



## Collection Letter

<today\_date>

Dear <title> <last\_name>,

Our records indicate that you are past due <num\_of\_days>. If you do not pay within <pay\_day>, then we will kindly repo your <color><style\_automobile>.

<greeting>.

Warm Regards,  
<repo\_man>

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### Example letter

December 18, 1999

Dear Mr. Harmon,

Our records indicate that you are past due 255 days. If you do not pay within 5 days from the date of this letter, then we will kindly repo your red Ford 150 Truck.

Please have a Merry Christmas and prosperous New Year.

Warm Regards  
Rocky Balboa

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### Questions and other information

- ❖ The number of past due days (num of days) is date of letter minus the due date. Due date derived from the *Payment File*
- ❖ *Pay day* is calculated.
- ❖ *Repo Man* is read from the *Employee File*
- ❖ Title and Last Name are read from the *Customer File*
- ❖ The *greeting* is based upon the date of the letter and an appropriate message from the *Greeting File*.

What are the data elements?

Is this letter an EO or an EQ, why?

How many FTR's?

## Control Inputs

1. How many data elements are on the “Checking Preferences” control Screen?
2. How many data elements are on the “General Preferences” control Screen?
3. The how many control inputs are represented by the menu items to the right?
4. If the “default” reads values from a control file, then how is “default” treated?



Accounting



Checking



Finance Charge



General



Iconbar



Menus

Checking Preferences

Print account names on youcher

Change check date when check is printed

Start with payee field on check

Warn about duplicate check numbers

OK

Cancel

Help

Default

General Preferences

Desktop

Save when closing company

Save current desktop

Don't save the desktop

Time Format

Show portions of an hour as

Decimal (10.20)

Minutes (10:12)

Pressing Enter moves between fields

Automatically place decimal point

Automatically recall last transaction for this name

Warn when editting a transaction

Warn when deleting a transaction or unused list item

Beep when recording a transaction

Never update name information when saving transactions

Turn on all one time messages

Hide Qcards for all windows

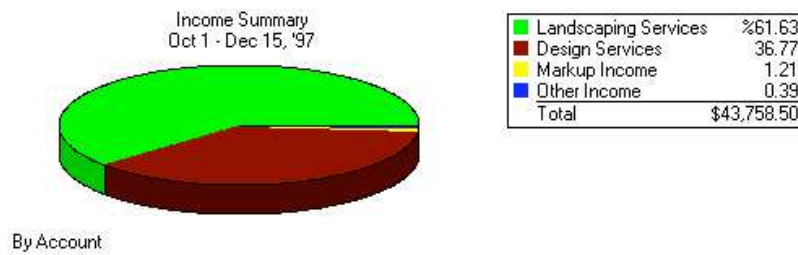
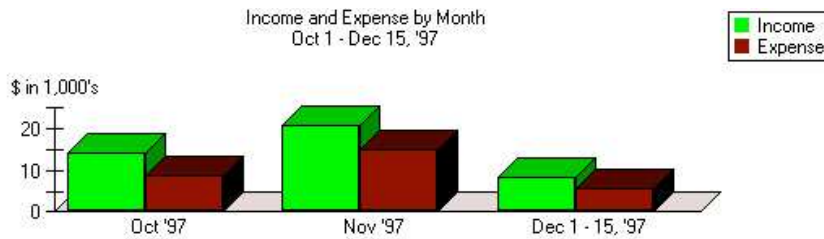
OK

Cancel

Help

Default

## Graphical Information

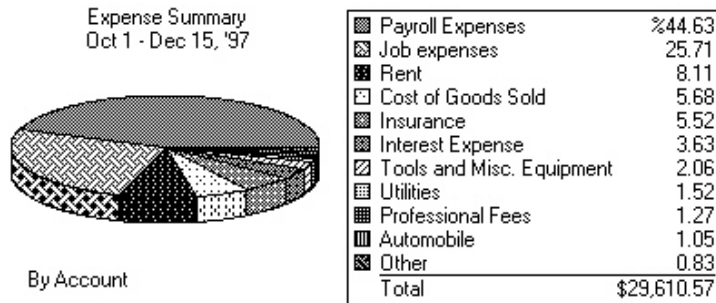
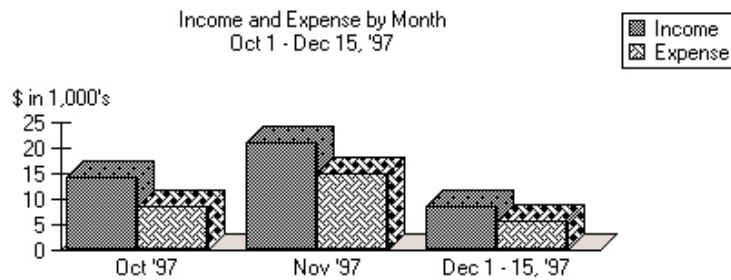
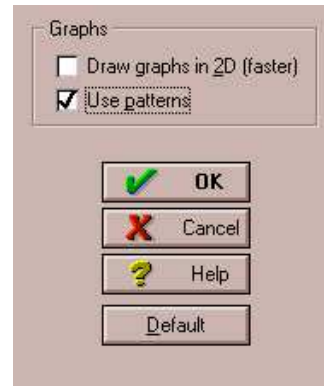


1. What are the external outputs?
2. What are the data elements for each EO?
3. How are the legends treated?

## Graphs Part II

There are two data ILF's that contain information needed to produce the graph. There is an additional control file which alters the way the graph looks.

1. Is there a control EI and control ILF for "graphs"?
2. How many total FTR's are referenced for the graphs?
3. Does this graph represent another EO?



## The Weather Application

Release 1.0

The following application was designed to capture temperature and rainfall by city and state. There is only one input screen, one file and one report. Each field on the following input screen can be modified (add, changed or deleted). The add and change functions are different. All previous entries viewed by using the scroll bar. Assume a VAF of 1.0.

The screenshot shows a graphical user interface for a weather application. The window has a title bar that says "Weather Applications". Inside the window, there are several input fields and buttons. The fields are labeled "City", "State", "Temperature", "Rain Fall", and "Date". The "Temperature" field is followed by the text "Degrees", and the "Rain Fall" field is followed by "Inches". Below the "Date" field, there are two buttons: "Add/Change" and "Delete". To the right of these buttons is a scroll bar with "Previous" and "Next" labels above it. The scroll bar has four arrows: a double left arrow, a single left arrow, a single right arrow, and a double right arrow.

Weather Storage File				
City	State	Temperature	Rain Fall	Date

Average Temperature and Rain Fall by City and State				
		Temperature	Rain Fall	Date
City 1	State 1			
	<i>Detail Readings for City 1</i>			
	Averages			
City 2	State 2			
	<i>Detail Readings for City2</i>			
	Averages			

Based on the weather application fill in the following table. The exercise is designed to identify the exact number of data elements.

<b>Component (EI,EXTERNAL OUTPUT, EQ, ILF and EIF)</b>	<b>Number of Data Elements?</b>	<b>What are the data elements?</b>

What is the total unadjusted number of function points?

## ***Adding A New Customer***

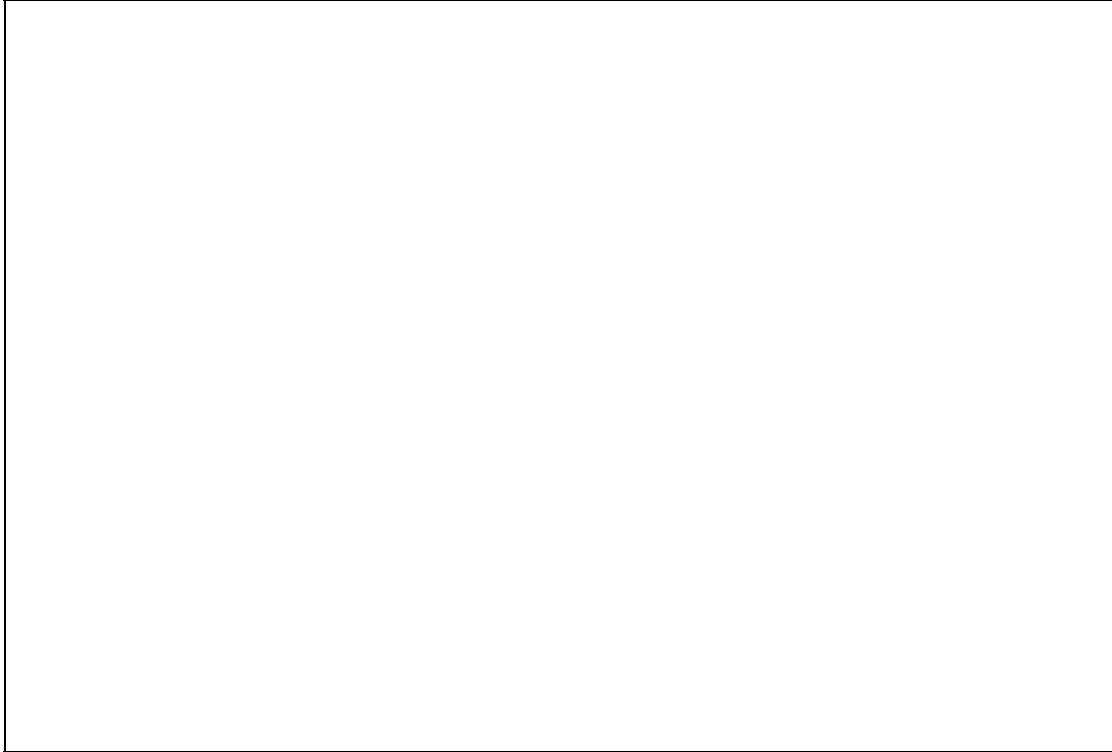
The following two screens are used to add a new customer to an application. The customer is not considered added until both Address information and Additional Information is completed.

The OK and Next buttons both save information to the file.



**Figure 1**

There are four drop down list boxes on the Additional Info tab (Type, Terms, Rep and Tax Item). The first three (Type, Terms and Rep) are read from files that are maintained by the application. Tax item is hard coded. Please ignore the “Define Fields” button.



**Figure 2**

The drop down lists Type, Rep and Terms are displayed at the end of this case study.

For this part of the application please answer the following questions.

1. How many external inputs are there?
2. How many total data elements are there on the external input?
3. What are the data elements?
4. In terms of function points what are Type, Terms and Rep (see next page)?
5. In terms of function points how are Type and Terms treated the second time they appear?
6. The Rep and Terms drop down box are used again when invoices are created.



**New Customer**

Customer

**Address Info** **Additional Info**

Categorizing and Defaults

Type  ↓

Terms  ↓

Rep  ↓

DHL  
MML

Credit Limit

Resale No.

Custom Fields

**New Customer**

Customer

**Address Info** **Additional Info**

Categorizing and Defaults

Type  ↓

Custom  
Off Campus  
On Campus Book Store  
Resaler  
Way Off Campus

Credit Limit

Custom Fields

## ***Enhanced Weather Application***

Release 2.0

Release 2.0 is an enhancement to “The Weather Application” Release 1.0. The user wants the ability to save temperature as either Celsius or Fahrenheit. To accomplish this a radio button is added to the input screen, which allows the user to select either Celsius or Fahrenheit. An additional field is added to the file, and an additional field is added to the reports. Assume that the value adjustment factor increases to 1.14.

How many “enhancement” function points does this represent?

What is the baseline function point of release 2.0?

# **BikeWare**

Release 1.0

BikeWare is a software product designed for competitive bike riders. BikeWare captures and stores a variety of information. BikeWare is for a single rider only. The rider wants to be able to change, add or delete information about a ride or rider. The following information is either entered by the rider or calculated. All **bold** items are stored. The following information is grouped logically into two major groups (ride and rider):

## *Ride Information*

**Average Speed**

**Bike Chill Factor**

T = Temperature during the Ride

W = Average Speed

$X = .303439 * \text{sqr}(W) - .0202886 * W$

$\text{Bikechill} = \text{Int}(91.9 - (91.4 - T) * (X + .474266))$

**Cadence**

**Calories Burned** = Exponential  $((.092037 * \text{Average Speed}) - 4.26) * (\text{Duration of Ride}) * \text{Weight of Rider}$

**Date of the Ride**

**Distance of the Ride**

**Duration of Ride**

**Temperature during the Ride**

## *Rider Information*

**Age** (age of rider in years)

**Weight** (weight of rider)

**Sex** (sex either male or female)

## *Graphs*

Four separate graphs (see below) can be created by days, by weeks or by months for each item below. A different set of calculations will be used depending of the graph is days, weeks or a months graph. Each graph is available on line or as a hard copy and processing logic is different.

**Distance of Ride**

**Average Speed**

**Duration of Ride**

**Calories Burned**

For BikeWare determine the following information:

Identify the external inputs, how many data elements and how many files will be referenced?

How many files type referenced are there for the add, the change and the delete? Is it always the same?

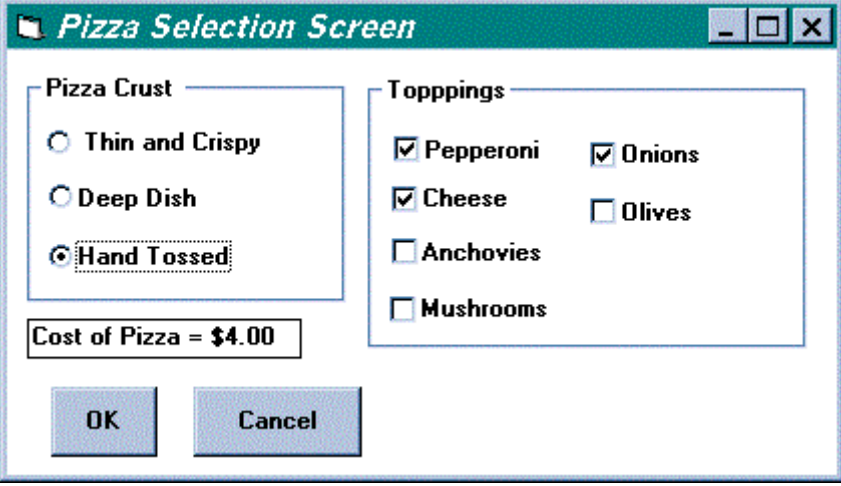
How many internal logical files are there and what are the data elements?

How many external outputs? Describe the external outputs also?

How many data elements for each external output?

## Pizza Screen Design

### Option 1



The screenshot shows a dialog box titled "Pizza Selection Screen". It contains two main sections: "Pizza Crust" and "Toppings".

- Pizza Crust:** Three radio buttons are present: "Thin and Crispy", "Deep Dish", and "Hand Tossed". The "Hand Tossed" option is selected and highlighted with a dashed border.
- Toppings:** A list of checkboxes for various toppings: "Pepperoni" (checked), "Onions" (checked), "Cheese" (checked), "Olives" (unchecked), "Anchovies" (unchecked), and "Mushrooms" (unchecked).

Below the sections, there is a text box displaying "Cost of Pizza = \$4.00". At the bottom of the dialog are two buttons: "OK" and "Cancel".

Toppings are read from another application (kitchen application). If the topping is not available it is not displayed.

The cost of the Pizza is calculated automatically.

Figure 3

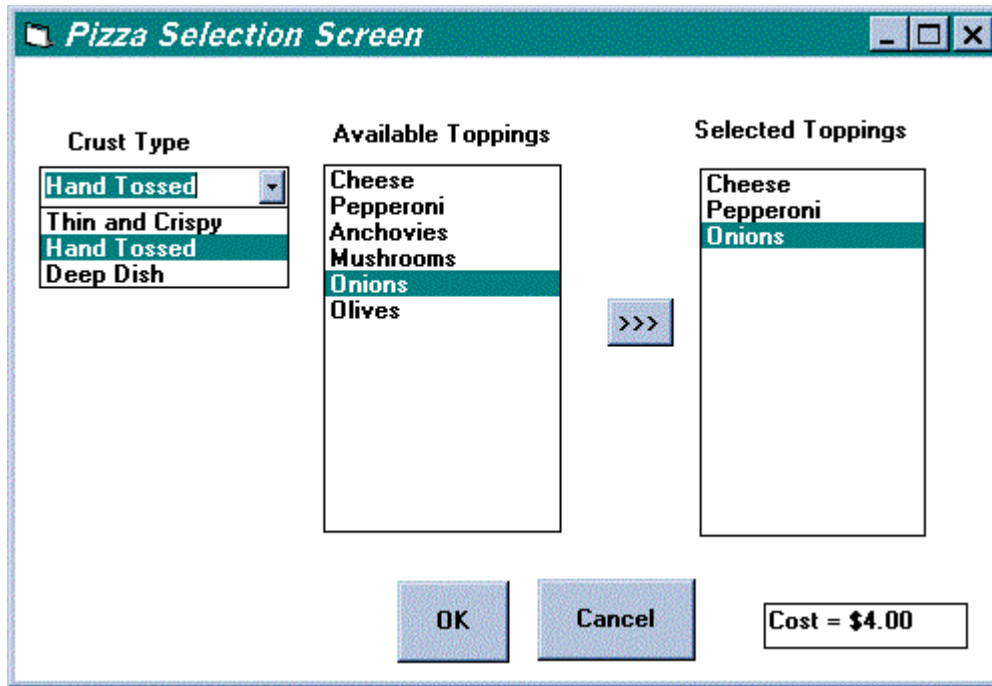
When the OK button is clicked the Toppings, Pizza Crust Type and Cost of Pizza are saved.

### Option 2

The Items in the drop down box are hard code – not read from a file.

Available Toppings are read from another application (kitchen application).

When a Topping is selected from Available Toppings it is copied to Selected Toppings



**Figure 4**

The Cost of the Pizza is automatically calculated.

When the OK button is clicked the Selected Toppings, Pizza Crust Type and Cost of Pizza are the saved.

What are the differences if any between Option 1 and Option 2? Please fill in the table below.

<i>Option 1</i>		<i>Option 2</i>	
Component	Data Elements	Component	Data Elements

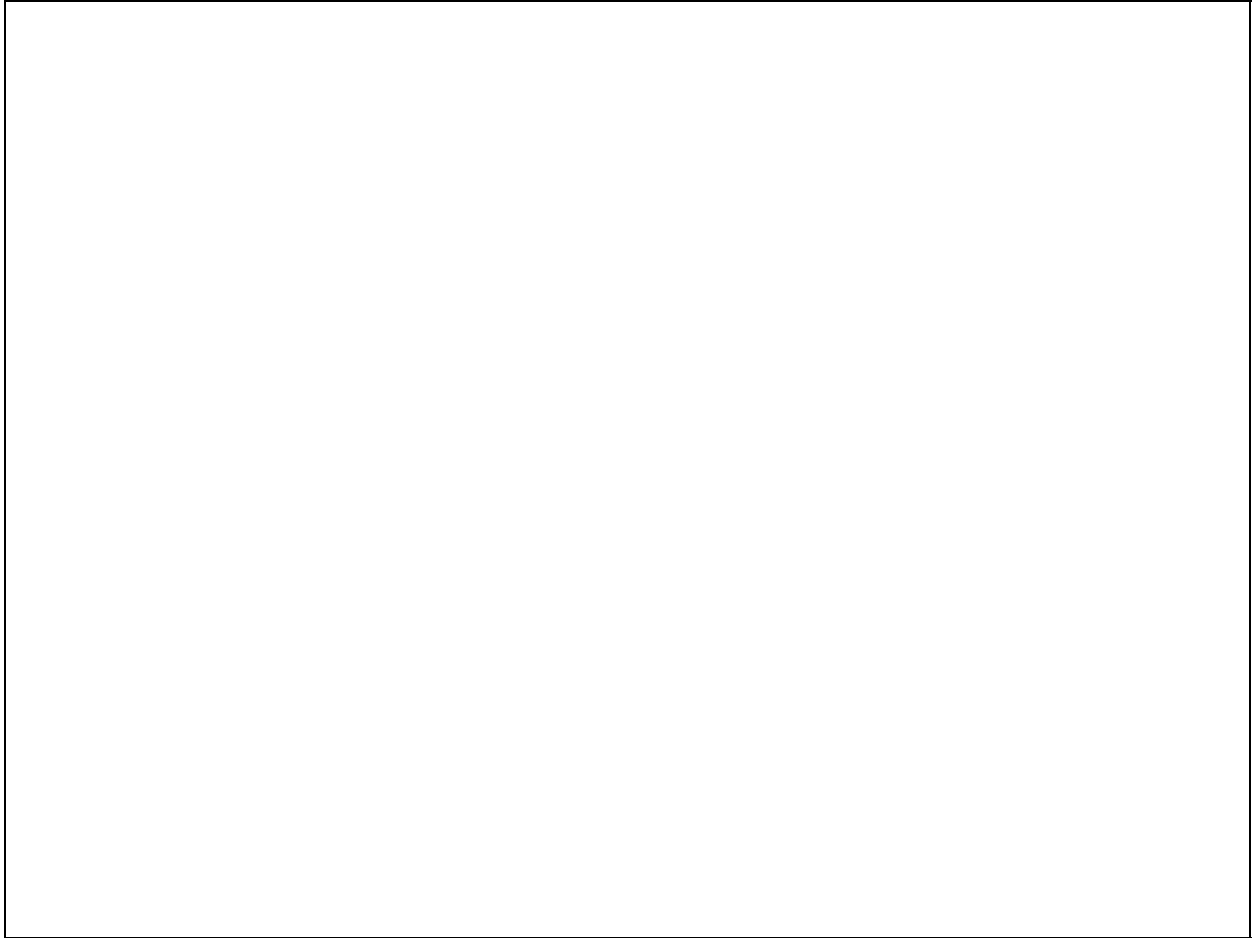
Note: Components are external input, external inquiries, internal logical files, and external interface files

## ***www.PIZZA CLUB.COM***

### Part 1

WWW.PizzaClub allows customers to order pizza via the Internet. The following is only one screen of many screens.

1. Once the customer has accessed [www.PizzaClub.Com](http://www.PizzaClub.Com) they fill out this screen.
2. When the customer clicks on the form the information is saved to a file.
3. If any of the fields are not filled out (populated) the customer receives an error message telling them “All fields must be populated”.
4. What are the data elements?
5. How many unadjusted function points does this screen and one file represent.



**Figure 5**



## Part 2

Www.PizzaClub.com is going to be enhanced. Instead of allowing the customer to type city and state, they will input the zip code number. The application will search the zip code file and then automatically populate City and State. The customer can override the populated fields. The zip code file is maintained by another application.

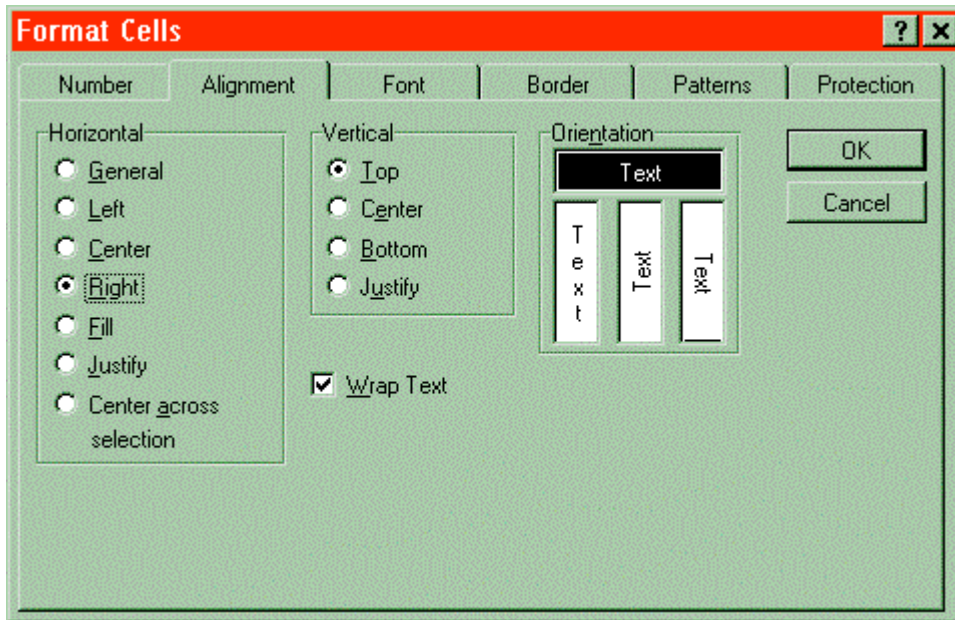
How many unadjusted function points does this enhancement represent?

What are the new components?

What data elements are impacted?

## Control Information

What are the data elements in the following control screen (alignment)?

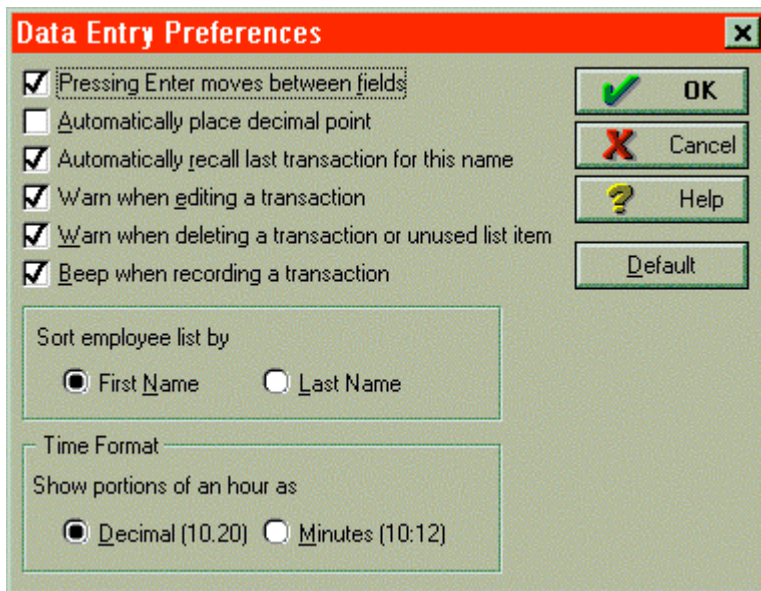


Screen

Figure 6 -Control

How many data elements are there in the following “Data Entry Preferences” control screen?

If this control screen updates one internal logical file, then how many unadjusted function points does this represent?



**Figure 7**

### Word Problem 1

Let's assume your productivity rate is 10 hours per function point (it takes 10 hours of work to deliver a function point). Additionally, assume your cost per hour is \$60. Therefore, the cost to deliver 1 function point is \$600.

1. How much would it cost to develop an application with 5,000 function points?
2. Let's assume you anticipate a Maintenance Rate is \$100/Function Point. How much needs to be budgeted to cover Maintenance Expenses for the first year?
3. Assume that the application will be operational for 6 years (application life expectancy is 6 years). Maintenance Costs will be fixed at \$100/Function Point Per Year. What is the total expected cost of the application-- including all development and maintenance costs?
4. Should maintenance costs be considered when developing an application? How do you determine expected maintenance costs?

### Word Problem 2

Assume the same cost per function point as before (\$600).

Suppose a vendor, a tool vendor, and claims that his tool will increase productivity by 50 percent -- cut your cost per function point in half. Assume the following to be true:

You are planning on implementing 1,000 function points over the next year.

You want the tool to pay for itself within 1 year.

1. What is the maximum amount you would be willing to pay for this tool -- You want to break even.