Agricultural Sciences." *NACTA Journal* 23(2): 8-11.

4. Bentley, O. 1983. "Forces Reshaping Agriculture: Research and Educational Institutions." *Increased Understanding of Public Problems and Policies*. Chicago: Farm Foundation.

5. Bjoraker, W.T. 1987. "Concepts and Philosophical Issues in Food and Agriculture Undergraduate Education with Basic Guidelines for Curricular Planners." *Curricular Innovation for 2005 -- Planning for the Future of our Food and Agricultural Sciences*, pp. 5-32. Madison, Wis.: North Central Region Curricular Committee Project.

6. Karbon, J.K., G.L. Walter, L. Maurer, and L. Meiller. 1987. *Soil Conservation in Wisconsin*. Univ. of Wisconsin-Madison Dept. of Agricultural Journalism Report, Hatch Project #2879.

7. Korsching, P.F., and P.J. Nowak. 1983. "Soil Erosion Awareness and Use of Conservation Tillage for Water Quality Control." *Water Resources Bulletin* 19(3):459-462.

8. Kruglanski, A.W. 1980. "Lay Epistemo-logic -- Process and Contents: Another Look at Attribution Theory." *Psychological Review* 87(1):70-87.

9. Kruglanski, A.W., and T. Freund. 1983. "The Freezing and Unfreezing of Lay Inferences: Effects on Impressional Primacy, Ethnic Stereotyping, and Numerical Anchoring." *Journal of Experimental Social Psychology* 19(5):448-468.

10. Larson, K.L., and E.O. Hoiberg. 1987. "Current Curricular Designs -- Strengths and Weaknesses." *Curricular Innovation for 2005 -- Planning for the Future of our Food and Agricultural Sciences*, pp. 86-114. Madison, Wis.: North Central Region Curricular Committee Project.

11. Merritt, R., and K. Wilson. 1990. "University Program Review, Key Questions Using Systems Techniques." *NACTA Journal* 34(1):14-19.

12. Mollett, T.A., and E.K. Leslie. 1986. "Demographic Profile of Students Majoring in Animal Science." *NACTA Journal* 30(3):26-29.

13. Murphy, M.R., L.R. Fettig, and N. Srickandarajah. 1990. "Freshman/Sophomore Seminar Depicts Systems Approaches to Agricultural Problems." *NACTA Journal* 34(1):45-48.

14. Poland, S.M., D.L. Williams, D.K. Whigham, and R.E. Mullen. 1982. "Effectiveness of Supplemental Instructional Materials For Students Differing in Farm Experience." *NACTA Journal* 26(4):8-10.

15. Rogers E.M., and J.W. Dearing. 1988. "Agenda-Setting Research: Where Has It Been, Where Is It Going?" *Communication Yearbook Vol. 11*, pp. 555-594. Beverly Hills: Sage.

16. Sledge, G.W., and K. Wharton. 1987. "Alternative Educational Delivery Systems for the Future -- The Rationale and Process." *Curricular Innovation for 2005 -- Planning for the Future of our Food and Agricultural Sciences*, pp. 61-68. Madison, Wis.: North Central Region Curricular Committee Project.

17. Sledge, G.W., E.E. Darrow, E.F. Ellington, L.H. Erpelding, T.E. Hartung, and K.W. Reisch. 1987. "Futuristic Curricular Model/Designs For the Food and Agricultural Sciences." *Curricular Innovation for 2005 -- Planning for the Future of our Food and Agricultural Sciences*, pp. 115-30. Madison, Wis.: North Central Region Curricular Committee Project.

18. Slocombe, J.W. 1986. "Factors Associated With Enrollment in Agricultural Curricula at Land Grant Universities," *NACTA Journal* 30(4):26-29.

19. Terry, D.E., and M.D. Gray. 1990. "A Study of Agricultural Students in Missouri and Arkansas Non-land Grant Universities." *NACTA Journal* 34 (4):32-35.

20. Waldren, R. P., A.M. Parkhurst, and J.K. Ward. 1983. "Differences Between Rural and Urban Students." *NACTA Journal* 27 (4): 8-13.

21. Walter, G., and A. Reisner. 1990. "Survey Finds Critical Development Gaps in Opinion Formation and Values Clarification on Soil Conservation by Agricultural Freshmen." *NACTA Journal* 34(2): 50-53.

22. Zimmerman, A.P. 1991. "A Capstone Problem Solving/Systems Course at a Two-Year Technical College." *NACTA Journal* 35(1): 1991.

A LOTUS Futures Trading Game

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Abstract

Lotus 1-2-3 is being used to maintain the accounts of simulated futures trades of students in the Department of Agriculture at Western Illinois University. This simulated trading activity is supported by real-time price quotation terminals.

Introduction

The WIU Trading Association--a student club--was formed to supplement instruction delivered in six courses related to fundamental and technical analysis for hedging and speculation using futures and options. The purpose of this club is to allow students to simulate day- , swing-, and position-trades. To support this activity, the students have access to four price quotation terminals which provide real-time quotations of futures prices and option premiums.

The purpose of this article is to describe the Lotus 1-2-3 spreadsheet used to maintain the accounts of simulated futures trades. Previously, a similar instructional use of a spreadsheet prepared with Apple Works on an Apple IIe was reported (Drinka, King, and Weishaar).

The Template

Figure 1 displays the spreadsheet fields, the column width, and the field contents. The Settlement Price Table (Figure 2) consists of Fields A through C. Field A contains standard futures contract codes; for example, "CZ" denotes Chicago Board of Trade December corn futures. Field B displays our futures contract identification code, which is specified as "LL.E", where "LL" is the market lookup code, and "E" is the expiration month code; for example, the contract identification code of Chicago Board of Trade (hereinafter, "CBOT") December corn is "01.1". Daily settlement prices are entered into Field C; these prices are used to mark-to-market open market positions each trading day.

For open market positions, trading-account equity is reduced by initial margin: the market lookup code is entered in Field E, and the spreadsheet uses these lookup codes, which also appear in Field V, to select the market's initial margin (i.e., MARG) as displayed in Field X of the Trading Cost Table (Figure 3). Field F designates whether the trade results in an open or an offset futures position: the contract identification code is entered for open positions, while "99" is entered for offset positions.

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Figure 1. Spreadsheet Fields and Input Specification.

Field	Width	Content
A	07	Standard Futures Contract Code >>> Settlement
B	05	Contract Identification Code > Price
C	09	Daily Settlement Price >>> Table
D	03	Column of "!" as a borderline
E	04	Market Lookup Code
F	05	Open/Offset Code
G	04	Number of Contracts >>>
H	04	Standard Futures Contract Code >
I	06	Date Bought >
J	07	Price Bought >
K	06	Date Sold >
L	07	Price Sold >
M	09	P/L; enter formula: > Daily
		@IF(F17=99,(L17-J17),@IF(J17=0,(L17-(@VLOOKUP(F17,B16..C214,1))),0) > Market to Market
		+@IF(L17=0,((@VLOOKUP(F17,B16..C214,1)))-J17,0) > Printout
		+@IF((((@VLOOKUP(F17,B16..C214,1))=0),(L17-J17),0)) >
N	10	NET P/L; enter formula: >
		+M17*(@VLOOKUP(E17,V10..Y61,1)*G17)-((@VLOOKUP(E17,V10..Y61,3)*G17)) >
O	08	YTD P/L; enter formula: >
		+O16+@IF(F17=99,N17,0) >
P	09	TRADE BALANCE; enter formula: >
		@IF(F17=99,(P16+N17),(P16-(@VLOOKUP(E17,V10..Y62,2)*G17-N17))) >>>
U	12	Market Name >>>
V	06	Market Lookup Code > Trading
W	07	QUAN > Cost
X	07	MARG > Table
Y	07	COMM >>>

Field G indicates the number of contracts being traded. Field H contains the standard futures contract codes which also appear in Field A.

Fields I and K indicate the date on which the futures is bought and sold, respectively. These dates are entered as "MM-DD" preceded by the " ' " symbol which identifies the numbers as labels, thereby allowing the " - " symbol to separate month from day.

Fields J and L contain the price at which the futures is bought and sold, respectively. For offset positions, these fields contain the price at which each trade was executed. For open positions, one of these fields contains the price at which the market was entered, while the other field remains blank; the daily settlement prices that are entered in Field C are used to mark-to-market open positions.

Prices are quoted by our terminals without a decimal point, and--with the exception of grains and certain financial instruments--are entered into Fields J and L in the same format as they are quoted. Grain prices are quoted in 1/8ths of a cent; for example, "2316" represents $2.31 3/4 per bushel. Similarly, for example, the price of U.S. long-term Treasury bonds quoted as "9424" represents 94-and- 24/32-of 100%, or 94-and-75%. When such prices are entered in Fields J and L, they must be entered as decimal equivalents: thus, the grain price would be entered as "231.75", while the bond price would be entered as "94.75".

The following four fields of the spreadsheet are calculated from the formulas shown in Figure 1. Firstly, Field M calculates the gain or loss (i.e., P/L) per contract in points, both for open marked- to-market positions, and for offset positions. For open positions, P/L is calculated by comparing the price at which the position was taken, with the settlement price of the latest trading day. For offset positions, P/L is calculated as the price sold minus the price bought.

Secondly, from P/L, Field N calculates NET P/L, the gain or loss for the total number of contracts in the position adjusted for brokerage fee. NET P/L equals P/L times the number of contracts in the position times QUAN, minus the number of contracts times COMM. QUAN (Field W of the Trading Cost Table) is derived from the contract size, and from the price decimal conversion; for example, QUAN for CBOT corn is 50, since the contract size is 5000 bushels and, additionally, since the spreadsheet converts the price entered as cents per bushel, to gain or loss in dollars per bushel. COMM (Field Y of the Trading Cost Table) is the brokerage fee (we realize that, in practice, brokerage fee is not assessed until a position is offset); the fee reflects three ticks slippage plus $25 per contract per turn.

Thirdly, field O calculates YTD P/L, the cumulative year-to-date total profit or loss; YTD P/L is not adjusted for open positions. NET P/L for offset positions is added to the previous YTD P/L.

Fourthly, field P calculates TRADE BALANCE, the trading account's equity, taking into consideration offset as well as open positions. For offset positions, TRADE BALANCE equals the previous TRADE BALANCE plus NET P/L. For open positions, TRADE BALANCE equals the previous TRADE BALANCE plus NET P/L, minus the number of contracts in the position times MARG.

The Trading Cost Table (Figure 3) consists of Fields U through Y. As explained above, this table contains QUAN, MARG, and COMM.

Setting Up The Spreadsheet

Figure 4 displays spreadsheet sample output. The steps required to set-up trading accounts on the spreadsheet are:

Figure 2.

	A	B	C	D
1				!
2		Settlement Price		!
3		Table		!
4				!
5		1-10 Grains		!
6		11-20 Livestock		!
7		21-30 Financials		!
8		31-40 Metals		!
9		41-50 Stock Indexes		!
10				!
11				!
12				!
13	Contract			!
14	Code	ID	Close	!
15	---	---	---	!
16	CZ	1.1	250	!
17	CH	1.2	0	!
18	SX	2.1	626	!
19	SF	2.2	0	!
20	SMV	3.1	0	!
21	SMZ	3.2	0	!
22	BOQ	4.2	0	!
23	BOU	4.3	0	!
24	WZ	5.1	0	!
25	WH	5.2	0	!
26	OK	6.1	0	!
27	OH	6.2	0	!
28	OJH	7.1	0	!
29	OJF	7.2	0	!
30	CTZ	8.3	0	!
31	CTH	8.4	0	!
32	CCK	9.2	0	!
33	CCN	9.3	0	!
34	CCH	10.1	0	!
35	CFK	10.2	0	!
36	LCV	11.1	0	!
37	LCZ	11.2	0	!
38	FCF	12.2	0	!
39	FCJ	12.3	0	!
40	LHZ	13.3	5115	!
41	LHG	13.6	0	!
42	PBG	14.1	5280	!
43	PBH	14.2	0	!
44	LBX	15.1	0	!
45	SUN	16.1	0	!
46	BDZ	21.1	0	!
47	EDH	21.2	0	!

Figure 3.

	U	V	W	X	Y
1					
2			Trading Cost Table		
3		L			
4		O			
5		O C			
6		K O			
7	MARKET	U D	QUAN	MARG	COMM
8		P E			
9	---	---	---	---	---
10	Corn	1	50	500	63
11	Soybeans	2	50	750	63
12	Soybean Meal	3	10	500	55
13	Soybean Oil	4	0	400	43
14	Wheat	5	50	500	63
15	Oats	6	50	250	63
16	O.J.	7	1.5	3000	48
17	Cotton	8	5	1500	40
18	Cocoa	9	10	900	55
19	Coffee	10	0	1500	36
20	Live Cattle	11	4	700	55
21	Feeders	12	4.4	700	58
22	Live Hogs	13	4	560	48
23	Pork Bellies	14	4	1500	55
24	Lumber	15	1.3	600	64
25	Sugar	16	11.2	2000	59
26	Bond	21	31.25	2000	119
27	Bill	22	25	800	100
28	Note	23	0	0	25
29	Swiss	24	0	2025	63
30	Pound	25	0	2100	63
31	C-Dollar	26	0	675	55
32	mark	27	0	1755	63
33	Yen	28	12.5	2025	63
34	Euro	29	25	810	100
35	CD	30	0	0	0
36	Crude	31	10	2500	55
37	Gasoline	32	4.2	2500	38
38	Heating Oil	33	4.2	2500	38
39	US-Dollar	34	0	0	0
40	Aluminum	35	0	1500	80
41	Copper	36	2.5	2000	63
42	Gold	37	10	1700	55
43	Silver	38	0	1700	40
44	Platinum	39	0	1600	40
45	Palladium	40	0	800	40
46	S&P 500	41	5	25000	100
47	NYSE Index	42	0	6500	100
48	MM Index	43	0	0	80

Step 1...set column widths as shown in Figure 1.

Step 2...type column headings as shown in Figure 4.

Step 3...set the spreadsheet to manual calculate.

Step 4...create the Settlement Price Table using Figure 2 as a guide. As explained above, this table contains the standard futures contract codes in Field A, our futures contract identification code in Field B, and daily settlement prices in Field C (note, that zeros are entered in Field C for contracts not currently being traded).

Step 5...enter the initial TRADE BALANCE in cell P16 (note, that each student's account is opened with a balance of $25,000); then, using the formulas of Figure 1 Fields M through P, prepare the first row of the spreadsheet, namely row 17 Fields E through P.

Step 6...using Figure 3 as a guide, prepare the Trading Cost Table (note, that zeroes are entered in Field W for contracts not currently being traded).

Step 7...using Figure 4 as a guide, enter sample data (i.e., columns E through L) to verify that the spreadsheet is calculating properly. After data entry, press the F9 key to calculate.

Step 8...following debugging, copy formulas M17 through P17 to subsequent rows down the spreadsheet, thereby allowing for more trades to be entered for Student 1.

Step 9...copy the trade account for each student by using the "RANGE" "COPY" command.

Sample Spreadsheet Output

Four simulated trades are shown in the sample output of Figure 4. Although we do not print Fields A through F in our daily mark-to-market printout, Fields E and F appear in Figure 4 as a guide to the reader.

The first position shown in Figure 4 is an open long position of CBOT December corn futures (i.e., "CZ" in Fields A and H), designated by "1" in Fields E and V, and "1.1"

Figure 4.

	E	F	G	H	I	J	K	L	M	N	O	P
1												
2												
3												
4												
5				SPRING 1991								
6												
7				WIU TRADING ASSOCIATION								
8												
9	L			TRADER: STUDENT 1								
10	O											
11	O C											
12	K O	ID										
13	U D	CODE		FUTURE						NET	YTD	TRADE
14	P E	99=CL	#	CODE	DATE	BUY	DATE	SELL	P/L	P/L	P/L	BALANCE
15												
16											0	25000
17	1	1.1	1	CZ	10-1	245			5	187	0	24687
18	13	13.3	2	LHZ			10-7	5122	7	-40	0	23527
19	14	99	1	PBG	10-10	5280	10-14	5275	-5	-75	-75	23452
20	2	99	5	SX	10-11	620.25	10-15	626.75	6.5	1310	1235	24762

in Fields B and F. Student 1 entered the market by buying one contract on October 1 at $2.45 per bushel. The contract identification code "1.1" is entered in Field F to allow for the daily settlement price to be obtained from Field C, thereby allowing the position to be marked-to-market at $2.50 per bushel. P/L shows a gain of 5 points (i.e., $0.05 per bushel). NET P/L converts the per-contract gain in points, to an equity gain in dollars for the position; thus, P/L of 5 times QUAN of 50 (i.e., $0.05 per bushel gain times 5000 bushels per contract), minus COMM of $63, equals $187 NET P/L. Since this position is open, initial margin is deducted from TRADE BALANCE; thus, the previous $25,000 TRADE BALANCE, plus NET P/L of $187, minus MARG of $500, equals $24,687 TRADE BALANCE.

The second position shown in Figure 4 is an open short position of Chicago Mercantile Exchange (i.e., CME) December live hog futures placed on October 7 at $51.22 per hundredweight. Since the daily settlement price is $51.15, P/L shows a gain of 7 points per contract; 7 points per contract times QUAN of 4 equals $28.00 per contract. Thus, NET P/L equals $28.00 per contract times two contracts, minus $96 brokerage fee (i.e., COMM of $48 times two contracts); NET P/L thus equals -$40.00. And, the previous TRADE BALANCE of $24,687 minus $40, minus $1120 (i.e., MARG of $560 times two contracts) equals $23,527 TRADE BALANCE.

The third trade involves assuming a long position of CME February pork belly futures at $52.80, and offsetting it at a 5-point loss. Since the position has been offset, the resultant $75 loss (i.e., a $20 loss on one contract plus COMM of $55) is taken into consideration by both YTD P/L and TRADE BALANCE.

The final trade (Figure 4) involves a long position of 25,000 bushels of CBOT November soybean futures that has been offset at a gain of $0.065 per bushel. The resultant $1310 NET P/L is added to the previous YTD P/L of -$75, as well as to the previous TRADE BALANCE of $23,452.

References

Drinka, Thomas P., Jon M. King, and Darrel R. Weishaar. "A Microcomputer-assisted Futures Trading Game", *NACTA Journal* 11(2), 42-45.

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CASE STUDY

Meeting General Education Requirements For Computing Skills by Revamping A Science-Based Dairy Management Course

G. W. Kazmer

Introduction

Recognizing that computer literacy is as important today as the traditional "3 R's", the University of Connecticut recently included computing skills as a requirement for graduation. As part of the General Education Requirements, which must be fulfilled by all students in order to graduate regardless of major, students at the University of Connecticut must complete at least one course which is designed to provide a substantial amount of computing experience. As would be expected, many such courses are available in some disciplines such as engineering, mathematics or computer science, but relatively few have traditionally been

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