z-Tree Programming: Part I

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z-Tree: Zurich Toolbox for Experimental Economics

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z-Tree: Zurich Toolbox for Experimental Economics

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Most common experimental economics software

- z-Tree: Zurich Toolbox for Experimental Economics
- Most common experimental economics software
- Runs on Windows. Possible to run on Linux and Mac computers

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- z-Tree: Zurich Toolbox for Experimental Economics
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Consist of two counterparts:

- z-Tree: Zurich Toolbox for Experimental Economics
- Most common experimental economics software
- Runs on Windows. Possible to run on Linux and Mac computers

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Consist of two counterparts:

Experimenter PC:

- z-Tree: Zurich Toolbox for Experimental Economics
- Most common experimental economics software
- Runs on Windows. Possible to run on Linux and Mac computers
- Consist of two counterparts:

Experimenter PC: ztree.exe

Subject PC: Jeaf.exe

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z-Tree Architecture



In order to download zTree you have to obtain a licence: http://www.ztree.uzh.ch/index.html

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In order to download zTree you have to obtain a licence: http://www.ztree.uzh.ch/index.html

In return for the license YOU undertake to mention the name of the Department of Economics of the University of Zurich as well as the name z-Tree and to cite the following article in all publications in which results of experiments conducted with the Software are published: Urs Fischbacher, z-Tree: Zurich Toolbox for

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Ready-made Economic Experiments, Experimental Economics 10(2), 171-178.

Place ztree.exe and zleaf.exe in the same folder

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Run ztree.exe

- Place ztree.exe and zleaf.exe in the same folder
- Run ztree.exe
- Run zleaf.exe (Only runs if ztree.exe is running)
 - Run from command line "zleaf.exe /name SubjectName" to give a name to the subject

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- Create a shortcut of zleaf
- Add /name
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- Change the name for each instance

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- Create a shortcut of zleaf
- Add /name

NameOfTheSubject at the end of the target part

 Change the name for each instance

Please note!

There are some tools and tricks to open multiple z-leafs at once. We will discuss about them later.

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Running zTree on a lab:



 Run zTree.exe on experimenter pc

Running zTree on a lab:

 23
 Command Prompt
 Image: Command Prompt

 Ethernet adapter Ethernet:
 Media State
 Image: Command Prompt

 Connection-specific DNS Suffix : : units.it
 Units.it

 Vireless LAN adapter Vi-Fi:
 Connection-specific DNS Suffix : : 10.24.28.200

 Connection-specific DNS Suffix : : 10.24.28.200

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 : : : 255.255.84.3

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 Tunnel adapter isatap.(G34DFM18-3361-4108-BE31-3956CD70566BD):

 Media State .
 : : : : Media disconnected

 Connection-specific DNS Suffix : : : Media disconnected

Property	Value	
Connection-specific DN		
Description	TAP-Windows Adapter V9	
Physical Address	00-FF-C3-4D-FA-18	
DHCP Enabled	No	
Pv4 Address	169.254.123.19	
Pv4 Subnet Mask	255.255.0.0	
Pv4 Default Gateway		
Pv4 DNS Server		
Pv4 WINS Server		
NetBIOS over Topip En	No	
Unk-local IPv6 Address Pv6 Default Gateway	fe80::db3:cade:e39d:d31d%9	
Pv6 DNS Servers	fec0:0:0:ffff::1%1	
	fec0:0:0:ffff::2%1	
	fec0:0:0:ffff::3%1	

 Run zTree.exe on experimenter pc

Get the ip adress of experimenter's pc write ipconfig on command window or Open "Network and Sharing Center" -> Click LAN connection -> Click Details

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Running zTree on a lab:

 Command Prompt
 Command Prompt

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 Vetwork Connection Deta18

Value Property Connection-specific DN Description TAP-Windows Adapter V9 Physical Address 00-FE-C3-4D-FA-18 DHCP Enabled No Pv4 Address 169.254.123.19 IPv4 Subnet Mask 255 255 0 0 IPv4 Default Gateway IPv4 DNS Server IPv4 WINS Server NetBIOS over Topip En... No Link-local IPv6 Address fe80::db3:cade:e39d:d31d%9 IPv6 Default Gateway IPv6 DNS Servers fec0:0:0ffff::1%1 fec0:0:0.0#fff::2%1 fec0:0:0.0ffff-3%1

 Run zTree.exe on experimenter pc

Get the ip adress of experimenter's pc write ipconfig on command window or Open "Network and Sharing Center" -> Click LAN connection -> Click Details

 Add /server "ip number" at the end of zleaf command

Close

Let's try together

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First look at z-Tree

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Background

Defines the settings and the structure of the experiment

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Parameters of the session

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- Parameters of the session
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- Constant Screen Layout

Background

Defines the settings and the structure of the experiment

- Parameters of the session
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- Parameters of the session
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- Initial Programs
- Stages
Structure of z-Tree

Background

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- Parameters of the session
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- Constant Screen Layout
- Initial Programs
- Stages
 - Defines the flow of the experiment

Structure of z-Tree

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Defines the settings and the structure of the experiment

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- Parameters of the session
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 - Defines the flow of the experiment
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Structure of z-Tree

Background

Defines the settings and the structure of the experiment

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- Stores all the information.
- Six default. Three main:

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- Stores all the information.
- Six default. Three main:
 - globals

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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible

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Γ	1	4	1		0	0	1		4	-16			
	1	5	2		0	0	1						
L	1	6	1		0	0	1		7	-25	-		
1	ession t	able	_							T			
5	iubject	FinalProfit	ShowUp	Fee	Sho	wUpFeelm	rested	Mor	neyAdded	MoneyTo	Pay	Moni	ryEarned
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	3	0	0			0			0	0			0
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters

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	1	5	2		0	0	1				1.1		1.1
	1	6	1		0	0	1		7	-25			
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5	Subject	FinalProfit	ShowUp	Fee	Sho	wUpFeelm	vested	Mor	neyAdded	MoneyTo	oPay	Mon	ryEarned
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

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	1	6	1		0	0	1		7	-25			
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment
 - subjects

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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

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- subjects
 - subject specific variables

4	glo	bals t	able										
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	1	5	2			0	1	_					
	1	6	1			0	1		7	-25			
8	session t	able	1					_		1			
	Subject	FinalProfit	ShowUp	Fee	Sho	wUpFeelm	vested	Mor	neyAdded	MoneyTo	oPay	Mon	ryEarned
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment
 - subjects
 - subject specific variables
 - usually the most important

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	1	3	2)	0	1						
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

subjects

- subject specific variables
- usually the most important
- Default variables: Period, Subject, Group, Profit, TotalProfit, Participate

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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

subjects

- subject specific variables
- usually the most important
- Default variables: Period, Subject, Group, Profit, TotalProfit, Participate

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H	1	3	2	0		0	1						
П	1	4	1	0		0	1		4	-16			
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- Stores all the information.
- Six default. Three main:
 - globals
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 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

subjects

- subject specific variables
- usually the most important
- Default variables: Period, Subject, Group, Profit, TotalProfit, Participate

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- session:
 - session specific variables

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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

subjects

- subject specific variables
- usually the most important
- Default variables: Period, Subject, Group, Profit, TotalProfit, Participate

session:

- session specific variables
- Contains the payment information

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П	1	2	2	0	0	1	5	-10			
	1	3	2	0	0	1					
	1	4	1	0	0	1	4	-16			1.1
	1	5	2	0	0	1					1.0
	1	6	1	0	0	1	7	-25			1.1
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

subjects

- subject specific variables
- usually the most important
- Default variables: Period, Subject, Group, Profit, TotalProfit, Participate

session:

- session specific variables
- Contains the payment information
- Gains importance in case of sessions with more than one treatment file

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H	1	3	2	0	0	1					
H	1	4	1	0	0	1	4	-16			
П	1	5	2	0	0	1					
П	1	6	1	0	0	1	7	-25			
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- Stores all the information.
- Six default. Three main:
 - globals
 - globally accessible
 - general parameters
 - Default variables: Period, NumPeriods, RepeatTreatment

subjects

- subject specific variables
- usually the most important
- Default variables: Period, Subject, Group, Profit, TotalProfit, Participate

session:

- session specific variables
- Contains the payment information
- Gains importance in case of sessions with more than one treatment file
- Default variables: Subject, FinalProfit, ShowUpFee, MoneyToPay...

Background

😣 General Parameters			
Number of subjects Number of groups # practice periods # paying periods	8 1 0 1	OK Cancel	
Exch. rate (Fr./ECU) Lump sum payment (ECU) Show up fee (Fr.) Bani			
Compatibility			
Options			

Stage

Name	DecisionOfCor	ntribution	 OK
		nulbullon	UK
Start			Cancel
• Wait for a			
O Start if pos	sible		
C Start if			
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Header

👂 Header	Box	
Name	Header V With frame OK	
Width [p/%] Height [p/%]	Distance to the margin [p/%] Adjustment of the remaining box Cancel	
Display condition		
	I Show current period number I Show total number of periods	
	Name of "Period" Periode	
	Term for "out of" von	
F	Prefix for trial periods Probe	States -
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Term	for "Remaining time" Verbleibende Zeit [sec]:	-
Term for "Plea	ase reach a decision" Bitte entscheiden Sie sich jetzt!	

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Program

	subjects Vwner Variable	ОК	
ondition		Cancel	
Program	IntEnd=10; // Initial endowment of each subject. EffRate=3; // Public Good Efficiencty Rate (Multiplier)		

Standard Box

Standar	d Box	
Name	Text with Frame	к
Width [p/%] Height [p/%]	Distance to the margin (p/%) Adjustment of the remaining box I	icel
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Item

			Dr. m	
😣 Item				
Label	How much would you like to contribute? (0 to 10)	×	OK Cancel	
Variable	Contr			
Layout	1 I Input	A V		
Minimum	0			
Maximum	10			
	 Show value (value of variable or default) Empty allowed 			
Default				

Item

!text: 7 = "seven"; 8 = "eight"; 9 = "nine";	seven	seven
!radio: 1 = "86.8"; 24 = "102.8";	© 86.8 © 102.8	© 86.8 © 102.8
<pre>!radioline: 0="zero";5="five"; 6;</pre>	zero CCCC CC five	zero CCCC five
radiosequence: 7="seven";8="eight";9="nine";	C seven C eight C nine	⊜seven ⊚eight ⊂nine
slider: 0 ="A"; 100= "B"; 101;	A	A
<pre>!scrollbar: 0="L";100= "R";101;</pre>	L	L . R
<pre>!checkbox:1="check me";</pre>	🔽 check me	🗹 check me
<pre>button: 1 = "accept"; 0 = "reject";</pre>	accept reject	accept

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Let's start programming then... Public Good Game

You will find the treatment file on the website: publicgood.ztt

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We need to define:

- Number of people in each group
- Initial Endowment
- Amount Contributed
- Efficiency Factor
- Total Contribution in Group

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- Individual Share
- Profit

We need to define:

Number of people in each group globals

- Initial Endowment
- Amount Contributed
- Efficiency Factor
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment
- Amount Contributed
- Efficiency Factor
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals
- Amount Contributed
- Efficiency Factor
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals IntEnd
- Amount Contributed
- Efficiency Factor
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals IntEnd
- Amount Contributed subjects
- Efficiency Factor
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group
- Individual Share
- Profit

We need to define:

Number of people in each group globals N

- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group subjects
- Individual Share
- Profit
We need to define:

- Number of people in each group globals N
- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group subjects TotalCont

- Individual Share
- Profit

We need to define:

- Number of people in each group globals N
- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group subjects TotalCont

- Individual Share subjects IndShare
- Profit

We need to define:

- Number of people in each group globals N
- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group subjects TotalCont

- Individual Share subjects IndShare
- Profit

We need to define:

- Number of people in each group globals N
- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group subjects TotalCont

- Individual Share subjects IndShare
- Profit subjects

We need to define:

- Number of people in each group globals N
- Initial Endowment globals IntEnd
- Amount Contributed subjects Cont
- Efficiency Factor globals Eff
- Total Contribution in Group subjects TotalCont

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- Individual Share subjects IndShare
- Profit subjects Profit (Default Variable)

Some Table Functions

average(x), average(a, x)
count(), count(a)
find(x), find(a, x)
maximum(x), maximum(a, x)
median(x), median(a, x)
minimum(x), minimum(a, x)
product(x), product(a, x)
sum(x), sum(a, x)

Average of the values. Number of records in the table The first value of the variable Maximum of the (found) values. Median of the (found) values. Minimum of the (found) values. Product of the (found) values. Sum of the (found) values.

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Program should look like this:

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See you next time

Some things to think about before next session

- How can we improve the code that we wrote today?
- What if we would like to show exactly how many tokens others contributed?
- Imagine we would like to have a second treatment with three different parameters. How can we implement different treatments in the same code?

PLEASE DO NOT FORGET TO ENROLL TO ORSEE!

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