
184	170100.0000	0.0000				
185	187110.0000	0.0000				
186	205821.0000	0.0000				
187	226403.0000	0.0000				
188	249043.0000	0.0000				
189	273948.0000	0.0000				
190	301343.0000	0.0000	1.0000	0.0000	1.0000	0.0000
191	331477.0000	0.0000	1.0000	0.0000	1.0000	0.0000
192	364624.0000	0.0000	1.0000	0.0000	1.0000	0.0000
193	401087.0000	0.0000	1.0000	0.0000	1.0000	0.0000
194	441196.0000	0.0000	1.0000	0.0000	1.0000	0.0000
195	485315.0000	0.0000	1.0000	0.0000	1.0000	0.0000
196	533847.0000	0.0000	1.0000	0.0000	1.0000	0.0000
197	587231.0000	0.0000	1.0000	0.0000	1.0000	0.0000
198	645955.0000	0.0000	1.0000	0.0000	1.0000	0.0000
199	710550.0000	0.0000	1.0000	0.0000	1.0000	0.0000
200	781605.0000	0.0000	1.0000	0.0000	1.0000	0.0000
201	859766.0000	0.0000	1.0000	0.0000	1.0000	0.0000
202	945742.0000	0.0000	1.0000	0.0000	1.0000	0.0000
203	1040320.0000	0.0000	1.0000	0.0000	1.0000	0.0000

We recover the result that the principal branch converges to the (H,H) equilibrium.

Liap V

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



#	Lambda	1: L	1: H	2: L	2: H	2: S
1	0.0016	0.4862	0.5138	0.3251	0.3518	0.3231
2	0.0031	0.4703	0.5297	0.3154	0.3715	0.3131
3	0.0044	0.4524	0.5476	0.3042	0.3926	0.3032
4	0.0056	0.4323	0.5677	0.2914	0.4155	0.2932
5	0.0067	0.4101	0.5899	0.2769	0.4403	0.2827
6	0.0077	0.3854	0.6146	0.2608	0.4675	0.2717
7	0.0086	0.3583	0.6417	0.2429	0.4974	0.2597
8	0.0095	0.3286	0.6714	0.2232	0.5303	0.2464
9	0.0103	0.2961	0.7039	0.2017	0.5668	0.2315
10	0.0112	0.2606	0.7394	0.1782	0.6073	0.2145
11	0.0121	0.2220	0.7780	0.1528	0.6525	0.1947
12	0.0131	0.1804	0.8196	0.1254	0.7032	0.1714
13	0.0144	0.1359	0.8641	0.0962	0.7603	0.1436
14	0.0163	0.0892	0.9108	0.0651	0.8252	0.1096
15	0.0196	0.0423	0.9577	0.0329	0.9000	0.0670
16	0.0232	0.0198	0.9802	0.0165	0.9435	0.0400
17	0.0269	0.0094	0.9906	0.0082	0.9682	0.0236
18	0.0306	0.0045	0.9955	0.0042	0.9819	0.0140
19	0.0340	0.0024	0.9976	0.0022	0.9891	0.0086
20	0.0395	0.0009	0.9991	0.0008	0.9952	0.0040
21	0.0468	0.0002	0.9998	0.0002	0.9983	0.0014
22	0.0515	0.0001	0.9999	0.0001	0.9992	0.0007

Save correspondence to .csv file

OK

Liap V

Player 1

Player 2



Compute quantal response equilibria

The computation has completed.



Player 1

L

Player 2

L

Liap V

#	Lambda	1: L	1: H	2: L	2: H	2: S
1	0.0016	0.4862	0.5138	0.3251	0.3518	0.3231
2	0.0031	0.4703	0.5297	0.3154	0.3715	0.3131
3	0.0044	0.4524	0.5476	0.3042	0.3926	0.3032
4	0.0056	0.4323	0.5677	0.2914	0.4155	0.2932
5	0.0067	0.4101	0.5899	0.2769	0.4403	0.2827
6	0.0077	0.3854	0.6146	0.2608	0.4675	0.2717
7	0.0086	0.3583	0.6417	0.2429	0.4974	0.2597
8	0.0095	0.3286	0.6714	0.2232	0.5303	0.2464
9	0.0103	0.2961	0.7039	0.2017	0.5668	0.2315
10	0.0112	0.2606	0.7394	0.1782	0.6073	0.2145
11	0.0121	0.2220	0.7780	0.1528	0.6525	0.1947
12	0.0131	0.1804	0.8196	0.1254	0.7032	0.1714
13	0.0144	0.1359	0.8641	0.0962	0.7603	0.1436
14	0.0163	0.0892	0.9108	0.0651	0.8252	0.1096
15	0.0196	0.0423	0.9577	0.0329	0.9000	0.0670
16	0.0232	0.0198	0.9802	0.0165	0.9435	0.0400
17	0.0269	0.0094	0.9906	0.0082	0.9682	0.0236
18	0.0306	0.0045	0.9955	0.0042	0.9819	0.0140
19	0.0340	0.0024	0.9976	0.0022	0.9891	0.0086
20	0.0395	0.0009	0.9991	0.0008	0.9952	0.0040
21	0.0468	0.0002	0.9998	0.0002	0.9983	0.0014
22	0.0515	0.0001	0.9999	0.0001	0.9992	0.0007

Save correspondence to .csv file

OK



Compute quantal response equilibria

The computation has completed.



Player 1

L

Player 2

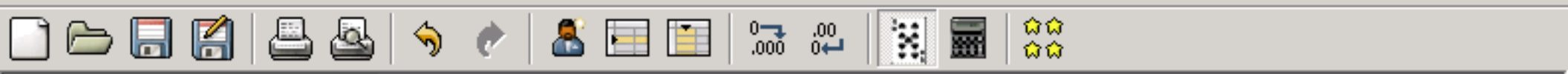
L

Liap V

#	Lambda	1: L	1: H	2: L	2: H	2: S
1	0.0016	0.4862	0.5138	0.3251	0.3518	0.3231
2	0.0031	0.4703	0.5297	0.3154	0.3715	0.3131
3	0.0044	0.4524	0.5476	0.3042	0.3926	0.3032
4	0.0056	0.4323	0.5677	0.2914	0.4155	0.2932
5	0.0067	0.4101	0.5899	0.2769	0.4403	0.2827
6	0.0077	0.3854	0.6146	0.2608	0.4675	0.2717
7	0.0086	0.3583	0.6417	0.2429	0.4974	0.2597
8	0.0095	0.3286	0.6714	0.2232	0.5303	0.2464
9	0.0103	0.2961	0.7039	0.2017	0.5668	0.2315
10	0.0112	0.2606	0.7394	0.1782	0.6073	0.2145
11	0.0121	0.2220	0.7780	0.1528	0.6525	0.1947
12	0.0131	0.1804	0.8196	0.1254	0.7032	0.1714
13	0.0144	0.1359	0.8641	0.0962	0.7603	0.1436
14	0.0163	0.0892	0.9108	0.0651	0.8252	0.1096
15	0.0196	0.0423	0.9577	0.0329	0.9000	0.0670
16	0.0232	0.0198	0.9802	0.0165	0.9435	0.0400
17	0.0269	0.0094	0.9906	0.0082	0.9682	0.0236
18	0.0306	0.0045	0.9955	0.0042	0.9819	0.0140
19	0.0340	0.0024	0.9976	0.0022	0.9891	0.0086
20	0.0395	0.0009	0.9991	0.0008	0.9952	0.0040
21	0.0468	0.0002	0.9998	0.0002	0.9983	0.0014
22	0.0515	0.0001	0.9999	0.0001	0.9992	0.0007

Save correspondence to .csv file

OK



Player 1

Player 2

Player 1

Player 2

	L	H	S
L	90 90	0 0	0 40
H	0 0	180 180	0 40

This concludes this tutorial on using Gambit.

You can view and download other tutorials from the Gambit website at

<http://econweb.tamu.edu/gambit>

Happy quantal responding!

#	Liap Value	1: L	1: H	2: L	2: H	2: S
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