How to correct errors in your life table data file

齊心教授 Prof. Dr. Hsin Chi

Adjunct professor, National Chung Hsing University Adjunct professor, Fujian Agriculture and Forestry University

TWOSEX-MSChart can be used on Windows and Mac system TWOSEX has been used on Windows XP, 7, 8, 10. In most cases, there will be no problem. If you use Chinese or non-ASCII codes in the folder names, you may encounter some problems. But you can always find a solution for that. Only in extreme cases, you may have to re-install your operating system.

On Mac computer, you have to use Windows operating system to run TWOSEX.

Possible errors

- 1. If you used Chinese, Turkish, Farsi, German characters in your folder name, you might encounter problems. Please save your data file in a folder with pure ASCII name.
- 2. If you save your data file with long path, you may encounter problem, please save your data in a folder located on the Desktop. Note well! It must be in a folder.
- 3. If there are more than 400 insects, you might encounter problem. But, please try it first before contact Prof. Chi.
- 4. If there are more than 13 stages, you might encounter problem. Please try it first before contact Prof. Chi.
- 5. If you try to compare more than 20 treatments, you may encounter problems. Please try it first before write me.

Please try to detect all errors!

```
"Project: Silverleaf whitefly at 25C"
    "User: Ta-Chi Yang"
    "25C"
    50
    3,6
    F,Egg,L1,L2,L3,L4,Pupa,Female
    M,Egg,L1,L2,,L3,L4,Pupa,Male
    N,Egg,L1,L2,L2,L4,Pupa,Unknow
    L0,L4
    1,M,7,3.4,5,6,5,8,2,8,2,
    2,F,7,2,3,4,5,8,6,4,12,9,5,8,0,1,3,-1,
    3,N,7,2,4,3,4,3,6
    4,F,6,2,3,4,5,7,19,0,0,2,20,,6,5,10,8,13,10,12,9,0,0,-1
Copyright 1997-2019 Hsin Chi
```

```
Can you detect all errors?
"Project: Silverleaf whitefly at 25C"
"User: Ta-Chi Yang"
"Date: 2001.4.16.-2001.6.10
50
F,Egg,L1,L2,L3,L4,Pupa,Female
M,Egg,L1,L2,,L3,L4,Pupa,Male
N.Egg,L1,L2,L2,L4,Pupa,Unknown
1,M,7,6.4,5,6,5,8,2,
2,F,7,2,3,4,5,8,6,4,12,9,5,8,0,1,3,-1,
3,N,7,2,4,3,4,3,6
4,F,6,2,3,4,5,7,19,0,0,2,20,5,10,8,13,10,12,9,0,0,-1
```

Please make sure that you have prepared your data file using pure text editors: **WordPad**, **Notepad**.

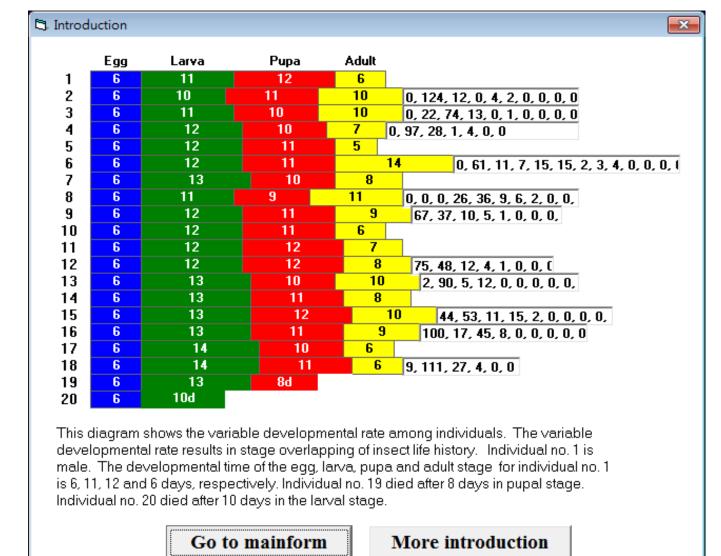
🖉 Save As		Х
← → ∽ ↑ 😵	> Dropbox v Ö Search Dropbox ,	Q
File <u>n</u> ame:	Test	\sim
Save as <u>t</u> ype:	Rich Text Format (RTF) (*.rtf)	\sim
	Rich Text Format (RTF) (*.rtf) Office Open XML Document (*.docx) OpenDocument Text (*.odt) Text Document (*.txt) Text Document - MS-DOS Format (*.txt) Unicode Text Document (*.txt)	
✓ <u>B</u> rowse Folder	Save in this format by <u>Save</u> Cancel	_
opyright 1997-2019 Hsin	n Chi	

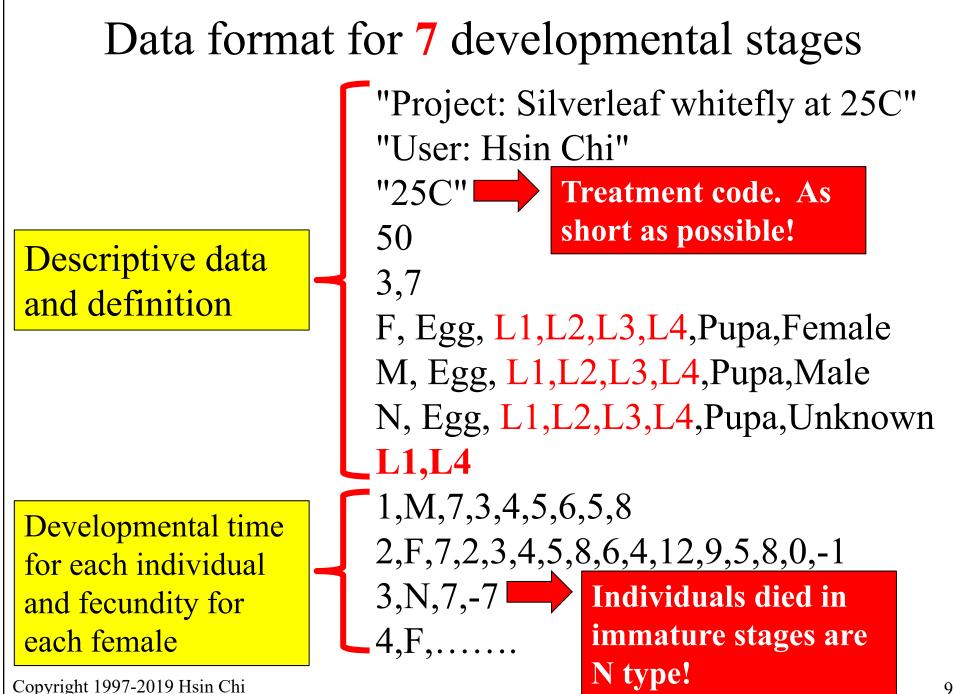
請確認你使用WordPad, Notepad 寫生命表資料. 如果使用NotePad產生錯誤,建議使用WordPad.

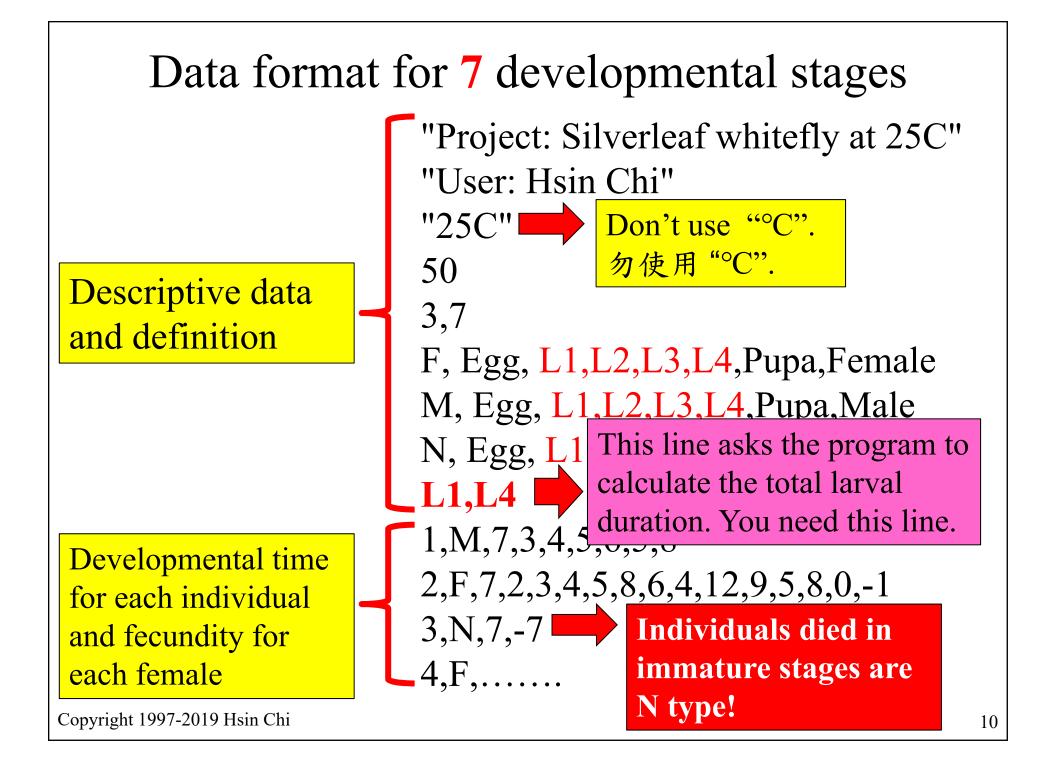
,c
~
ncel
nce

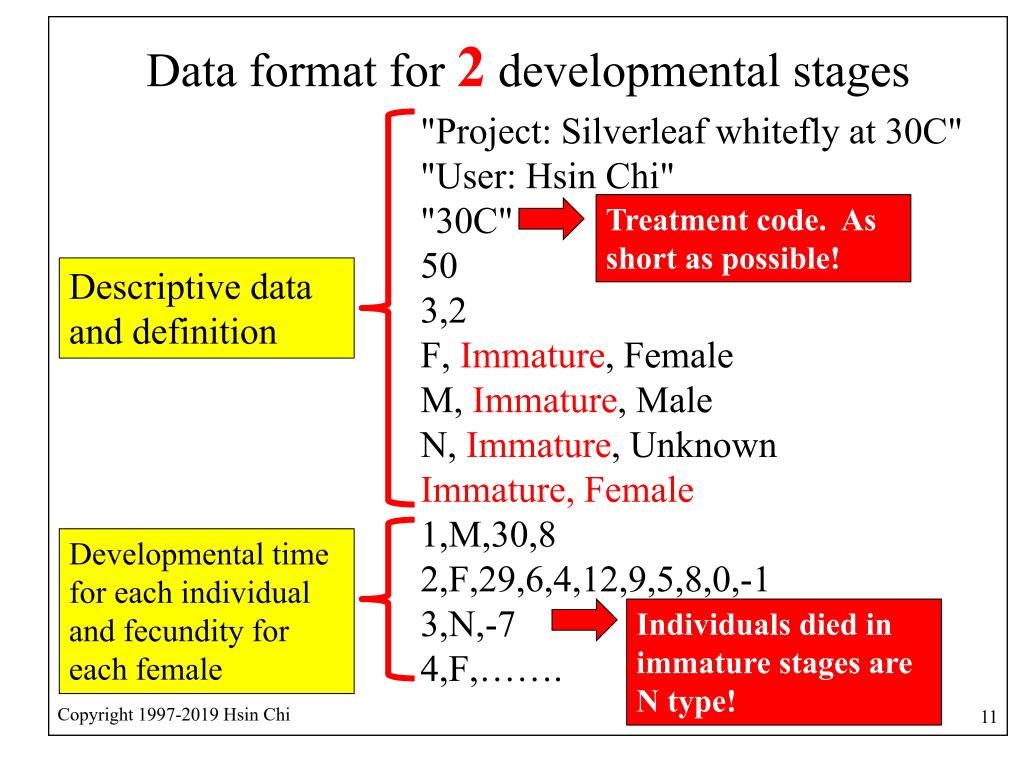
7

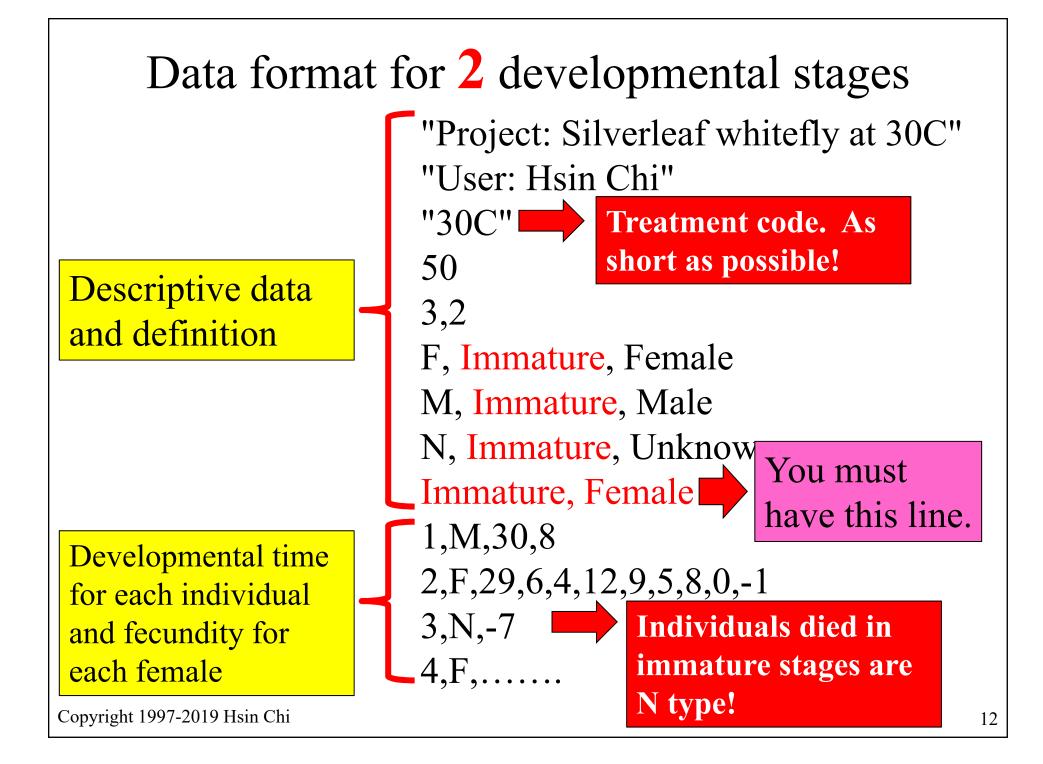
General life table data

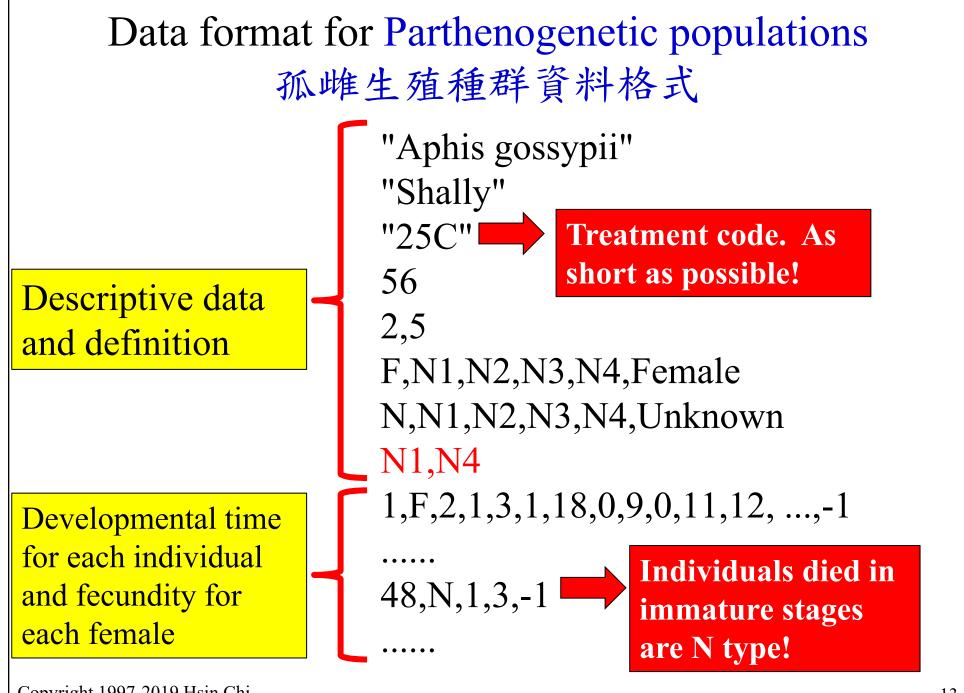


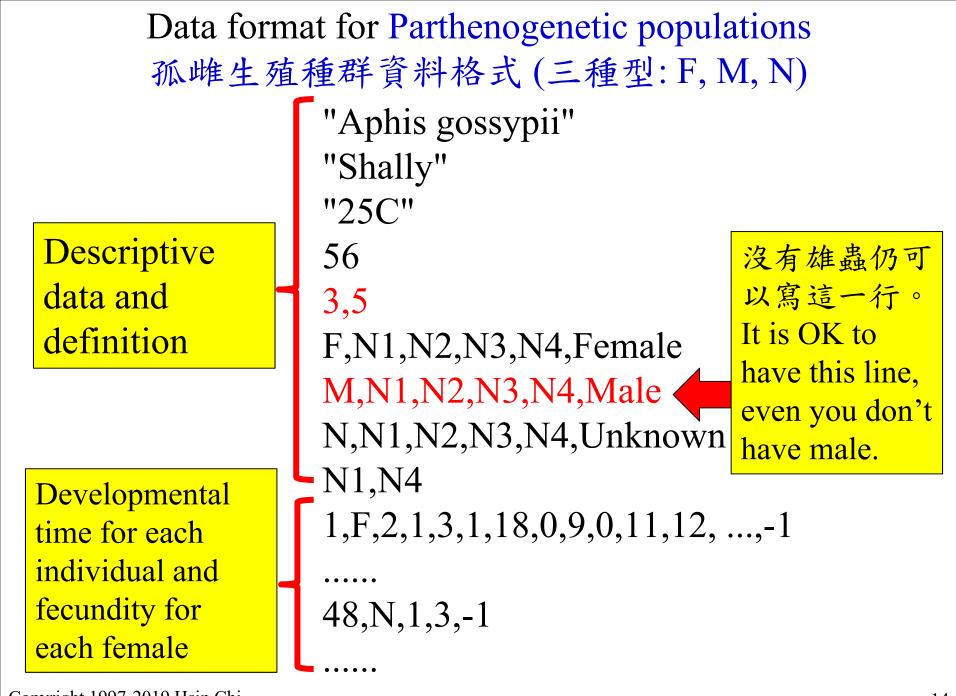












```
Data format for 7 developmental stages with
           stage-specific rearing cost
"Project: Diamondback moth at 25C"
"User: Hsin Chi"
"DBM."
50
3,7
F, Egg, L1,L2,L3,L4,Pupa,Female
M, Egg, L1,L2,L3,L4,Pupa,Male
N, Egg, L1,L2,L3,L4,Pupa,Unknown
                                        Not well! There are 8
                                        data. 2 is the rearing
0, 0.2, 0.3, 0.5, 1, 0, 2, 1.5
                                        cost of female and 1.5
L1,L4
                                        is the cost of male.
```

The rearing cost for egg, L1, L2, L3, L4, Pupa, Female and Male adults are 0, 0.2, 0.3, 0.5, 1, 0, 2, and 1.5, respectively.

Detailed explanation of data format

"Project: Diamondback moth at 25C" "User: Ta-Chi Yang" "DBM."

Don't use "o" or any non-ASCII code. 勿用中文。

50 (Number of eggs used at the beginning) 3,7 (Number of types, number of stages) F, Egg, L1,L2,L3,L4,Pupa,Female (Female stages) M, Egg, L1, L2, L3, L4, Pupa, Male (Male stages) N, Egg, L1,L2,L3,L4,Pupa,Unknown (Unknown type) L1,L4 (Special grouping: total time from L1 to L4) 1,M,7,3,4,5,6,5,8 (Developmental time) 2,F,**7**,**2**,**3**,**4**,**5**,**8**,**6**,**4**,**12**,**9**,**5**,**8**,**0**,-1 (Daily fecundity) 3, N, 7, -7 (Died on 7th day of L1) 4,F,6,2,3,4,5,7,19,0,0,2,20,9,6,5,10,8,13,10,12,9,0,0,-1

Explanation of data format for TWOSEX

"Project: Diamondback moth at 25C" "User: Hsin Chi" "DBM."

These three lines are descriptive data. They must be enclosed in double quotes.

50 (Number of insects you used at the beginning of life table study)

3,7 (Number of types and number of life stages. Please don't change the number "3". If there are only four life stages, e.g., egg, larva, pupa and adult, you should write 3,4. If there are only two stages, e.g., preadult and adult, you should write 3,2)

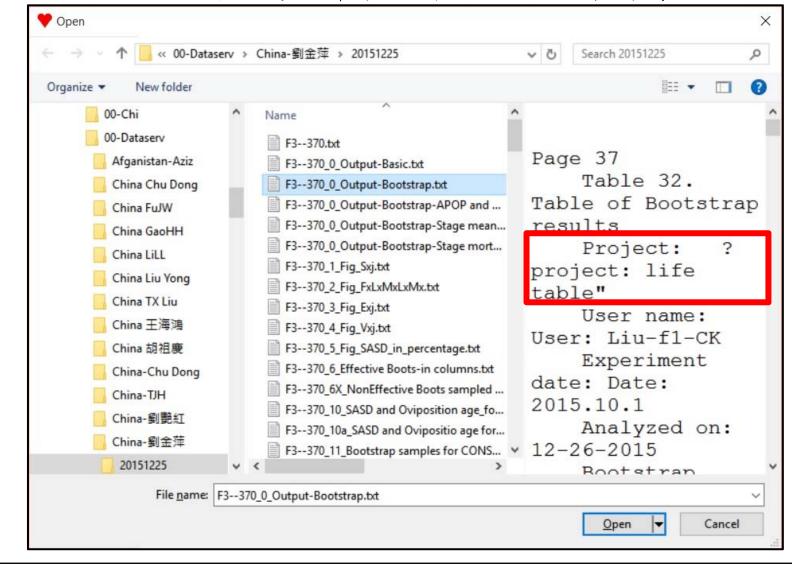
File explorer preview can show your errors

Organize 🔻 New folder	
00-Chi ^ Name	["project: life
00-Dataserv F3370.txt	table" "User: Liu-f1-CK"
China Chu Dong	"Date: 2015.10.1" 150
China FuJW China GaoHH	3,5
China LiLL China Liu Yong	F, Egg, L1-L3, L4- L6, Pupa, Female
China TX Liu China 王海鴻	M,Egg,L1-L3,L4- L6,Pupa,Male
China 胡祖慶 China-Chu Dong	N, Egg, L1-L3, L4- L6, Pupa, Unknown
China-TJH	L1-L3,L4-L6 1,F,3,7,4,9,7,0,-1
China-劉艷紅 China-劉金萍	2, F, 3, 7, 4, 10, 7, 0, 1 78, 385, 159, 0, 20, -1
20151225 🗸 <	> 3 F 3 7 4 9 12 0 1
File name: F3370.txt	

File explorer preview shows errors. 您可以在預覽視窗中發現錯誤。

Organize New folder 00-Chi Name 00-Dataserv F3370.txt Afganistan-Aziz F3370_0_Output-Basic.txt China Chu Dong F3370_0_Output-Bootstrap.txt China FuJW F3370_0_Output-Bootstrap.APOP and China GaoHH F3370_0_Output-Bootstrap-Stage mean China LiLL F3370_1_Fig_Sxj.txt China TX Liu F3370_2_Fig_FxLxMxLxMx.txt	<pre>"Description: the next three lines are project, date and usor name " " ?project: life table""" "Date: 2015.10.1" "User: Liu-f1-CK"</pre>
00-Dataserv F3370.txt Afganistan-Aziz F3370_0_Output-Basic.txt China Chu Dong F3370_0_Output-Bootstrap.txt China FuJW F3370_0_Output-Bootstrap-APOP and China GaoHH F3370_0_Output-Bootstrap-Stage mean China LiLL F3370_1_Fig_Sxj.txt China Liu Yong F3370_2_Fig_FxLxMxLxMx.txt	<pre>next three lines are project, date and usor nemo " " ?project: life table""" "Date: 2015.10.1"</pre>
China 王海鴻 China 胡祖慶 China-Chu Dong China-TJH China-劉艶紅 China-劉艶紅 China-劉金萍 20151225 ▼ × × × × ×	"Description: the next line is the finite rate." 1.19747015448238 "In Column" "Description: the next lines are the SASD." 179333393319639

Sometimes TWOSEX can analyze your data. But some errors will prevent you to use the results for TIMING or CONSUME. 有時您可以用TWOSEX分析生命表,卻不能使用TIMING或CONSUME,這是因為生命表檔案中的中文字符導致錯誤。



In general, if you prepare the data file using **Notepad**, there should be no error. 若您使用 Notepad撰寫資料檔,一般不會產生錯誤。

Organize 🔻 New folder		
 O0-Dataserv Afganistan-Aziz China Chu Dong China FuJW China GaoHH China GaoHH China LiLL China LiL China TX Liu China TX Liu China TX Liu China TX Liu China Ai租度 China-TJH China-劉艶紅 China-劉金萍 20151225 20151226Chi 	Name 1.txt 1_0_Output-Basic.txt 1_0_Output-Bootstrap.txt 1_0_Output-Bootstrap-APOI 1_0_Output-Bootstrap-Stage 1_0_Output-Bootstrap-Stage 1_1_Fig_Sxj.txt 1_2_Fig_FxLxMxLxMx.txt 1_3_Fig_Exj.txt 1_6_Effective Boots-in colun 1_6X_NonEffective Boots sar 1_10a_SASD and Oviposition 1_11_Bootstrap samples for	0 0 0

Coding error results in extra empty lines (this error can be easily detected in preview).

若有編碼錯誤,預覽視窗會顯示空行。

Documents library 2014 Arrange by: Folder •		"Dysaphis pyri, Cossia" "James Bond 2014"
Name	-	"16.05.2014."
Cossia.txt		
Cossia_0_Output-Basic.txt	=	22
Dysaphis pyri-new.txt		
Dysaphis pyri-new_0_Output-Basic.txt		3,5 TENT NO NO NA Ferral a
Dycaphic pyri-new 0. Output-Bootstrap by		F,N1,N2,N3,N4,Female

Correct format. 正確格式。

Documents library	Arrange by: Folder 🔻		"Dysaphis pyri, Cossia "James Bond 2014" "16.05.2014."
Name	^	-	22
Cossia.txt			3,5 F,N1,N2,N3,N4,Female
Cossia_0_Output-Basic.txt			M,N1,N2,N3,N4,Male
Dysaphis pyri-new.txt			N, N1, N2, N3, N4, Unknown
Dvsaphis pvri-new 0 Output-Bas	ic.txt		N1, N4

If you prepare data file using Excel, file explorer preview shows extra empty lines. 若您使用Excel撰寫檔案,預 覽視窗會顯示許多空行。

♥ Open ♥ ● ♥ ● ≪ 39-201501-Vali	-Asr University-Rafsanjan 🕨 2015 life table lecture 🕨 data file 🔹 🚽 Search data file	<u>×</u> م
Organize 🔻 New folder		
W Microsoft Word	D Arrange by: Folder V d "Golden beetle (L.)" "Mr. John Smith" "Aug. 1 2008 ~ Jan. 31 2009"	▲ E
 ★ Favorites ↓ Downloads ↓ Recent Places ■ Desktop ↓ Libraries ↓ Documents ↓ Music ■ Pictures ↓ Videos 	Name 30 aphid.txt 3,8 aphid-Chi edited.txt F, Egg, L1, L2, L3, L4, pp, Pupa, Female aphis ephestia.txt M, Egg, L1, L2, L3, L4, pp, Pupa, Male aphis ephestia.txt N, Egg, L1, L2, L3, L4, pp, Pupa, Male aphis ephestia.txt N, Egg, L1, L2, L3, L4, pp, Pupa, Unknow aphis ephestia.Chi edited.txt N, Egg, L1, L2, L3, L4, pp, Pupa, Unknow hippodamia (2).txt N, 2, 2, 2, 2, 2, 4, 1, 4, 34 hippodamia.txt M, N, 2, 2, 2, 2, 2, 4, 1, 4, 34 menochilus.txt menochilus.txt menochilus.Chi edited.txt Empty I	wn
🤣 Homegroup	psil.txt	
🖳 Computer		
🏝 Windows7, OS (C:)	 ✓ < III ▶ 2, F, 2, 2, 2, 1, 4, 1, 3, 68, 0, 0, 0, 0, 0, 0 	21,29,2 -
File <u>n</u> ame:	aphid.txt All Files (*.*)	
	Too <u>l</u> s v Open v	Cancel

Show editing marks in Word. 用WORD開啟檔案可以檢查格式。

aphid.txt - Microsoft W	ord
Acrobat	
'⊊* ≇ ≇ X+ <u>}</u> <mark>⊁</mark> ≡ ≌ ≋ \$≣* <u>≫</u> * ⊡ *	AaBbCcD AaBbCcD AaBb + Normal + No Spac Heading 1
Paragraph 5%	
Sho	w/Hide Editing Marks (Ctrl+*) ow paragraph marks and other Iden formatting symbols.

Tabs from Excel. 使用Excel撰寫檔案會有隱藏的Tab符號。

	aphid.txt - Microsoft Word	x
File H F Paste Clipboard G	Insert Page Layout References Mailings Review View Acrobat C Image v 12 v abc S Image Imag	≏ ?
L 141		28
	$3,M,2,2,2,2,4,1,4,38 \rightarrow \rightarrow$	-
	$\rightarrow \rightarrow $	
-	$\rightarrow \rightarrow $	
50 -	$\rightarrow \rightarrow $	
-	4, F, 2, 2, 2, 1, 5, 1, 3, 66, 0, 0, 0, 0, 0, 20, 20, 20, 19, 25, 13, 25, 24, 28, 31, 24, 29, 23, 27, 24, 18, 2	
- 33	3 ,20 ,23 ,24 ,25 ,25 ,21 ,21 ,28 ,20 ,29 ,24 ,24 ,22 ,27 ,23 ,28 ,25 ,18 ,20 ,21 ,24 ,20 ,17 ,23 ,19 ,21 ,	
-	23,15,20,18,24,21,15,20,24,22,18,15,8,12,8,5,5,3,-1+ → → ↔	
24 -	$5,M,2,2,2,2,4,1,4,35 \rightarrow \rightarrow$	
-	$\rightarrow \rightarrow $	
26 1	$\rightarrow \rightarrow $	
-	$\rightarrow \rightarrow $	
- 38	6, F, 2, 2, 2, 2, 4, 1, 4, 66, 0, 0, 0, 0, 0, 15, 25, 25, 21, 28, 25, 28, 23, 20, 20, 18, 24, 26, 23, 22, 29, 3	
-	1,30,22,28,20,29,16,23,15,26,24,22,20,27,29,21,25,22,24,23,15,22,24,23,21,22,15,	
- 08	21,19,23,25,22,0,20,23,16,0,15,20,15,10,12,10,5,4,-1 → → → +	
-	$7, \texttt{M}, 2, 2, 2, 2, 4, 1, 4, 33 \rightarrow \rightarrow$	
32 -	$\rightarrow \rightarrow $	*
-	$\rightarrow \rightarrow $	0
4	$\rightarrow \rightarrow $	*
Page: 1 of 4	Words: 63 English (U.S.) Insert	⊕_,

Open file in WORD and remove all **tabs**

Find and Replace	* * * * *		10.0	? ×
Find Replace Go To				
Find what:				-
Replace with:				•
<< Less	<u>R</u> eplace	Replace <u>A</u> ll	Eind Next	Close
Search Options				
Search <u>:</u> All 💌				
Match case		M	atch prefi <u>x</u>	
Find whole words only		M	a <u>t</u> ch suffix	
Use wildcards		M	atch half/full width	n for <u>m</u> s
Sounds like (English)		Ig 📃	nore punctuation	character <u>s</u>
Find all word forms (English)		Ig	nore <u>w</u> hite-space	characters
Format Special	No Formatting			
	140 Formaturing			

Errors result in more errors

If you used Chinese character in your life table data file, you might be able to use TWOSEX to analyze your data

<u>File Edit Format View Help</u>

"Project: Life table of Spodoptera litura fed on cabbage" "User: Dr. Shu-Jen Tuan" "Date: 2010.4.5.-2010.6.2"

But there will be errors in the "Timing data file" prepared by TWOSEX. You will face problem when you use TIMING.

```
<u>File Edit Format View Help</u>
```

"Description: the next three lines are project, date and user name." ""Project: Life table of Spodoptera litura fed on cabbage"" ""Date: 2010.4.5.-2010.6.2"" ""User: Dr. Shu-Jen Tuan"" "Description: Last age group is 57, number of stages is 9" If and only if the life table data file is correct, TWOSEX will prepare the correct file for TIMING. 使用正確的生命表檔案格式,才能產生正確的TIMING 檔案格式。

Correct life table data file

<u>File Edit Format View Help</u>

"Project: Life table of Spodoptera litura fed on cabbage" "User: Dr. Shu-Jen Tuan" "Date: 2010.4.5.-2010.6.2"

Correct TIMING data file

```
<u>File Edit Format View Help</u>
```

```
"Description: the next three lines are project, date and user name."
"Project: Life table of Spodoptera litura fed on cabbage"
"Date: 2010.4.5.-2010.6.2"
"User: Dr. Shu-Jen Tuan"
"Description: Last age group is 57, number of stages is 9"
```

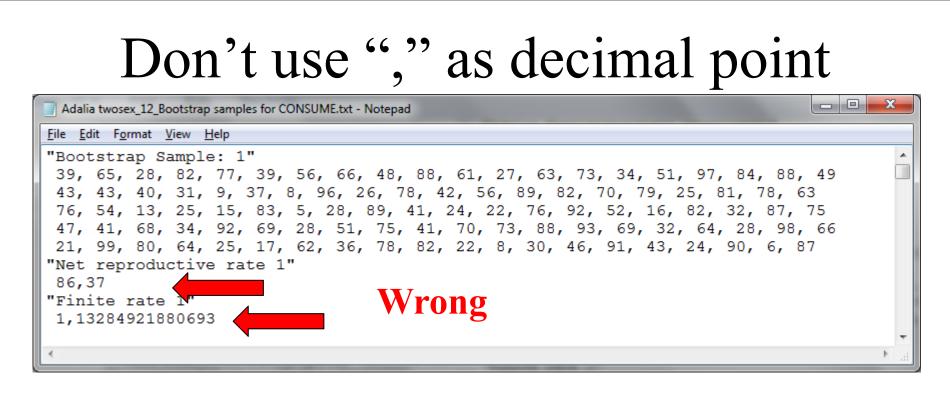
Errors result in more errors "Project: Life table of western flower thrips Name Date modified Size Type 1F:5M" Life table data "User: Dr. Zhang" te: 2016.5.16-2016.6.26." ?Project: Life table of western flower Size Name Date modified Type thrips 1F:5M""" 22,230 KB 1f-5m-all 11 Bootstr... Text Docu... 6/27/2017 8:25 PM 2016 5 16-2016.6.26." 1f-5m-all 15 For TIM "Dato ng" pf effective bootstrap =100000" **Error in file no. 11.Bootstrap samples**

Copy life table data (except the first three lines) to new notepad file (in English mode). Rewrite the first three lines. Rerun TWOSEX.

Name Date	modified	Туре	Size	"Project: Life table of western flower thrips 1F:5M"
Corrected	life ta	ble d	lata	"User: Dr. Zhang" "Date: 2015.5.16-2015.6.26."

Name	Date modified	Туре		"Projec <mark>t: Life</mark> table of western flower thrips
1f-5m-all_11_Bootstr	6/27/2017 9:04 PM	Text Docu	22,228 KB	1F:5M"
1f-5m-all_15_For_TIM	6/27/2017 9:00 PM	Text Docu	4 KB	"Date: 2015.5.16-2015.6.26."

File no. 11. Bootstrap samples without errors.



Adalia twosexA_12_Bootstrap samples for CONSUME.txt - Notepad				x
le <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp				
Bootstrap Sample: 1"				
96, 69, 84, 3, 48, 29, 83, 100, 4, 45, 9, 23, 59, 38, 84, 63,	66, 52	, 54,	40	
3, 66, 65, 68, 56, 24, 69, 53, 38, 92, 44, 13, 27, 45, 52, 22	, 30, 6	9, 9,	84	
69, 100, 93, 24, 1, 78, 66, 9, 51, 29, 29, 98, 82, 76, 95, 4,	78, 70	, 92,	97	
62, 48, 93, 22, 35, 14, 61, 40, 38, 52, 30, 7, 43, 54, 6, 59,	64, 78	, 94,	42	
2, 33, 48, 49, 2, 87, 46, 98, 48, 97, 98, 21, 72, 71, 64, 87,	98, 44	, 15,	49	
Net reproduc <u>tive ra</u> te 1"				
86.98				
Finite rate 1" Correct				
1.12981630064819				-
				N .

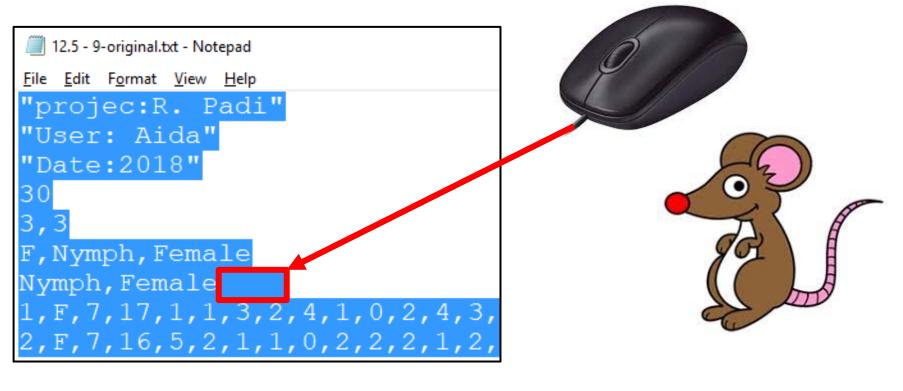
Check your data carefully!

```
"projec:R. Padi"
"User: Aida"
"Date:2018"
30
3,3
F,Nymph,Female
Nymph,Female
1,F,7,17,1,1,3,2,4,1,0,2,4,3,1,1,0,3,3,3,1,-1
.....
13,F,7,9,10,1,0,4,0,0,0,0,0,0,-1
14,F,7,7,4,3,5,4,5,3,3,-1
15,F,7,8,9,0,1,5,0,6,0,0,0,0,0,-1
16,F,7,14,0,3,3,3,1,1,2,0,1,0,5,3,1,1,-1
```

Individual no. 15: Adult duration is 8 days. But there are more than 8 fecundity!

Use your mouse to detect errors

If you use your mouse to drag over your data, you may see there are some "extra" spaces in your data file (this occurs when you prepare your data file using Excel or Word). You have to delete them.



Use "•" as decimal symbol

Control panel → Clock, Language, and Region → Region and language → Change keyboards or other input method → Formats → Format: English → Additional settings → Decimal symbol → "."

Why are text file line breaks wrong, after the file is transferred or edited?

20141229 (Chun-Yen) B d life table W T.txt - Notepad \Box X File Edit Format View Help "B.d. life table test""Kido Huang""2014.09.02. - 2014.12.29."503,4F,Egg,Larva,Pupa,FemaleM,Egg,Larva,Pupa,Male N,Egg,Larvae,Pupa,UnknownEgg,0,150,50Larva,2,550,50,50,45Pupa,5,165,50,50,50,50,50,50,50,50,50,38,2 20,20,20,20,20,20,20,20,19,19,19,19,19,19,19,19,19,19,19,19 21,21,21,20,20,20,20,20,20,20,20,20,20,20,20,19,18,18,17,17,17,15,15,15,15,15,15,14,13,13,13,11,11,11,10,9,7,6,6,6,6 6,6,6,6,6,6,6,6,5,5,4,2,1,1Female,15,107 0.0.0.0.0.0.12.51.63.231.353.340.271.331.239.347.254.269.387.387.267.316.283.316.295.244 413,379,401,372,395,301,225,292,244,236,243,268,207,293,201,201,204,136,193,223 218,219,219,205,171,147,164,107,125,102,129,121,131,102,80,79,62,57,61,47 57.68.45.19.34.22.24.19.22.26.15.17.5.6.6.1.3.1.0.0.1.0.1.0.0.0

To avoid this problem, send your text file as zip or RAR file. Reference: https://winscp.net/eng/docs/faq_line_breaks

Explanation of data format for TWOSEX

- F,Egg,L1,L2,L3,L4,Pupa,Female (*F is the type code of "female"*. *Egg, L1, ..., Female are the stage codes of respective stages.*)
- M,Egg,L1,L2,L3,L4,Pupa,Male (*M* is the type code of "male". Egg, L1, ..., Male are the stage codes of respective stages.)
- N,Egg,L1,L2,L3,L4,Pupa,Unknown (N is the type code for individuals that died in the immature stages. Egg, L1, ..., Unknown are the stage codes of respective stages.)
 L1,L4 (This line lets you to calculate the total development time from stage L1 to L4. You must have this line.)

Explanation of data format for TWOSEX

- **1,M,7,3,4,5,6,5,8 (The first individual is male. The** *duration of egg, L1, ..., adult are 7, 3, 4,..., 8 days, respectively*)
- 2,F,7,2,3,4,5,8,6,4,12,9,5,8,0,-1 (The second individual is female. The duration of egg, L1, ..., adult are 7, 2, 3,..., 6 days, respectively. The daily fecundities are 4, ..., and 0 eggs, respectively. The "-1" denotes the end of fecundity data. You don't need to enter all zeros at the tailend.)

3,N,7,-6 (The third individual did not reach the adult stage. The duration of egg stage was 7 days. It then lived 6 days in L1 and died. The minus sign denotes "death")

```
Good practice: Developmental time and fecundity
                on separate lines
建議將發育歷期寫一行,繁殖率寫在下一行。
You can write in the following formats:
4,F,6,2,3,4,5,7,19 (developmental time)
0,0,2,20,9,6,5,10,8,13,10,12,9,0,0,-1 (daily fecundity)
or
4,F,6,2,3,4,5,7,19
0,0,2,20,9,6,5,10,8,13,10,12,9,0,0,0,0,0,0,-1
                           You can omit these zeros.
or
                           可以省略這些零。
4,F,6,2,3,4,5,7,19
0,0,2,20,9,6,5,10,8,13,10,12,9,-1
```

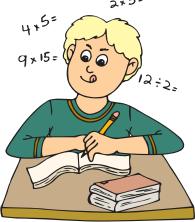
```
Can you detect all errors
"Project: Silverleaf whitefly at 25C"
"User: Ta-Chi Yang"
"Date: 2001.4.16.-2001.6.10(")
50
F,Egg,L1,L2,L3,L4,Pupa,Female
M,Egg,L1,L2,,L3,L4,Pupa,Male
N.Egg,L1,L2,L2,L4,Pupa,Unknown
1,M,7,3,4,5,6,5,8,2(?)
2,F,7,2,3,4,5,8,6,4,12,9,5,8,0,1,3,-1,
3,N,7,2,4,3,4,3,6(?)
4,F,6,2,3,4,5,7,19,0,0,2,20,,5,10,8,13,10,12,9,0,0,-1
```

Attention! Do NOT enter more than 30 data items in each line. Press ENTER at the end of each line.

建議:每行不要超過30個資料 理由:容易閱讀與偵錯 Are you qualified to use a computer?

- If and only if you can use your head and pencil to do the basic computation, then you are qualified to use a computer.
- Temel hesaplamaları yapmak için sadece ve sadece beyin ve kaleminizi kullanabilirseniz, o zaman bir bilgisayarı kullanabilmek için gerekli yeterliliğe sahipsiniz.
- Si y sólo si se puede usar la cabeza y un lápiz para hacer el cálculo de base, entonces usted está capacitado para usar una computadora.







Teşekkür ederim! سپاسگزارم 謝謝! ขอบคุณครับ Děkuji Danke! ¡Muchas gracias! Thank you! ご清聴ありがとうござ います!