ENG/TE 566   2019

Computer Program Instructional Guide

1. **Problem Statement**
   Using the following information and the software modules that you have previously developed, create a software program that continually updates the income statement, balance sheet, and cash flow for your business upon completion of a business financial activity. The program should store historical information for later review. The program should be able to provide a hard copy of the various completed forms.

   Note: The toy truck example given in class is **an example business and does not have to be used** for the computer program exercise. If you chose to use the toy truck example, please see part 2 of this instructional guide for a description of initial financial conditions.

2. **Toy Truck Financial Conditions**

<div align="center">Example bill of materials (BOM)</div>

	Item	Quantity per Truck	Unit Cost
1	Wheels	8	$.01
2	Windshield Glass	1	$.05
3	Interior	1	$.05
4	Tank	1	$.10
5	Axles	4	$.01
6	Cab	1	$.10
7	Body	1	$.10
8	Box (packaging)	1	$.05

3. **General Functions (applicable to all computer programs)**
   Initial investment = $200,000
   No long-term asset purchases
   Sales = $1,000,000

   Four inventory purchases will be made during the year (purchase order at the beginning of each quarter). Parts will be ordered from 8 unique vendors. You may assume that the inventory arrives when the PO is produced (although creating the option to wait is good). Note, what is received is often different in quantity than what is ordered. For example, you order 5,000 carton labels and 5471 are delivered and billed to you. Conversely, sometimes quantities are shipped less than the order quantity.

The inventory module should show quantity on hand in terms of units (not just $), finished goods, and reorder points. Additionally, the computer program should warn the user when the inventory levels gets low so that more raw parts can be ordered.

The business will experience 12 sales. A sale requires the creation of a customer invoice (beginning of each month). There will be a total of 10 customers.

Terms of a sale are net 30. **At the end of each month, you will update the books by posting receivables to the cash account and paying your bills even if it's not quite 30 days.**

The software should handle 10 different expense accounts (you may ignore depreciation in your software). Expenses total $200,000 for the year not including salary or withholding taxes. You should have a separate expense account for the various taxes (in addition to the 10).

There will be 12 payroll events (1 employee @ $150,000 annual salary paid at end of the month). The employee is single with 15 children. Just kidding single with no kids but has a pet dog (it's a cross between a bull dog and a Shih Tzu). I'm sure I said something different in class. Oh well. It would be great if your software could handle the general payroll situation, but the minimal requirement is to handle this slacker.

4. **Programming – Screen Shots and Description of Functionality**
   a. Main Menu
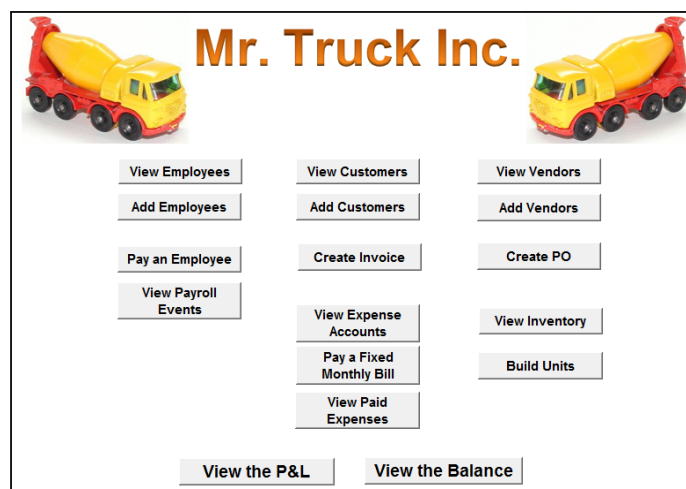
b. <u>View Employees</u> – Displays the current list of employees

Employees

<div align="right">

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Last Name	First Name	Address Line 1	Address Line 2	City	State	Zip	Social Security #	# of Withholdings	Salary
Maffetone	John	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00
Stebens	Brad	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00
Theel	Bill	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00
Bob	Billy	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00

c. <u>Add Employees</u> – Gathers employee information from the user and updates the employee listing

Add Employee

First Name: John
Last Name: Smith
Address 1: 4567 Smith Lane
Address 2:
City: Urbana
State: IL
Zip Code: 61801
Social Secutity Number: 333-33-3333
Number of Withholdings: 0
Salary: $150,000

OK

Cancel

Last Name	First Name	Address Line 1	Address Line 2	City	State	Zip	Social Security #	# of Withholdings	Salary
Bob	Billy	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00
Maffetone	John	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00
Smith	John	4567 Smith Lane		Urbana	IL	61801	333-33-3333	0	$ -
Stebens	Brad	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00
Theel	Bill	Address 1	Address 2	Seattle	WA	98109	154-52-5423	1	$ 150,000.00

d. <u>View Customers</u> – Displays the current list of customers

Customers

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Company Name		Poiont of Contact		Address Line 1	Address Line 2	City	State	Zip Code	Price	
	Last Name	First Name								
Amazon	John	Maffetone							$	2.50
Toys r Us									$	2.50
Online Hobbies									$	2.50
TowerHobbies									$	2.50
Hobbytron									$	2.50
Walmart									$	2.50
Kmart									$	2.50
Target									$	2.50
Hobbytown									$	2.50
Cars are Us									$	2.50
									$	2.50

e. <u>Add Customer</u> – Gathers customer information from user and updates the customer listing

Add Customer

Company Name
Smith Co.

Point of Contact
First Name: John   Last Name: Smith
Address 1: 4567 Smith Lane
Address 2:
City: Urbana
State: IL   Zip Code: 61801

[OK]   [Cancel]

↓

Customers

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Company Name	Last Name	First Name	Address Line 1	Address Line 2	City	State	Zip Code	Price
		Poiont of Contact						
Amazon	John	Maffetone						$ 2.50
Toys r Us								$ 2.50
Online Hobbies								$ 2.50
TowerHobbies								$ 2.50
Hobbytron								$ 2.50
Walmart								$ 2.50
Kmart								$ 2.50
Target								$ 2.50
Hobbytown								$ 2.50
Cars are Us								$ 2.50
Smith Co.	Smith	John	4567 Smith Lane		Urbana	IL	61801	$ 2.50

f. <u>View Vendors</u> – Displays the current list of vendors

Vendors

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Company Name	Part	Price/Unit	Address 1	Address 2	City	State	Zip
Tires R Us	Tires	$ 0.02					
Mr. Mixers	Mixer	$ 0.05					
Casting Man	Body Casting	$ 0.10					
Castings for U	Cab Casting	$ 0.05					
Acme Plastics	Windshield	$ 0.10					
Micro Axles	Axles	$ 0.01					
All Rims	Rims	$ 0.01					
Screw it	Screw	$ 0.02					
Many Boxes	Box	$ 0.05					
None	Labor	$ 0.10					
Master Packing	Master Pack	$ 0.02					

g. <u>Add Vendor</u> - Gathers vendor information from user and updates the vendor listing

Add Vendor

Vendor Name		Part Number
Smith Co.		3456

Price/Unit
4.33

Address 1
4567 Smith Lane

Address 2

City
Urbana   OK

State   Zip Code
IL   61801   Cancel

Vendors   Back to Main

Company Name	Part	Price/Unit	Address 1	Address 2	City	State	Zip
Tires R Us	Tires	$ 0.02					
Mr. Mixers	Mixer	$ 0.05					
Casting Man	Body Casting	$ 0.10					
Castings for U	Cab Casting	$ 0.05					
Acme Plastics	Windshield	$ 0.10					
Micro Axles	Axles	$ 0.01					
All Rims	Rims	$ 0.01					
Screw it	Screw	$ 0.02					
Many Boxes	Box	$ 0.05					
None	Labor	$ 0.10					
Master Packing	Master Pack	$ 0.02					
Smith Co.	3456	4.33	4567 Smith Lane		Urbana	IL	61801

h. <u>Pay an Employee</u> – Actions to be completed:
   i. Update the balance sheet based on the cash outflow shown on the employee listing sheet
   ii. Update the income statement based on the cash outflow shown on the employee listing sheet
   iii. Document the history of payroll events

Pay Employee

Pay Employee Monthly Salary

Bob
Maffetone
Smith
Stebens
Theel

OK

Cancel

Select the employee to pay

↓

Income Statement

Sales	$	52,412.5
COGS	$	16,143.1
Gross Profit	$	36,269.5
Expenses		
Payroll	$	9,375
Payroll Withholding	$	3,125
Bills	$	1,250
Annual Expenses	$	13,750
Total Expenses	$	24,375
Other Income	$	-
Operating Income	$	11,894
Income Taxes	$	2,379
Net Income	$	9,516

Assets		Liabilities & Net Worth	
Cash	$ 195,397.50	Accounts Payable	$ -
Accounts Receivable		Notes Payable	
Inventory	$ 23,247.50	Accruals	
Total Current Assets	$ 218,645.00	**Total Current Liabilities**	$ -
Land/Buildings	$ -	Mortgage	$ -
Equipment	$ -	**Total Long Term Debt**	$ -
Furniture and Fixtures	$ -		
Total Fixed Assets	$ -	**Total Liabilities**	$ -
		Net Worth	$ 218,645.00
Total Assets	$ 218,645.00		
		Total Liabilities & Net Worth	$ 218,645.00

After the salary payment, it should automatically update the proper cells in the income statement and balance sheet

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Payroll Payments
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Date Paid	Employee	Disbursment	Withholding (25%)	**Total Payroll Expenses** $	12,500.00
5/1/2012	Maffetone (Salary)	$12,500.00	3125	**Total Withholding**	$3,125.00

Create a record of the payroll events

i. <u>View Payroll Events</u> – View the history of previous payroll events

Payroll | Pay Employee

Update

Salary	Bounce	Federal Tax Withh	State Tax Withholl	Social Security Ta	Midicare Tax	Amount paid
4000	0	784.266	200	248	58	2709.734
4000	200	514.6	200	248	58	2979.4
5000	0	1064.266	250	310	72.5	3303.234

Make sure you include the Federal tax, State tax, social security tax, and Medicare tax. *Check this year tax %*

j. <u>Create Invoice</u> – Actions to be completed when completed units are sold:

   i. Update the balance sheet with receivables from a sale. See 3. General Functions for a completed description of the payment scheme (net 30, cash, receivables, 10 customers)

   ii. Update the income statement with sales

   iii. Update the inventory to reflect the sale of complete units

   iv. Update the history of invoices

Select the Customer and input the number of units to invoice

Income Statement

Sales	$	52,412.5
COGS	$	16,143.1
Gross Profit	$	36,269.5
Expenses		
Payroll	$	9,375
Payroll Withholding	$	3,125
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Annual Expenses	$	13,750
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Other Income	$	-
Operating Income	$	11,894
Income Taxes	$	2,379
Net Income	$	9,516

Assets		Liabilities & Net Worth	
Cash	$ 195,397.50	Accounts Payable	$ -
Accounts Receivable		Notes Payable	
Inventory	$ 23,247.50	Accruals	
Total Current Assets	$ 218,645.00	Total Current Liabilities	$ -
Land/Buildings	$ -	Mortgage	$ -
Equipment	$ -	Total Long Term Debt	$ -
Furniture and Fixtures	$ -		
Total Fixed Assets	$ -	Total Liabilities	$ -
		Net Worth	$ 218,645.00
Total Assets	$ 218,645.00		
		Total Liabilities & Net Worth	$ 218,645.00

Update the balance sheet and income statement

↓

Inventory

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Part	Price/Unit	Quantity	Value	Re-Order
Tires	$0.02	6000	$ 120.00	X
Mixer	$0.05	48250	$ 2,412.50	
Body Casting	$0.10	48250	$ 4,825.00	
Cab Casting	$0.05	28250	$ 1,412.50	
Windshield	$0.10	48250	$ 4,825.00	
Axles	$0.01	33000	$ 330.00	
Rims	$0.01	6000	$ 60.00	X
Screw	$0.02	48250	$ 965.00	
Box	$0.05	48250	$ 2,412.50	
Labor	$0.10	28250	$ 2,825.00	
Master Pack	$0.02	48250	$ 965.00	

Total	$ 20,747.50

Total Complete Units that can be built from current Parts inventory
750

Complete Units In Stock
0

Total Value $

Update the Inventory of complete units in stock once a sale is made

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Invoices

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Invoice Number	Date	Customer	Quantity	Price/Unit		Total
1	4/30/2012	TowerHobbies	200	$	2.50 $	500.00
2	5/1/2012	Amazon	1000	$	2.50 $	2,500.00
3	5/1/2012	TowerHobbies	2500	$	2.50 $	6,250.00
4	5/1/2012	Online Hobbies	265	$	2.50 $	662.50
5	5/1/2012	Toys r Us	3500	$	2.50 $	8,750.00
6	5/1/2012	Target	2000	$	2.50 $	5,000.00
7	5/1/2012	Toys r Us	2000	$	2.50 $	5,000.00
8	5/1/2012	Amazon	2500	$	2.50 $	6,250.00
9	5/1/2012	Hobbytron	2000	$	2.50 $	5,000.00
10	5/1/2012	Online Hobbies	1500	$	2.50 $	3,750.00
11	5/1/2012	Cars are Us	2000	$	2.50 $	5,000.00
12	5/1/2012	Walmart	1500	$	2.50 $	3,750.00
13	12/2/2012	Amazon	1000	$	2.50 $	2,500.00

Total Sales
$ 54,912.50

COGS
$16,913.05

Update the history of invoices

k. <u>Create PO</u> – Actions to be completed when a purchase order is created:
   i. Update the balance sheet with the expense of buying components
   ii. Update inventory of parts
   iii. Update the history of purchase orders

Create Purchase Order

Select Part

- Tires
- Mixer
- Body Casting
- Cab Casting
- Windshield
- Axles
- Rims
- Screw
- Box
- Labor
- Master Pack

Quantity

5000000

[OK]

[Cancel]

Select the part and quantity

↓

Purchase Orders

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PO Number	Date	Supplier	Part	Quantity	Price/Part	Total
1	4/30/2012	Tires R Us	Tires	2000	$0.02	$40.00
2	5/1/2012	Tires R Us	Tires	20000	$0.02	$400.00
3	5/1/2012	Mr. Mixers	Mixer	20000	$0.05	$1,000.00
4	5/1/2012	Casting Man	Body Casting	20000	$0.10	$2,000.00
5	5/1/2012	Acme Plastics	Windshield	20000	$0.10	$2,000.00
6	5/1/2012	Micro Axles	Axles	20000	$0.01	$200.00
7	5/1/2012	All Rims	Rims	20000	$0.01	$200.00
8	5/1/2012	Screw it	Screw	20000	$0.02	$400.00
9	5/1/2012	Many Boxes	Box	20000	$0.05	$1,000.00
10	5/1/2012	Master Packing	Master Pack	20000	$0.02	$400.00
11	5/1/2012	Tires R Us	Tires	40000	$0.02	$800.00
12	5/1/2012	Mr. Mixers	Mixer	40000	$0.05	$2,000.00
13	5/1/2012	Casting Man	Body Casting	40000	$0.10	$4,000.00
14	5/1/2012	Castings for U	Cab Casting	40000	$0.05	$2,000.00
15	5/1/2012	Acme Plastics	Windshield	40000	$0.10	$4,000.00
16	5/1/2012	Micro Axles	Axles	40000	$0.01	$400.00
17	5/1/2012	All Rims	Rims	40000	$0.01	$400.00
18	5/1/2012	Screw it	Screw	40000	$0.02	$800.00
19	5/1/2012	Many Boxes	Box	40000	$0.05	$2,000.00
20	5/1/2012	None	Labor	40000	$0.10	$4,000.00
21	5/1/2012	Master Packing	Master Pack	40000	$0.02	$800.00
22	5/1/2012	Tires R Us	Tires	60000	$0.02	$1,200.00
23	5/1/2012	All Rims	Rims	60000	$0.01	$600.00
24	5/1/2012	Tires R Us	Tires	50000	$0.02	$1,000.00
25	5/1/2012	All Rims	Rims	50000	0.01	500
26	5/1/2012	Micro Axles	Axles	50000	0.01	500
27	12/2/2012	Tires R Us	Tires	5000000	0.02	100

Update the PO history

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Inventory

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Part	Price/Unit	Quantity	Value	Re-Order
Tires	$0.02	5006000	$100,120.00	
Mixer	$0.05	48250	$ 2,412.50	
Body Casting	$0.10	48250	$ 4,825.00	
Cab Casting	$0.05	28250	$ 1,412.50	
Windshield	$0.10	48250	$ 4,825.00	
Axles	$0.01	33000	$ 330.00	
Rims	$0.01	6000	$ 60.00	X
Screw	$0.02	48250	$ 965.00	
Box	$0.05	48250	$ 2,412.50	
Labor	$0.10	28250	$ 2,825.00	
Master Pack	$0.02	48250	$ 965.00	

Total Complete Units that can be
built from current Parts inventory
750

Complete Units In Stock
1000

Total Value $ 2,500.00

Update the Inventory of components

↓

Income Statement		
Sales	$	52,412.5
COGS	$	16,143.1
Gross Profit	$	36,269.5

Assets			Liabilities & Net Worth		

Expenses			Cash	$ 195,397.50	Accounts Payable	$	-
Payroll	$	9,375	Accounts Receivable		Notes Payable		
Payroll Withholding	$	3,125	Inventory	$ 23,247.50	Accruals		
Bills	$	1,250	Total Current Assets	$ 218,645.00	Total Current Liabilities	$	-
Annual Expenses	$	13,750					
			Land/Buildings	$ -	Mortgage	$	-
			Equipment	$ -	Total Long Term Debt	$	-
			Furniture and Fixtures	$ -			
Total Expenses	$	24,375	Total Fixed Assets	$ -	Total Liabilities	$	-
Other Income	$	-					
Operating Income	$	11,894			Net Worth	$ 218,645.00	
Income Taxes	$	2,379	Total Assets	$ 218,645.00			
Net Income	$	9,516			Total Liabilities & Net Worth	$ 218,645.00	

Update the balance sheet and income statement

l. <u>View Inventory</u> - Display the current amount of parts, units under construction, completed products ready for sale, and flag the parts that need to be reordered

Inventory						
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Part	Price/Unit	Quantity	Value	Re-Order	Total Complete Units that can be built from current Parts inventory	Complete Units In Stock
Tires	$0.02	5006000	$100,120.00		750	0
Mixer	$0.05	48250	$ 2,412.50			
Body Casting	$0.10	48250	$ 4,825.00			Total Value	$
Cab Casting	$0.05	28250	$ 1,412.50			
Windshield	$0.10	48250	$ 4,825.00			
Axles	$0.01	33000	$ 330.00			
Rims	$0.01	6000	$ 60.00	X		
Screw	$0.02	48250	$ 965.00			
Box	$0.05	48250	$ 2,412.50			
Labor	$0.10	28250	$ 2,825.00			
Master Pack	$0.02	48250	$ 965.00			
		Total	$ 33,247.50			
		COG/Unit	0.77			

m. <u>View Balance Sheet</u> – Go to the current balance sheet
n. <u>View Income Statement (P&L)</u> – Go to the income statement for the current year

5. **Optional Functions (non-essential)**
   a. <u>View expense account</u> – Shows the total expenses of the business

Expense		Cost per Month
Maintenance	$	1,250.00
Cleaning	$	416.67
Water	$	416.67
Sewage	$	833.33
Electricity	$	1,250.00
Travel	$	833.33
Donuts	$	416.67
gas	$	1,250.00
High Speed Internet	$	833.33
Phone	$	833.33
Total	$	8,333.33

Example business expenses

b. Pay a monthly bill – Pay a business expense from the expense account and update the balance sheet and income statement
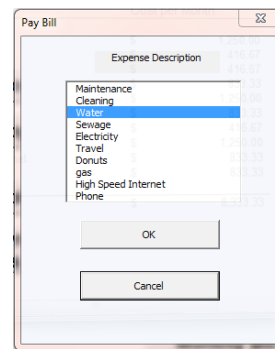
Pay for business expenses and update the balance sheet and income statement

c. View Paid Expenses – View the paid business expenses

Expenses

Date Paid	Expense		Cost
5/1/2012	Sewage	$	833.33
5/1/2012	Donuts	$	416.67

History of paid business expenses

d. Build Units – Build additional units with the inventory of parts in stock and update the inventory listing

Build Units

Build Complete Units from Existing Inventory

With the existing Inventory [250] Units can be buuilt

Enter Number of Units to build from Inventory

OK

Cancel

Select the number of units to be built out of the available inventory