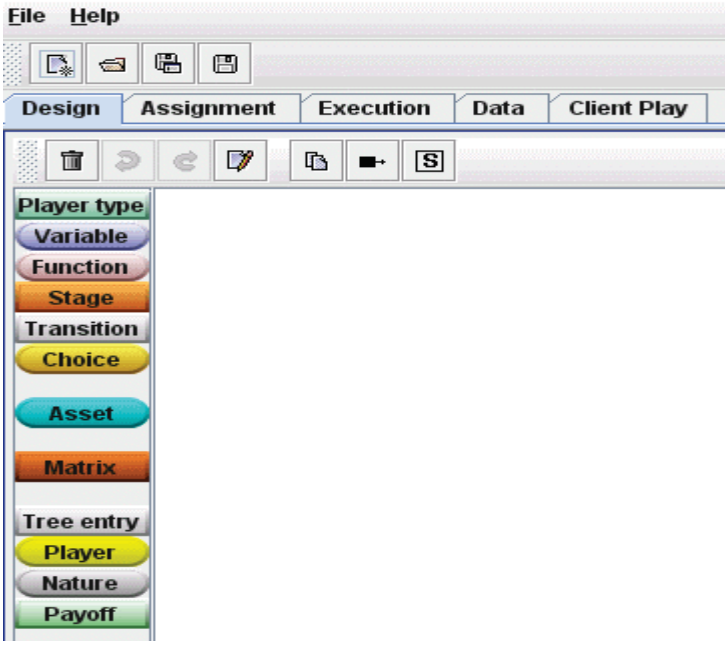
1. Basic design of an extensive form game with the standard layout

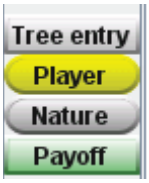
a. Open the program.

- Experiments are designed in 

window which opens as a default option.



b. Elements for designing an extensive form game on the left side of the design window are:



c. Some basic features of icons

- When 

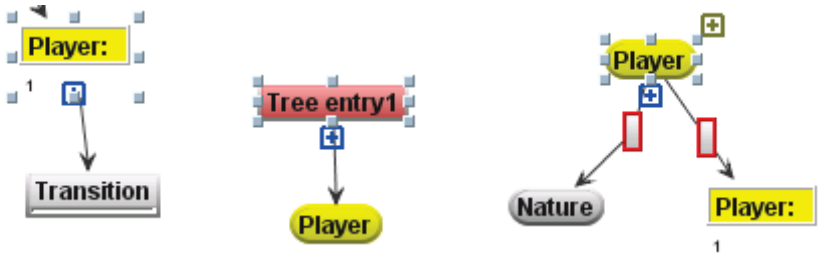
and 

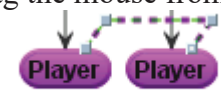
(payoff) , 

and 

are dropped into the design window, you can use  (blue plus)

to connect to another icon:

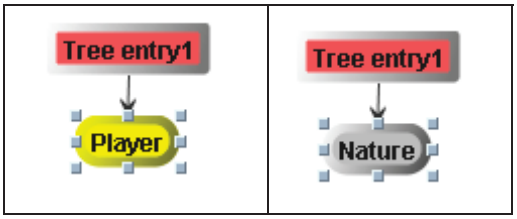


- Each  when selected  has also a in the right upper corner.  is the color of the  . Drag the mouse from  to the next player to create an information set: 

d. Necessary steps to design an extensive form game in a standard layout:

- Each tree has to start with  . Drag and drop  into the design window.

- Once  is in the design window, select it  and drag and drop a  or a  . Note the starting  has to be colored in red. The red color indicates the starting point of the experiment. If it happens to be white, select the  and click on  .  changes the color  to indicate that the game will start from this tree entry.



Note that 

appears at the bottom of the design window once a 

is created. Selection of a 

draws a tree automatically. If free (hand) drawn tree is needed disable Standard layout: 

.

- All the instructions below apply to 

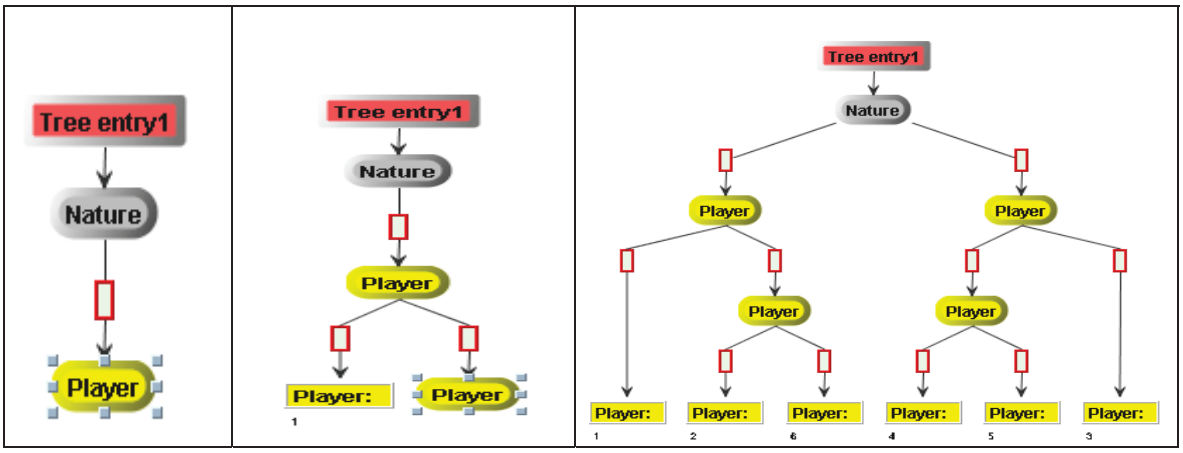
.

- Continue building the tree by selecting the predecessor player (node) and dropping a new 

, 

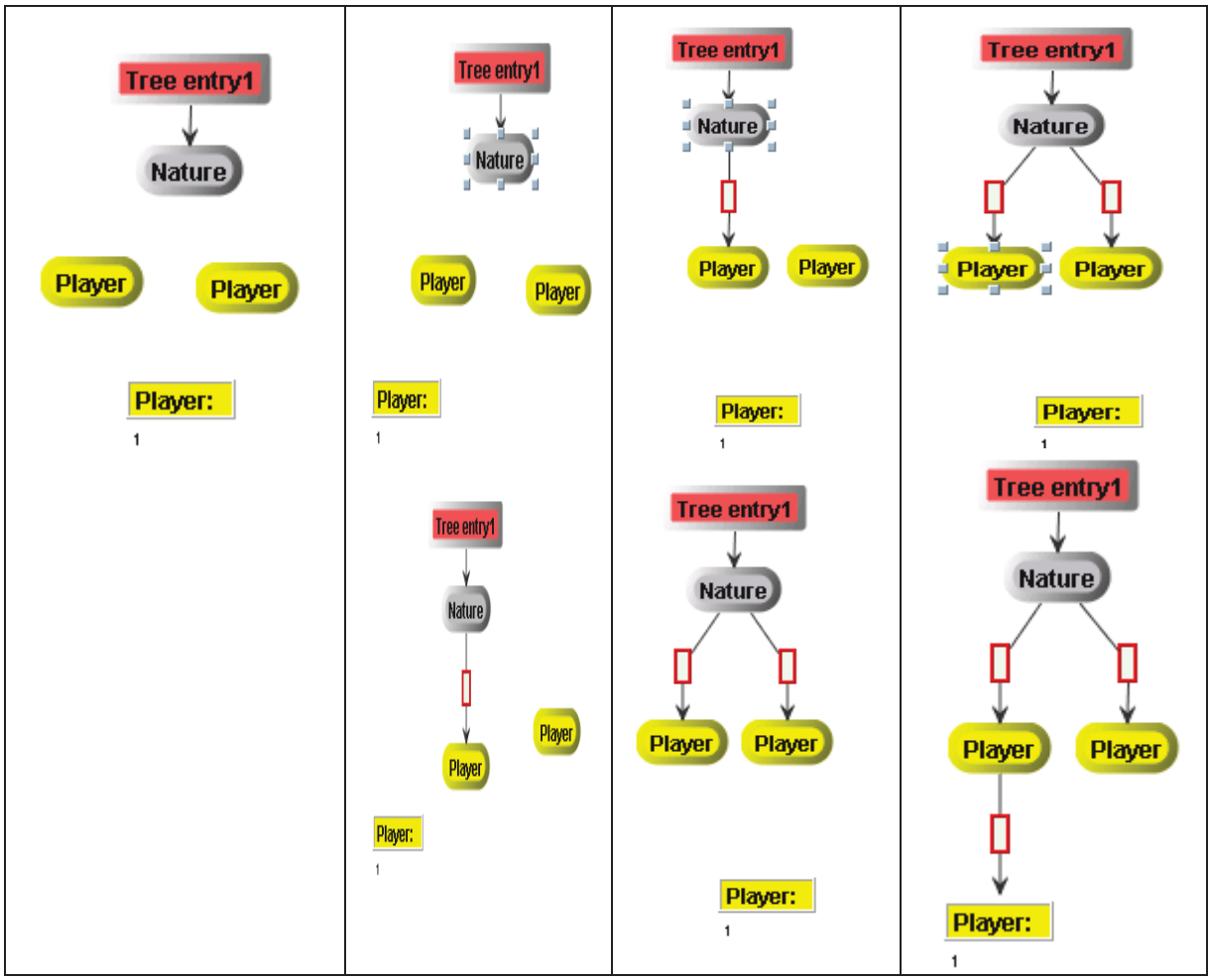
or 

icon into the design window.



- If a predecessor node is not selected the connections between the notes are not drawn like in the picture on the left. To draw a connection, double click on the predecessor, go to the middle of the icon with the mouse; a blue  appear (

), then drag the mouse from blue  to the successor node. In a similar way all nodes can be connected.



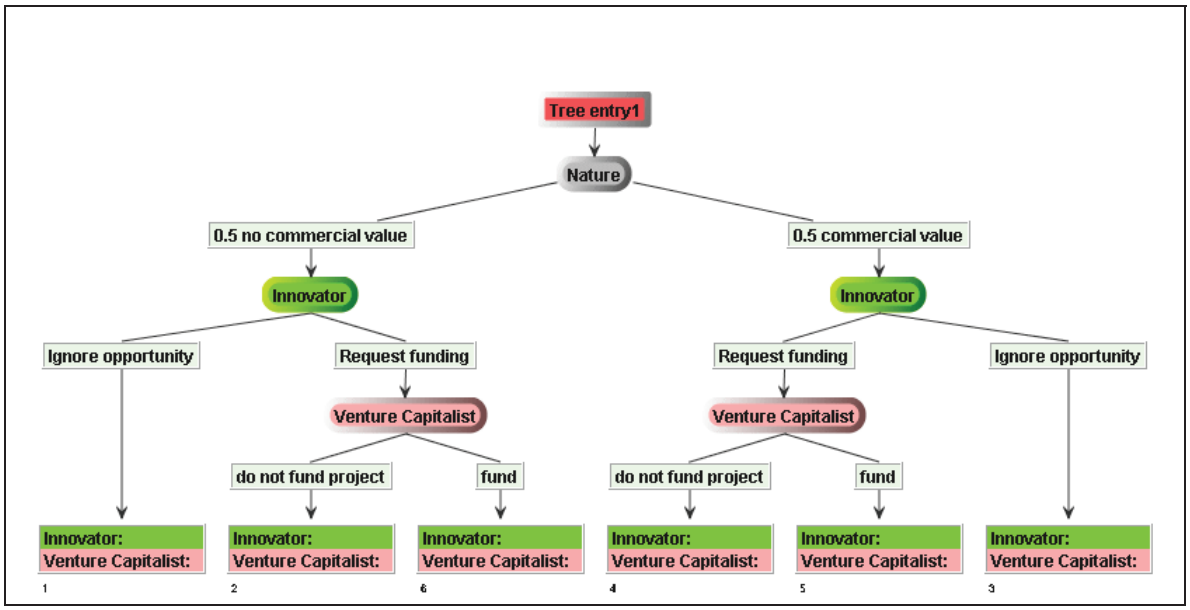
e. Editing 

, 

, 

- Double click on the appropriate icon to open the editor: 

and rename it.



- **Renaming** 

.

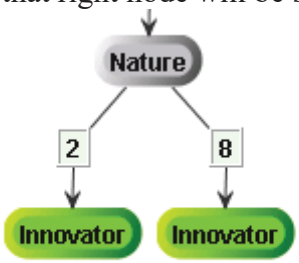
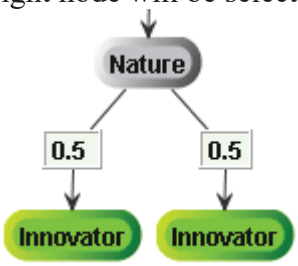
  Double click on 

and rename it: 

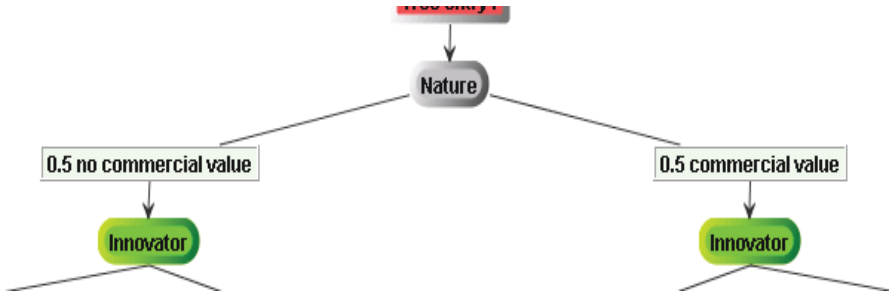
. This part is optional.

- **Editing Chance Probabilities in** 

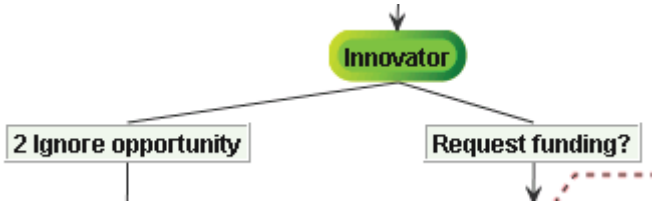
  Only whole numbers or decimal numbers can be written as weights.

2 and 8 represents the weights and it means that with there is a 0.2 chance that left node will be selected and a 0.8 chance that right node will be selected. 	0.5 represent the weight and because it sums up to 1 it means that there is 0.5 chance that left or right node will be selected. 

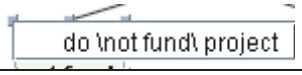
- When the weights are accompanied with labels there **must be at least one empty space** between the number and the label.



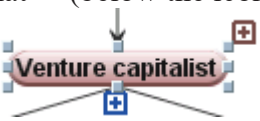
f. Editing Choice Names



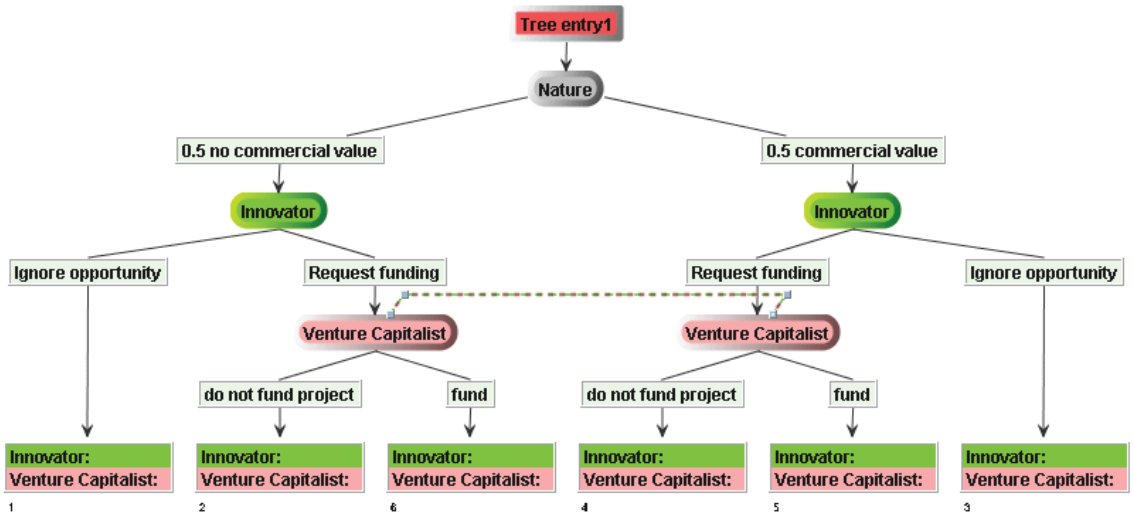
- If the label is too long, separate the text with a backslash (\) or several. Each backslash means a new line.

Two backslashes are separating the words which means that the label will be shown in three lines 	

g. Creating information sets

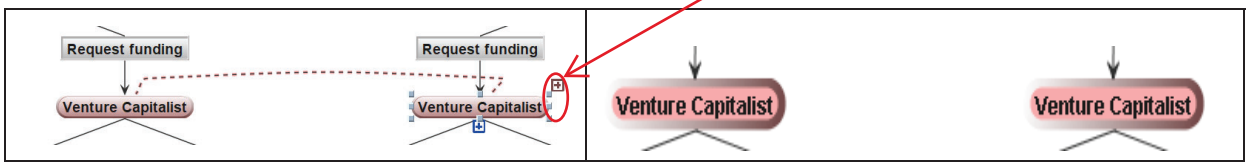
- Select the appropriate player or nature node so that (below the icon) and (in the upper right corner) appears ()

and drag the mouse from  to the next player or nature node.

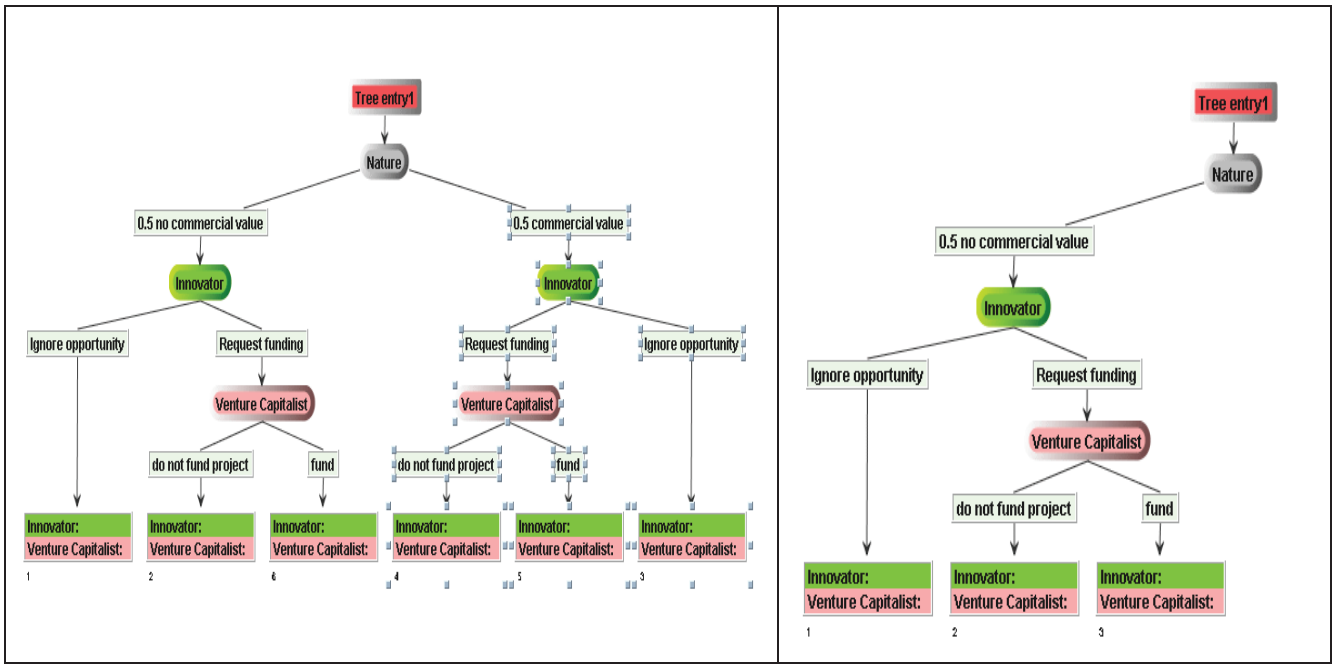


h. Deleting the information sets or any other parts of a tree

- Select an appropriate player and click on "+" to remove information set



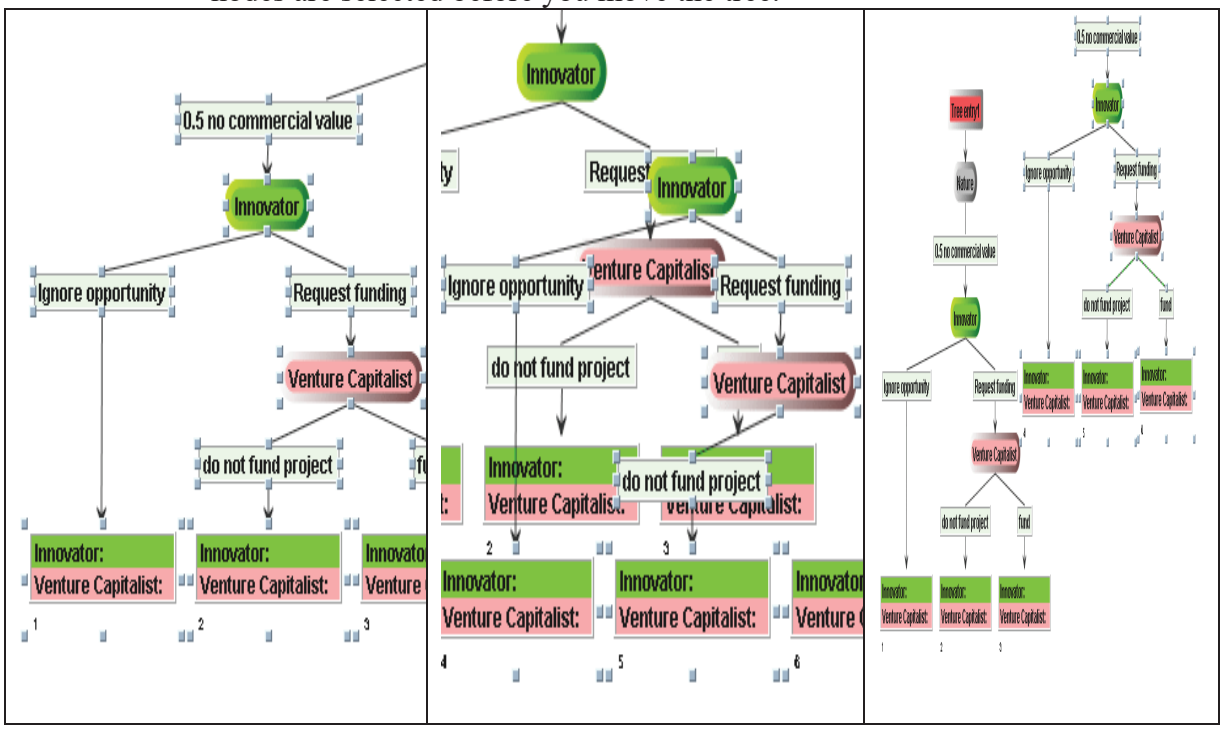
- Click on the first icon that you want to remove, then click on “CTRL” and hold it while you are selecting all other icons that you want to delete, and then click on delete button ().



i. **Copying a part of a tree or a whole tree**

(Note: drawing the whole tree is not necessary if a tree is a duplicate of a certain part)

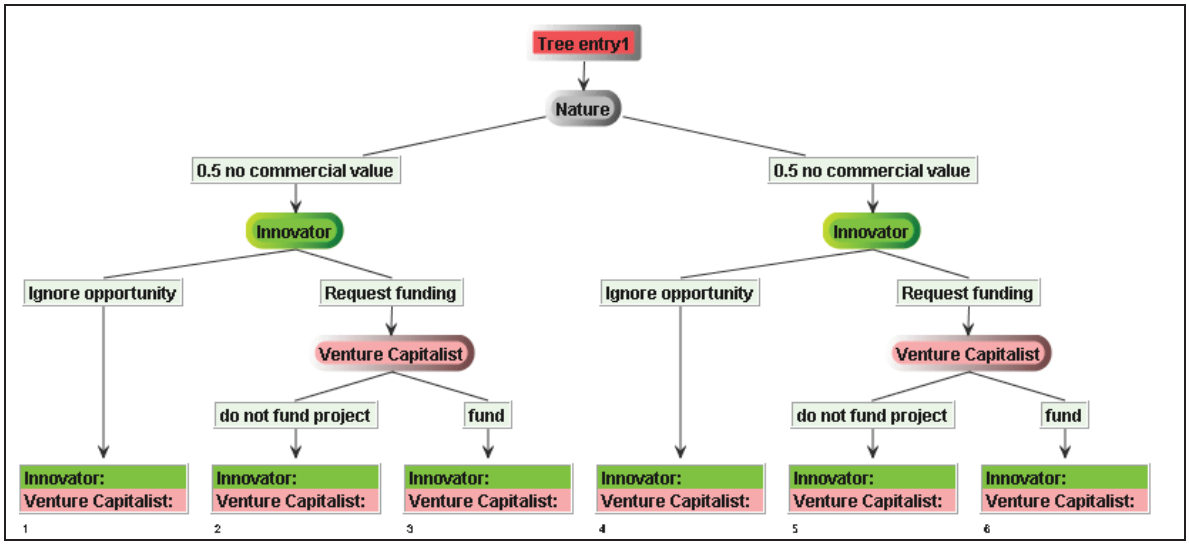
- Select the part or the whole tree that you want to copy, and click on copy () button and then move the duplicate. Make sure all the duplicate nodes are selected before you move the tree.



- Connect the duplicate part to the rest of the decision tree by selecting the predecessor node which in is in our example 

, drag the mouse from  to the destination you want to connect to (in our example 

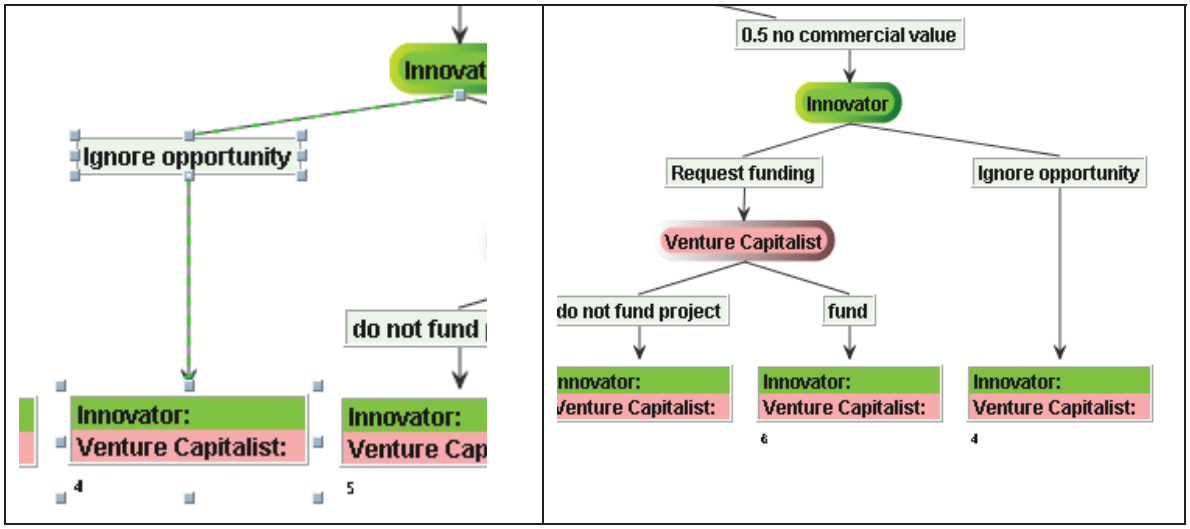
.



- To move a certain part of the tree to a different side, select it and drag it to the designated destination. If the tree does not appear correctly just disable 

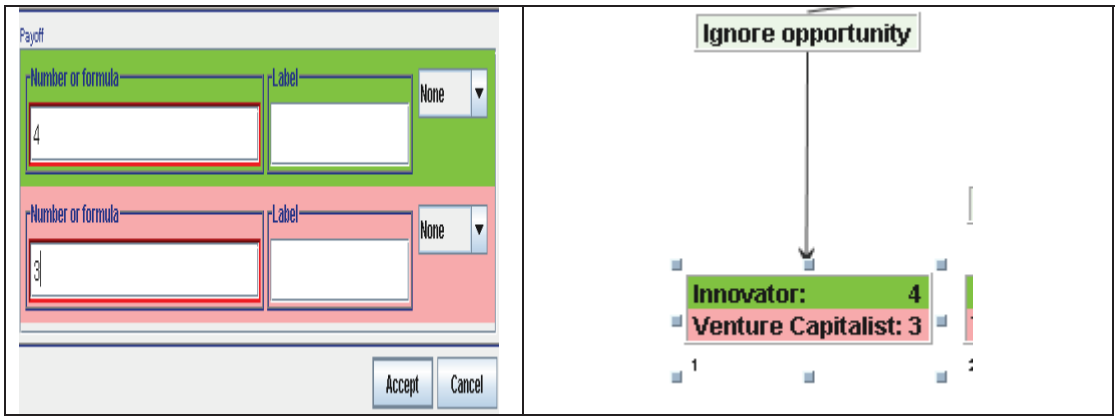
and then unable it 

.

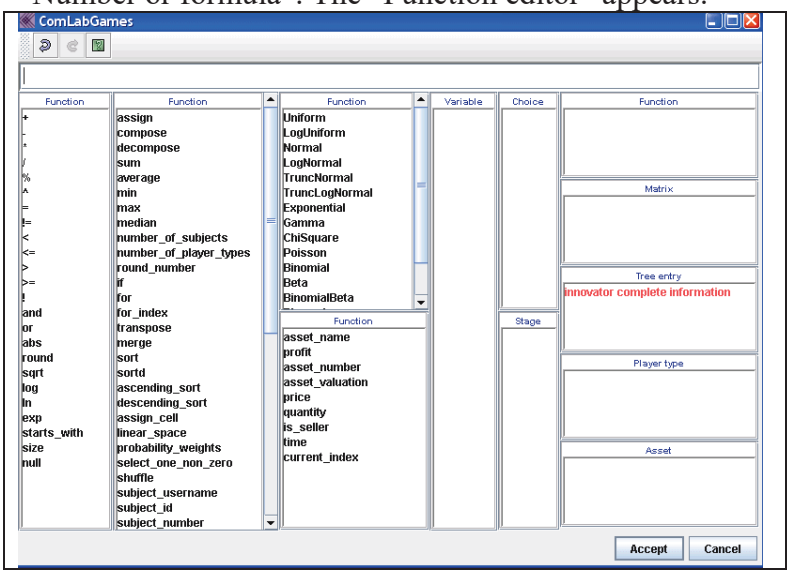


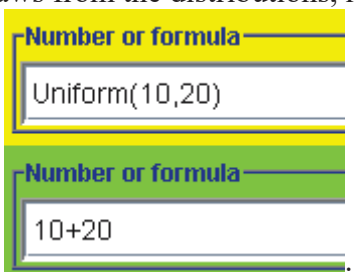
j. Editing payoffs

- Double click on the appropriate payoff and write a number under "Number or formula" and click Accept.

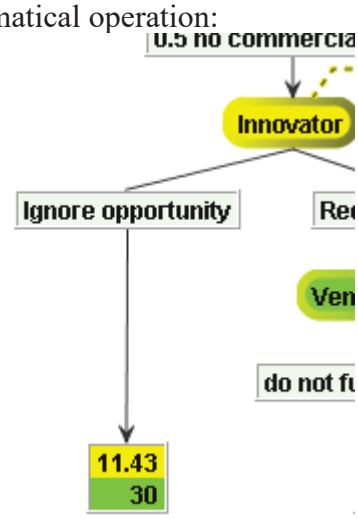


- To write a formula in the payoffs, right click in the white editor in "Number or formula". The "Function editor" appears.

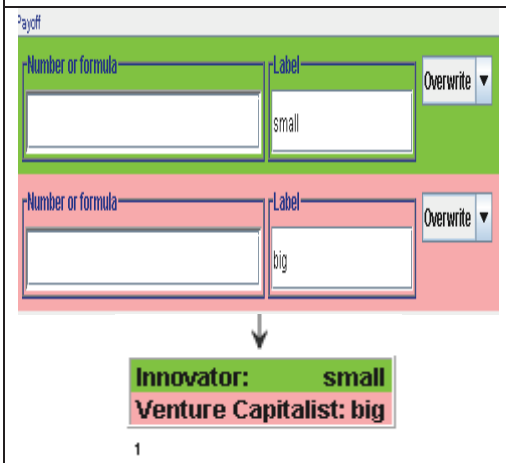
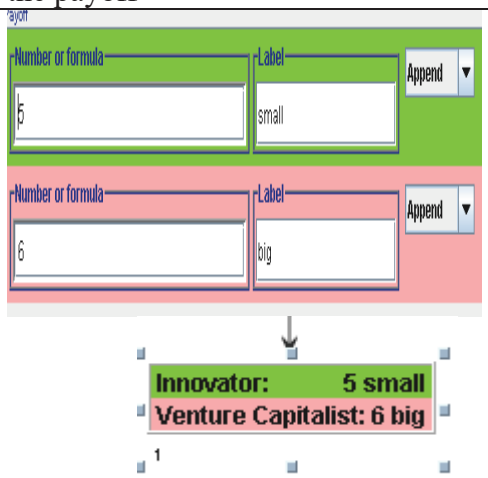


- Write the appropriate expression, and click **Accept**.
- The expressions can be draws from the distributions, mathematical expressions. For example: 

. When the game is played a random number drawn from the uniform distribution with support 10 and 20 will be drawn for the **Innovator** and the sum of 10+20 will be the result of the payoff for **Venture capitalist**.

Moderator will see the following payoffs:	Subjects will see the actual draws or result of a mathematical operation:
	

- The payoffs can have labels as well.

If only labels are needed write a label and select "Overwrite".	If both number and label should appear, select "Append". None option presents just the payoff
	

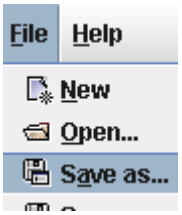
k. Changing icon color for players

- Double click on any edge  (i.e. darker part of the ) or select a  and click on edit:  . The color choices appear:  . Select

one of the possible colors and 

color will be changed to the new selected color.

l. Saving a tree (file)

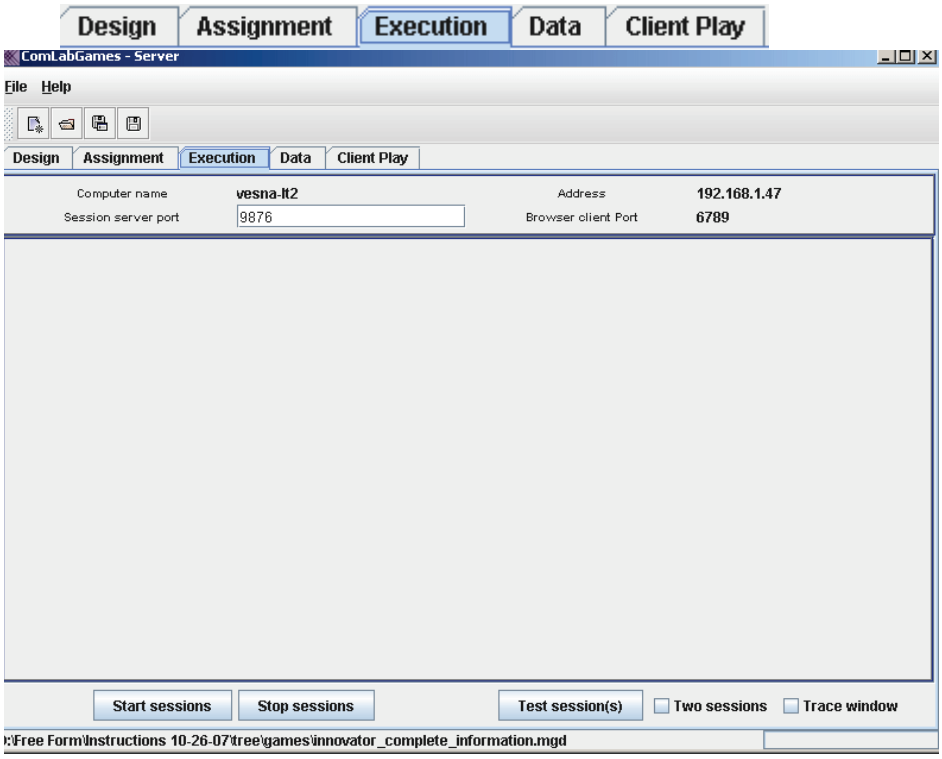
- Click on 

and save the file. The program automatically adds suffix “mgd”.

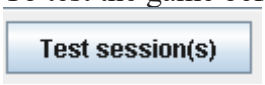
m. Conducting an experiment

- Select 

on

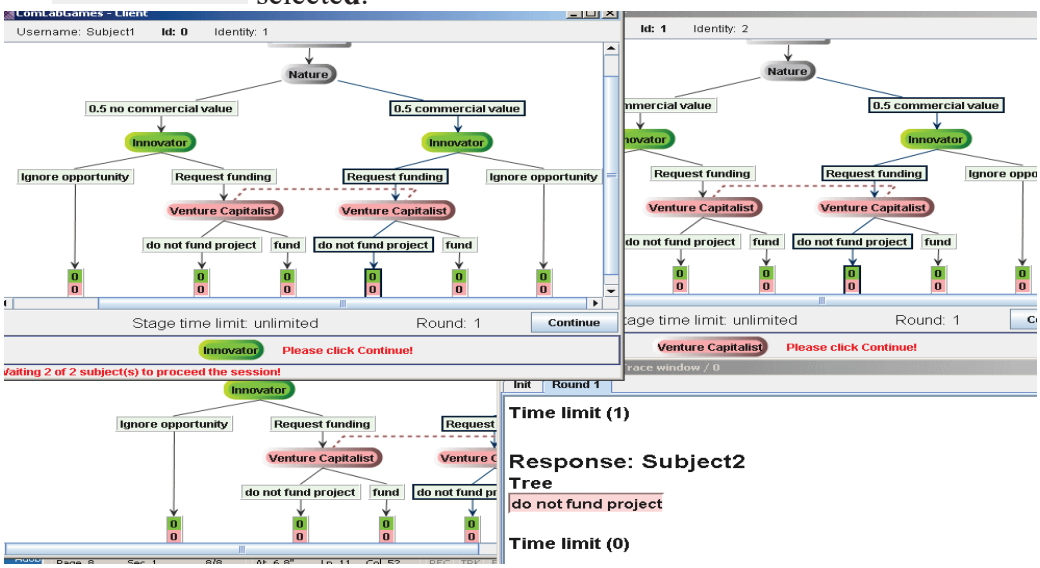


- Make sure the game is loaded on the design window (the name of the game is shown at the bottom of the window or just click on 

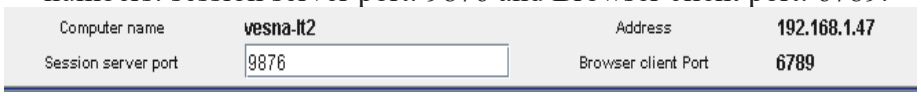
to see if the game is loaded)
- To test the game before conducting an experiment, click on 

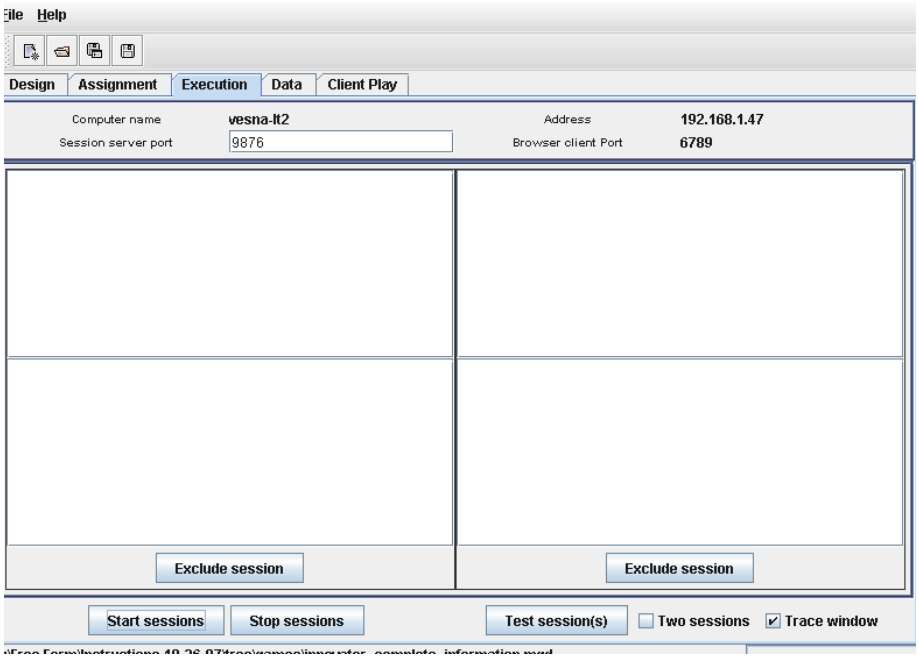
that can be found at the bottom right end of the

wind**ow.** This option allows the moderator to see how the client window looks like and to go thorough the experiment on the same screen as the program. Selecting ☑ Two sessions tests two sessions running at the same time. ☑ Trace window shows all the calculations during the test. Figure below captures the screen with client windows, trace window and the result window during the Test session(s), and with the ☑ Trace window selected.



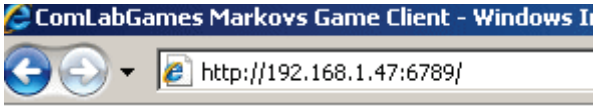
- To run an experiment, click on Start sessions and give the address of the server to the subjects. The address consists of two parts: the address and the port number. The address is located in the top right corner of the window. In our example the address is: 192.168.1.47. There are two port numbers: session server port: 9876 and Browser client port: 6789.





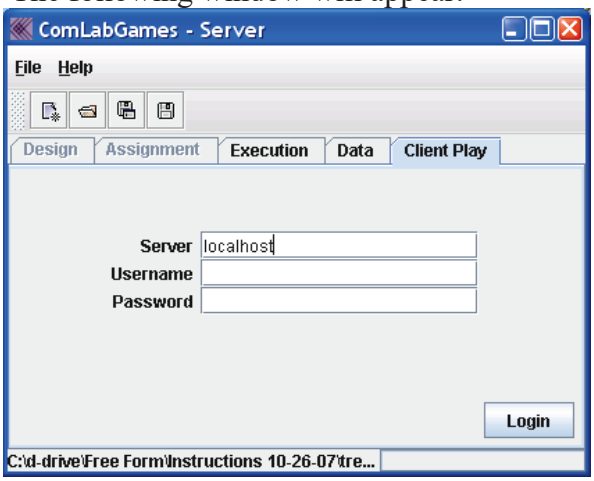
- Provide the Url address to the subjects:

- If a subject uses a browser the address written in the browser should be as follow: http://192.168.1.47:6789 (do not omit http://)



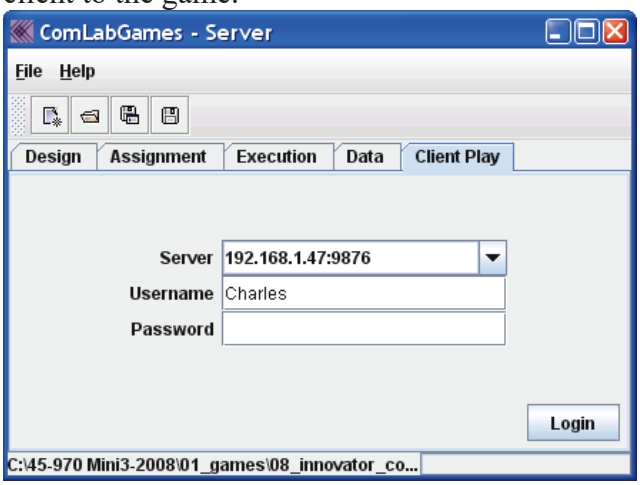
- If a subject uses Comlabgames program then a subject should select Client Play on Design Assignment Execution Data Client Play .

The following window will appear:



- Provide Url address, colon and session server port for users of Client Play:
  192.168.1.47:9876 (Note session server port is: 9876)

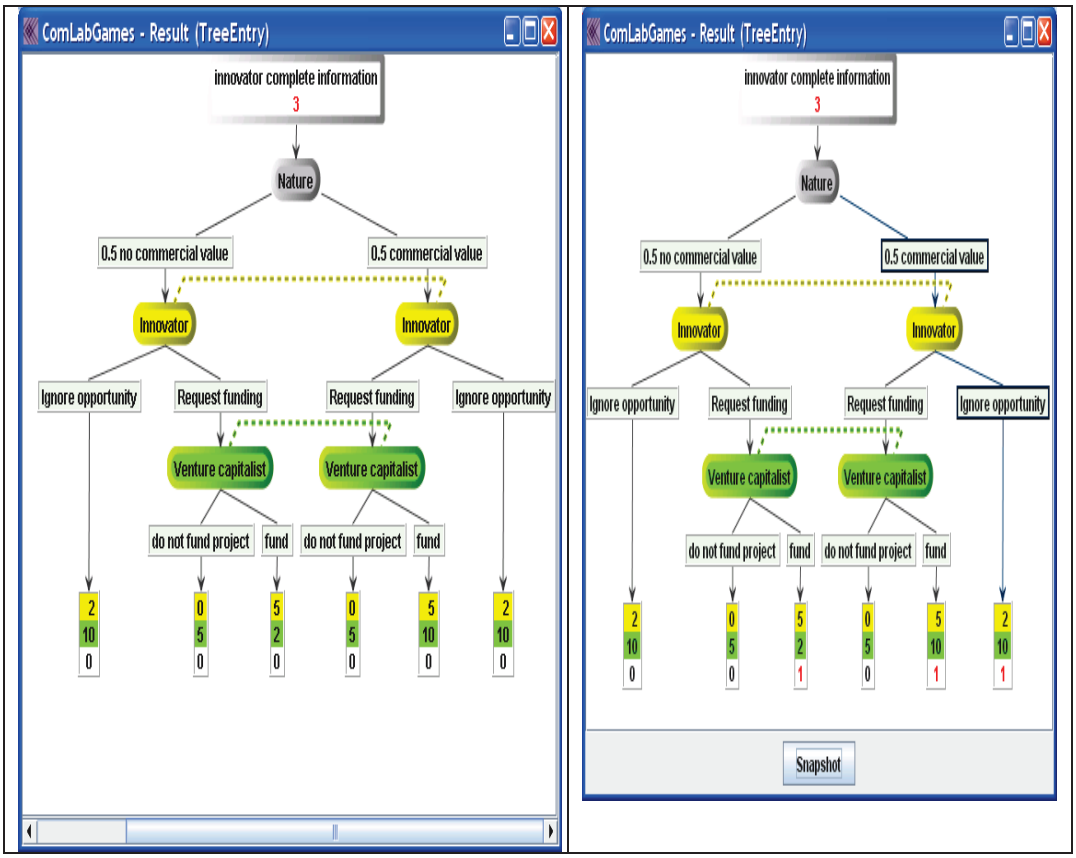
- A subject writes a Url address under server, login name that can be any name. Password is not necessary. Clicking on Login connects the client to the game.



n. Moderator Viewing the Data

- During the game a separate window will open that will show all the outcomes as they occur during the experiment like in pictures below:

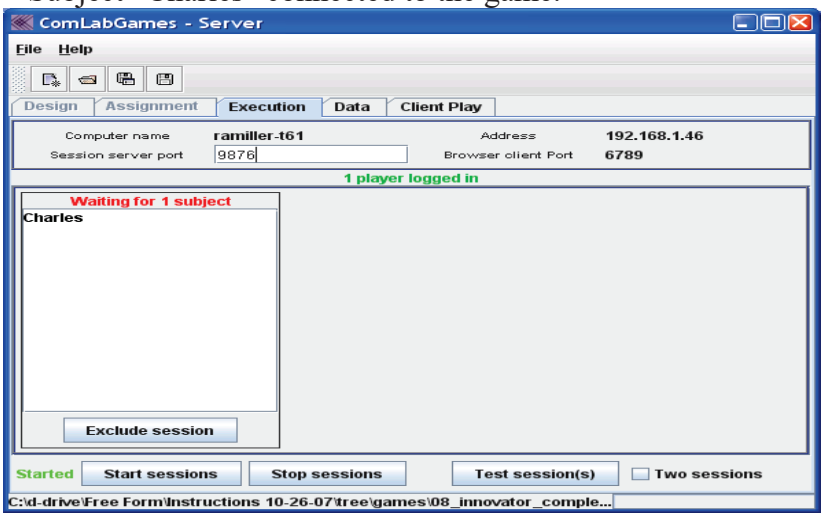
The data window after 6 subjects connected (three pairs) to the game but nobody have made a decision yet.	Results shown after all 6 subjects made the decisions. The red numbers below the terminal nodes represent the frequencies of ending the game in that node.



- On the execution window the moderator can follow the status of each subject:

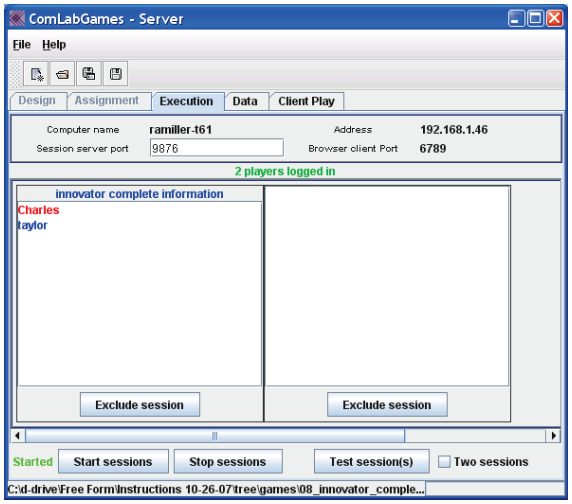
(1) A Subject connected to the game and not all the subjects for the session connected to the game (Login names are in black).

Subject "Charles" connected to the game.

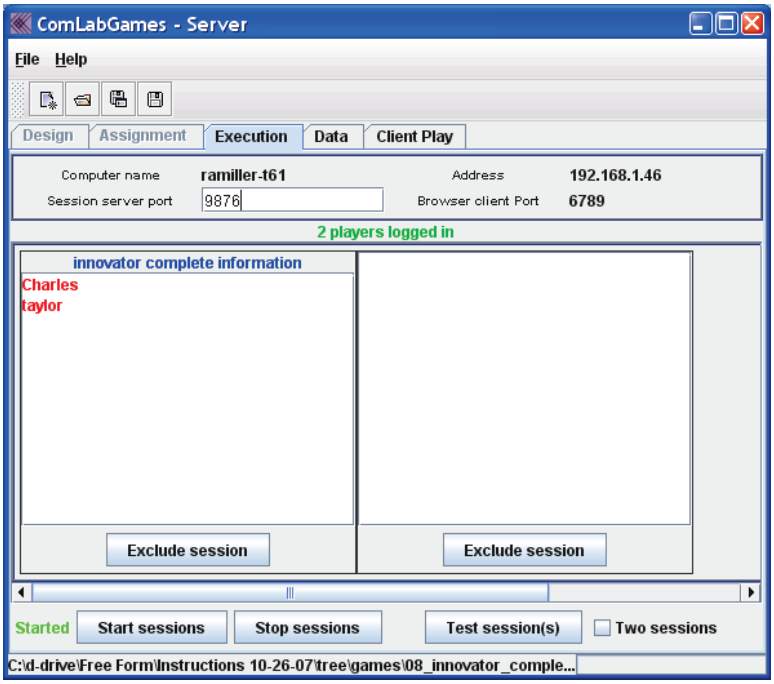


(2) All subjects are connected to the game but nobody made a decision yet

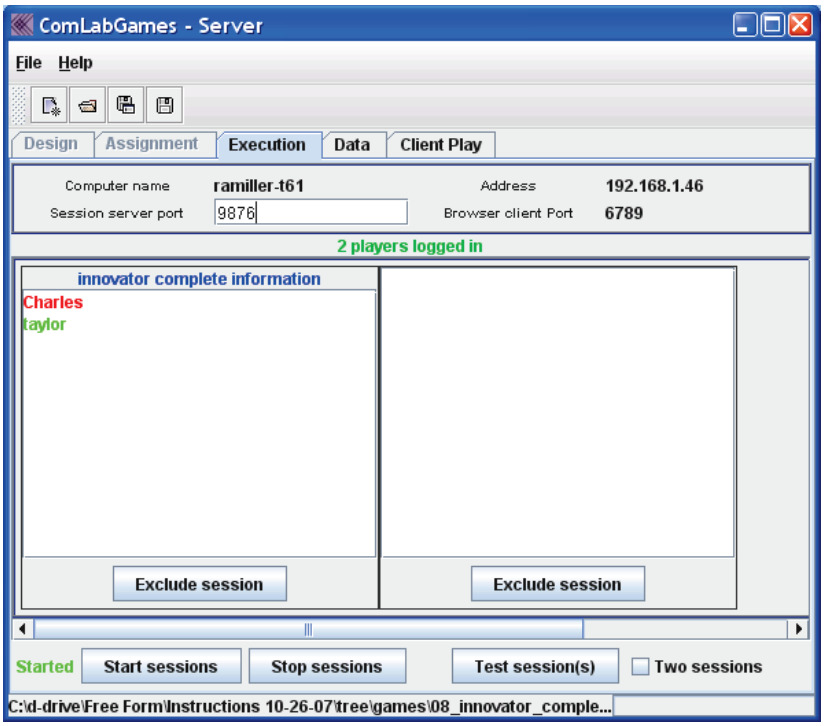
Subject in red is the one who has to make a decision and a subject in blue has to wait until the first subject selected a choice.



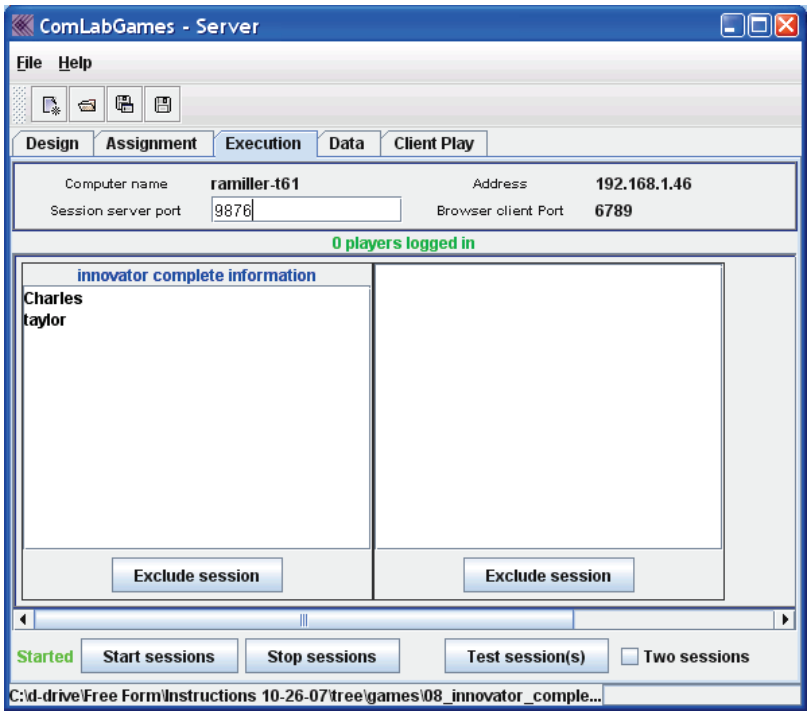
(3) All subjects have to make a decision but they have not clicked on "Continue" yet (all login names for the session are in red)



(4) Subjects who finished the tasks are in green (i.e. clicked "Continue"). Subjects who did not finish the task are in red.



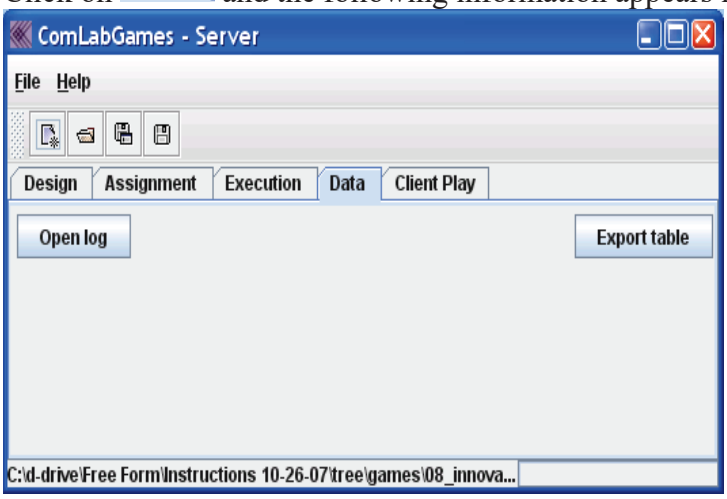
(5) The game is over, and all the names are in black. All subjects finished all the tasks (i.e. clicked on "Continue").



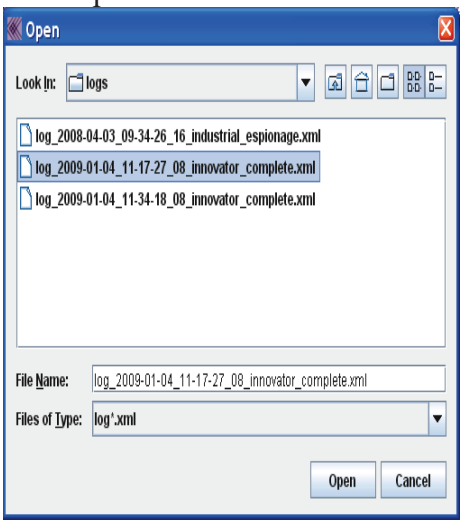
- If any of the sessions have technical problems, moderator can disconnect them by clicking on **Exclude session** below the session that has a problem.

o. **Viewing the Data after the experiment (i.e. after clicking on Stop sessions)**

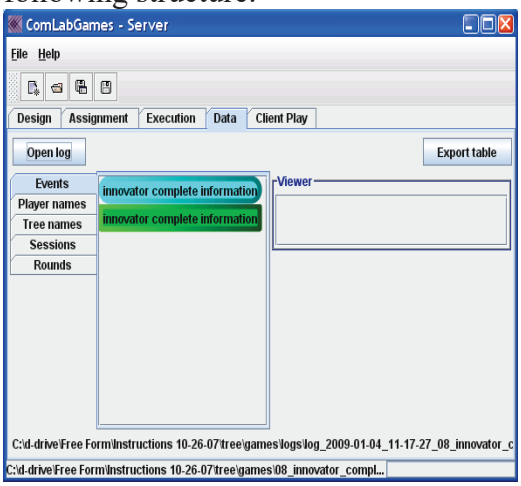
- Moderator can show the data immediately after the experiment
- Click on **Data** and the following information appears in the window:



- Click on **Open log** and select the appropriate data file. Data file have start with "log-date-time-name-of-the-experiment".



- After selecting a file and clicking on **Open** the data will have the following structure:



innovator complete information the green icon is storing the information on terminal nodes reached.

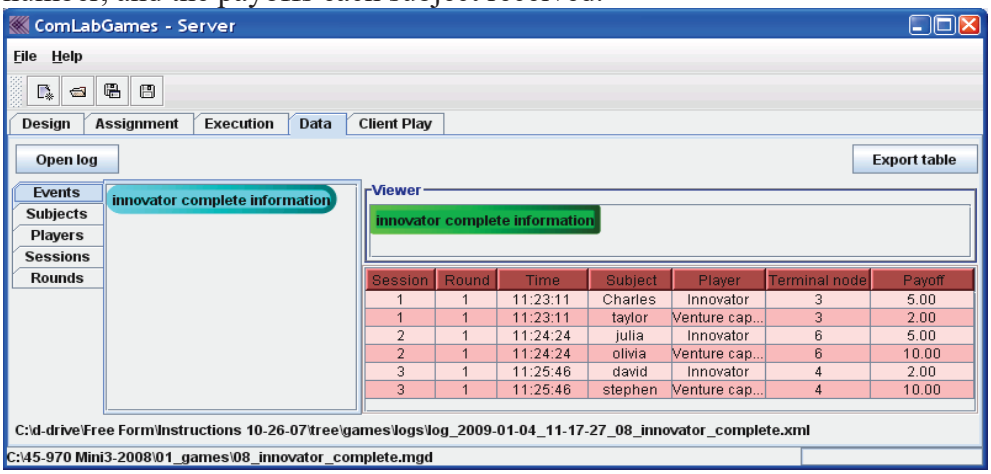
innovator complete information the turquoise color is storing information on choices that subjects chose.

	Note that the icons are named after the "tree entry name" innovator complete information

- Drag and drop any icon displayed into Viewer to view a particular type of data.

  - To view terminal nodes, drag and drop innovator complete information into Viewer

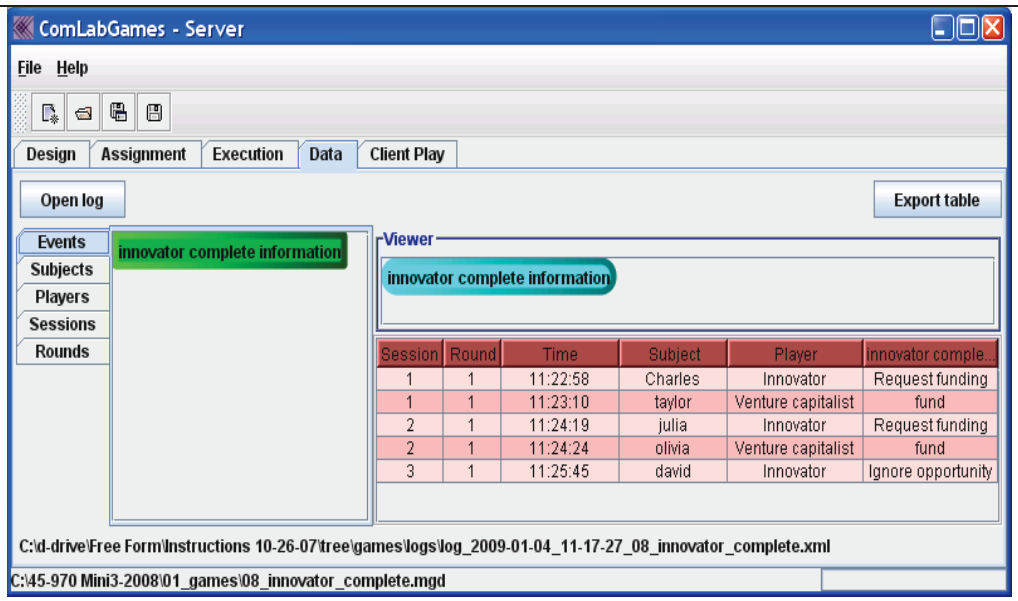
The data includes session number, round number, time that the node was reached, subject's login name (Player name), player type name, terminal node number, and the payoffs each subject received.



Each terminal nodes in the design window has a number and that number corresponds to the terminal node in the data:

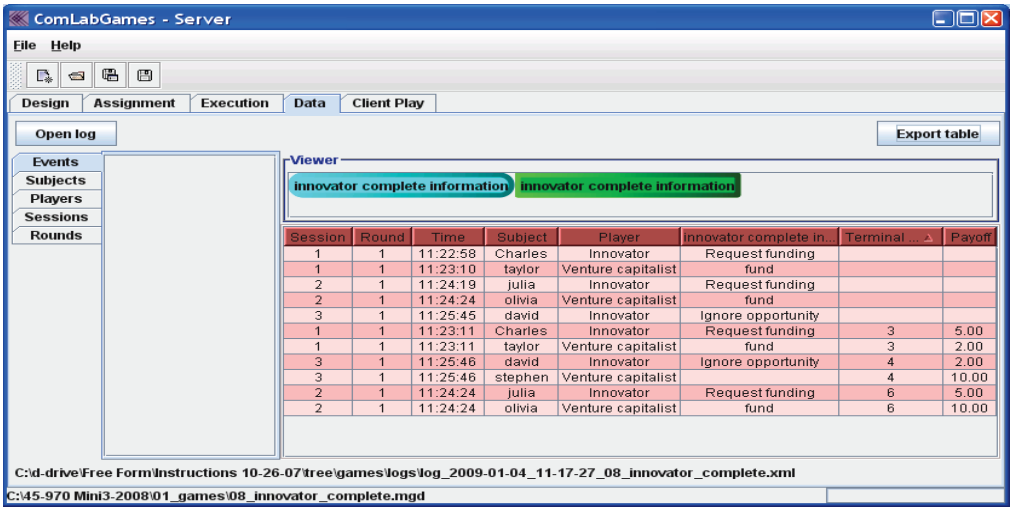
In our example terminal node 3 was selected once, terminal node 4 once, and node 6 once.

  - To view only the choices subjects made, drag innovator complete information from Viewer and drop it into Events place and drag&drop innovator complete information into the Viewer.



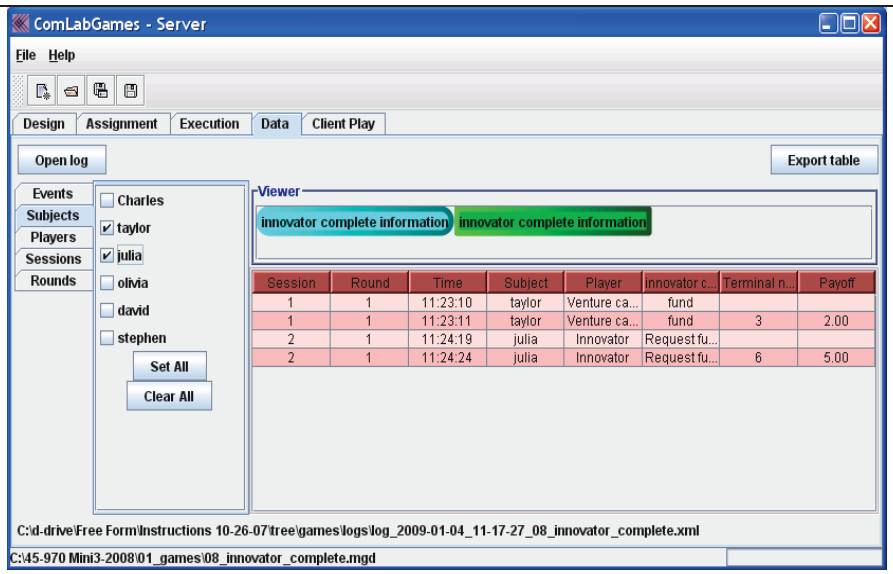
- To view both data together, drag&drop both icons into Viewer. The data will merge together.

  - To sort the data ascending order, just click once on one of the labels in the table. In the example we clicked on Terminal node label:

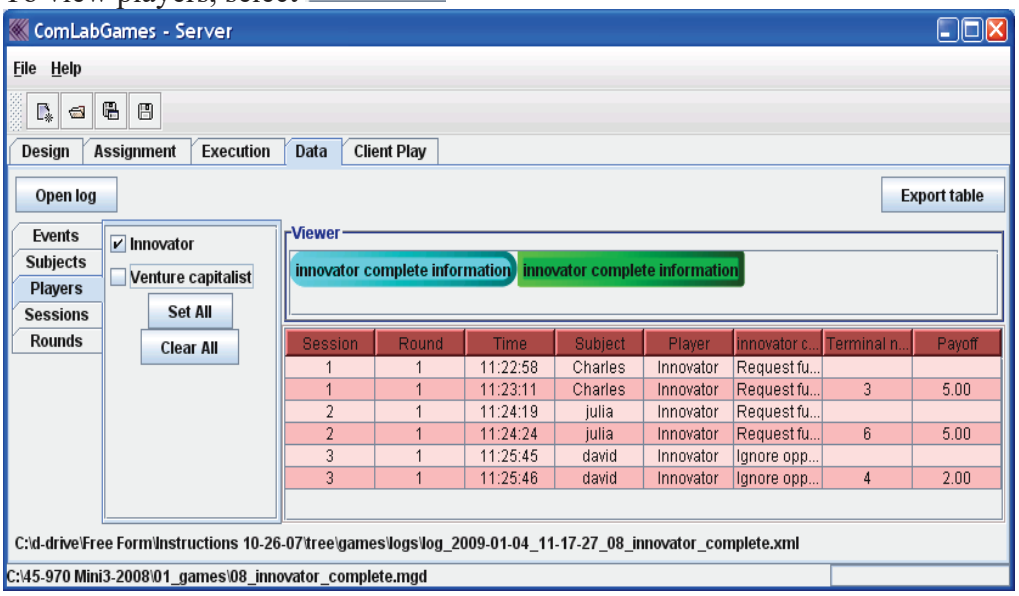


  Clicking again on the Terminal node label sorts the data in descending order.

  - To view a subset of subjects, click on Subjects and select the names.

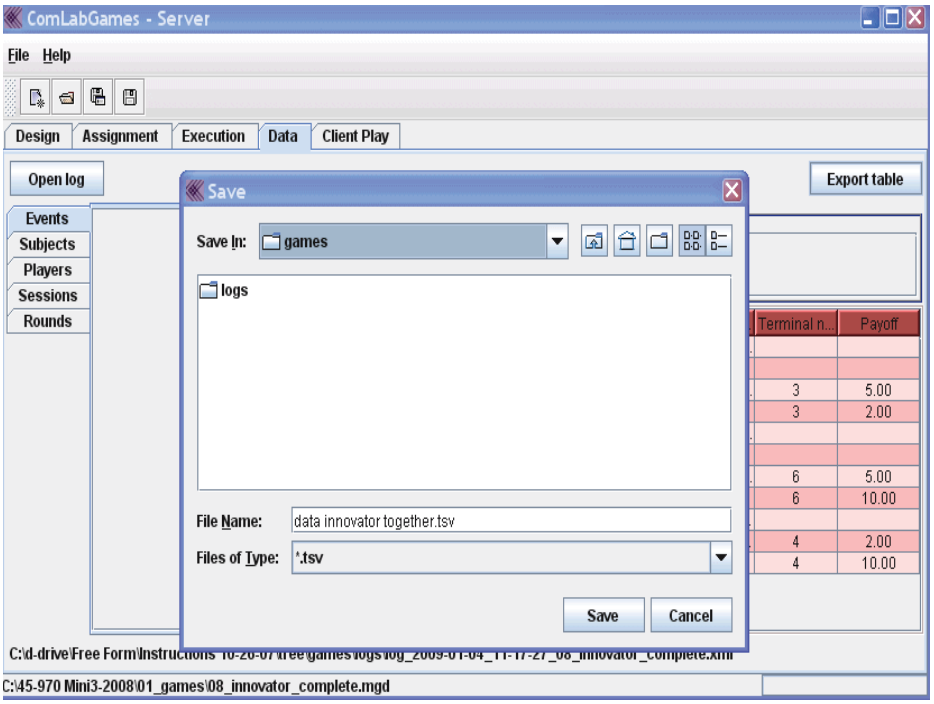


To view players, select **Players**



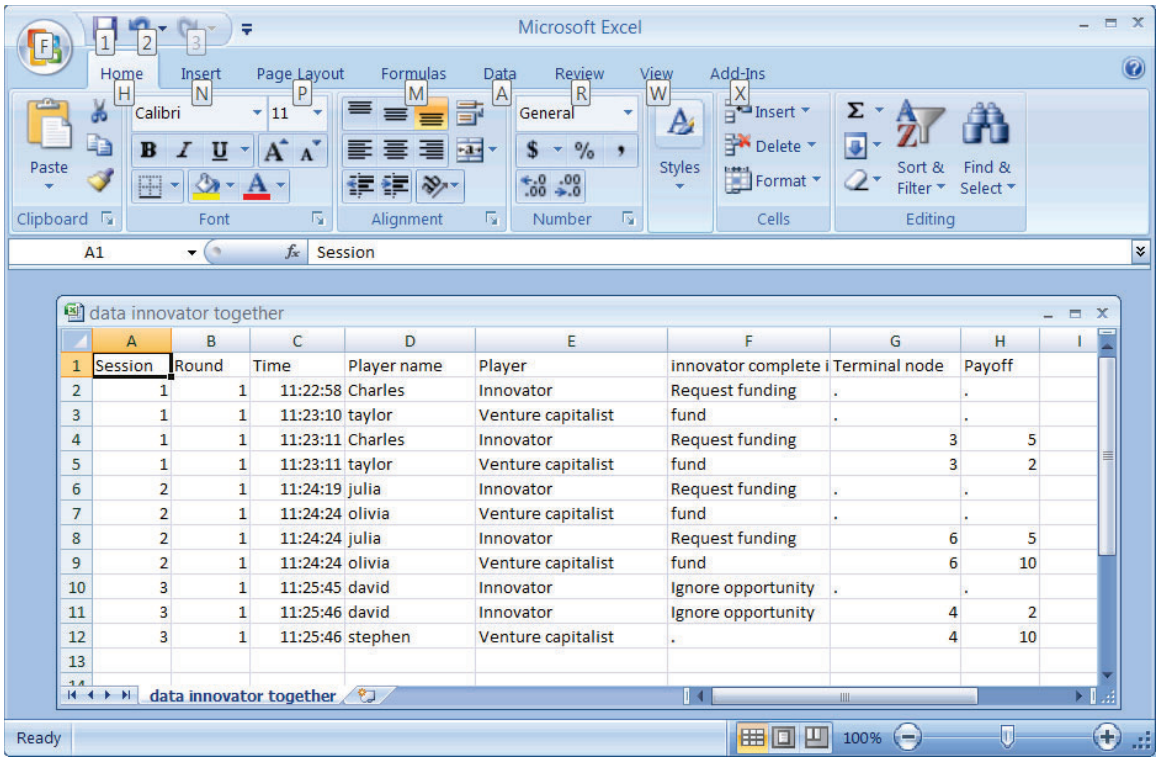
Similarly for all other titles.

- Select **Export table** to create an ASCII file for the viewing/using the data in other programs such as Excel, STATA, Mathlab etc.



- In order to save the data in ASCII form the variable icons that you want to select have to be placed in Viewer.
- File name has a default extension *.tsv. In the example above the file name is called “data innovator together.tsv”

- **Open Excel to read the data and use them for statistical analysis**



	A	B	C	D	E	F	G	H	I
1	Session	Round	Time	Player name	Player	innovator complete i	Terminal node	Payoff	
2	1	1	11:22:58	Charles	Innovator	Request funding	.	.	
3	1	1	11:23:10	taylor	Venture capitalist	fund	.	.	
4	1	1	11:23:11	Charles	Innovator	Request funding	3	5	
5	1	1	11:23:11	taylor	Venture capitalist	fund	3	2	
6	2	1	11:24:19	julia	Innovator	Request funding	.	.	
7	2	1	11:24:24	olivia	Venture capitalist	fund	.	.	
8	2	1	11:24:24	julia	Innovator	Request funding	6	5	
9	2	1	11:24:24	olivia	Venture capitalist	fund	6	10	
10	3	1	11:25:45	david	Innovator	Ignore opportunity	.	.	
11	3	1	11:25:46	david	Innovator	Ignore opportunity	4	2	
12	3	1	11:25:46	stephen	Venture capitalist	.	4	10	
13									