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## A P P E N D I X   D

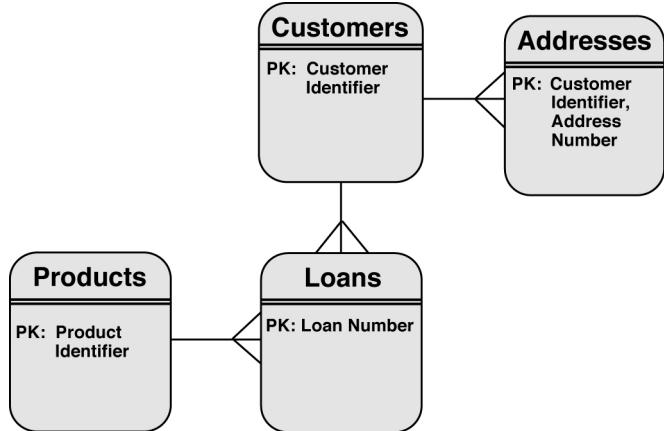
### Case Study Models

This appendix contains the detailed data models, entity-attribute reports, subject area file layouts, data mappings, and other artifacts that were created and used throughout the book in the Wheeler case studies.

## Case Study 1: Consumer Loan Data Warehouse Project

### Case Study 1—Data Models

Customer Loan Data Warehouse Model—Entity-Relationship Diagram



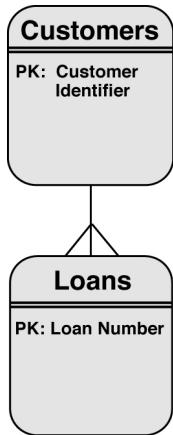
## Customer Loan Data Warehouse Model Entity-Attribute Report

Entity Name	Entity Definition				
<b>Customers</b>	A customer is a person or organization that uses services or products from the bank or one of its organization units or who is a potential recipient of such services or products.				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Customer Identifier	The unique identifier assigned to an customer.	Cust_Id	INTEGER(10)	Yes	Primary
Customer Name	Customer Name: specifies the primary current name (normally the legal name for the customer),as	Cust_Name	VARCHAR(64)	Yes	
Gender	Gender of the customer. Data Quality Criteria: Male, Female,	Gender	VARCHAR(10)	Yes	
Source System Unique Key Text	The unique identifier of the customer in the source system.	Source_Sys_Unique_Key_Text	VARCHAR(32)	Yes	
Source System Code	The unique identifier of the source	Source_Sys_Code	VARCHAR(20)	Yes	
Customer Type Identifier	The unique identifier assigned to the customer type. For example,	Customer_Type_Id	SMALLINT	Yes	
Social Security Number	The government-issued identification for non-commercial	Social_Security_No	INTEGER(9)	No	
Tax Identification Number	The government-issued identification for commercial	Tax_Id_No	INTEGER(9)	No	
Employer Identification Number Text		Employer_Id_No_Text	CHAR(12)	No	
Customer Effective Date	The date on which the customer first became relevant to the	Cust_Effective_Date	DATE	Yes	
Customer End Date	The date on which the customer ceased to be relevant to the	Cust_End_Date	DATE	Yes	
Last Update Run Identifier		Last_Update_Run_Id	INTEGER(10)	Yes	
Created Run Identifier		Created_Run_Id	INTEGER(10)	Yes	
Customer Legal Status Type Identifier	The unique identifier of the classification.	Cust_Legal_Status_Type_Id	INTEGER(10)	Yes	
Customer Legal Status Date	Date of a change in legal status such as bankruptcy Chapter 11, 7	Cust_Legal_Status_Date	DATE	No	
Entity Name	Entity Definition				
<b>Addresses</b>	The location of the customer.				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Customer Identifier	The unique identifier assigned to an customer.	Cust_Id	INTEGER(10)	Yes	Primary
Address Number	The unique identifier assigned an address.	Address_No	INTEGER(10)	Yes	
Address Line 1	The first address line	Address_Line_1	VARCHAR(20)	Yes	
Address Line 2	The second address line	Address_Line_2	VARCHAR(20)	No	
City Code	The city of the customer	City_Code	VARCHAR(20)	Yes	
State	The two-digit state code, e.g. "NY"	State	VARCHAR(2)	Yes	
Zip Code	The Zip code	Zip_Code	INTEGER(5)	Yes	
Zip Extension	The Zip extension	Zip_Ext	INTEGER(4)	No	
Entity Name	Entity Definition				
<b>Loans</b>	A loan represents an agreement, either potential or actual, involving two or more customers that provides and affirms the rules and obligations associated with the sale, exchange, or provision of goods and services; for example, loan number				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Loan Number	The unique identifier of an loan between two or more individuals,	Loan_No	INTEGER(10)	Yes	Primary
Customer Name	Customer name: specifies the primary current name (normally the legal name for the customer),as	Cust_Name	VARCHAR(64)	Yes	Foreign
Source System Code	The unique identifier of the source	Source_System_Code	VARCHAR(20)	Yes	
Source System Unique Key Text	The unique identifier of the loan in	Source_System_Unique_Key_Text	VARCHAR(32)	Yes	
Loan Name	The primary name assigned to the loan. This name is used in reports and documents referring to the loan.	Loan_Name	CHAR(36)	Yes	
Loan Type Identifier	The unique identifier of the loan type.	Loan_Type_Id	INTEGER(10)	Yes	
Loan Term Type Identifier	The unique identifier of the loan term type.This indicates product behavior—fixed/revolving	Loan_Term_Type_Id	INTEGER(10)	Yes	
Loan Payment Type Identifier	The unique identifier of the loan	Loan_Payment_Type_Id	INTEGER(10)	No	
Loan Purpose Type Identifier	The unique identifier of the loan purpose type.Indicates the purpose for which the loan proceeds will be	Loan_Purpose_Type_Id	INTEGER(10)	No	
Loan Effective Date	The calendar date on which the loan became relevant to the financial institution. This can be extracted from the appropriate instance of the entity recording accepted loan financial status'	Loan_Effective_Date	DATE	Yes	
Loan End Date	Date loan is paid in full and commitments have expired, or recovery process has been completed.The calendar date on which the loan was actually formally completed or closed. This	Loan_End_Date	DATE	No	
Renewal Date	For a recurring loan (e.g. an	Renewal_Date	DATE	No	

<b>Entity Name</b>	<b>Entity Definition</b>			
<b>Customers</b>	A customer is a person or organization that uses services or products from the bank or one of its organization units, or who is a potential recipient of such services or products.			
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory Key</b>
Customer Identifier	The unique identifier assigned to an customer.	Cust_Id	INTEGER(10)	Yes Primary
Customer Name	Customer name: specifies the primary contact name (normally the legal name for the customer) as	Cust_Name	VARCHAR(64)	Yes
Gender	Gender of the customer. Data Quality Criteria: Male, Female,	Gender	VARCHAR(10)	Yes
Source System Unique Key Text	The unique identifier of the customer in the source system.	Source_Sys_UIQUE_Key_Text	VARCHAR(32)	Yes
Source System Code	The unique identifier of the source system.	Source_Sys_Code	VARCHAR(20)	Yes
Customer Type Identifier	The unique identifier assigned to the customer type. For example, the government-issued identification number for commercial	Customer_Type_Id	SMALLINT	Yes
Social Security Number	The government-issued identification number for commercial	Social_Security_No	INTEGER(9)	No
Tax Identification Number	The government-issued identification for commercial	Tax_Id_No	INTEGER(9)	No
Employer Identification Number Text		Employer_Id_No_Text	CHAR(12)	No
Customer Effective Date	The date on which the customer first became relevant to the	Cust_Effective_Date	DATE	Yes
Customer End Date	The date on which the customer ceased to be relevant to the	Cust_End_Date	DATE	Yes
Last Update Run Identifier		Last_Update_Run_Id	INTEGER(10)	Yes
Created Run Identifier		Created_Run_Id	INTEGER(10)	Yes
Customer Legal Status Type Identifier	The unique identifier of the classification	Cust_Legal_Status_Type_Id	INTEGER(10)	Yes
Customer Legal Status Date	Date of a change in legal status such as bankruptcy Chapter 11, 7	Cust_Legal_Status_Date	DATE	No
<b>Entity Name</b>	<b>Entity Definition</b>			
<b>Addresses</b>	The location of the customer.			
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory Key</b>
Customer Identifier	The unique identifier assigned to an customer.	Cust_Id	INTEGER(10)	Yes Primary
Address Number	The unique identifier assigned an address.	Address_No	INTEGER(10)	Yes
Address Line 1	The first address line	Address_Line_1	VARCHAR(20)	Yes
Address Line 2	The second address line	Address_Line_2	VARCHAR(20)	No
City Code	The city of the customer	City_Code	VARCHAR(20)	Yes
State	The two-digit state code, e.g. "NY"	State	VARCHAR(2)	Yes
Zip Code	The Zip code	Zip_Code	INTEGER(5)	Yes
Zip Extension	The Zip extension	Zip_Ext	INTEGER(4)	No
<b>Entity Name</b>	<b>Entity Definition</b>			
<b>Loans</b>	A loan represents an agreement, either potential or actual, involving two or more customers that provides and affirms the rules and obligations associated with the sale, exchange, or provision of goods and services; for example, loan number			
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory Key</b>
Loan Number	The unique identifier of an loan between two or more individuals.	Loan_No	INTEGER(10)	Yes Primary
Customer Name	Customer name: specifies the primary contact name (normally the legal name for the customer) as	Cust_Name	VARCHAR(64)	Yes Foreign
Source System Code	The unique identifier of the source system.	Source_System_Code	VARCHAR(20)	Yes
Source System Unique Key Text	The unique identifier of the loan in the source system.	Source_System_UIQUE_Key_Text	VARCHAR(32)	Yes
Loan Name	The primary name assigned to the loan. This name is used in reports and documents referring to the loan.	Loan_Name	CHAR(36)	Yes
Loan Type Identifier	The unique identifier of the loan type.	Loan_Type_Id	INTEGER(10)	Yes
Loan Term Type Identifier	The unique identifier of the loan term type. This indicates product behavior:fixed/revolving	Loan_Term_Type_Id	INTEGER(10)	Yes
Loan Payment Type Identifier	The unique identifier of the loan payment type.	Loan_Payment_Type_Id	INTEGER(10)	No
Loan Purpose Type Identifier	The unique identifier of the loan purpose type.Indicates the purpose of the loan.	Loan_Purpose_Type_Id	INTEGER(10)	No
Loan Effective Date	The calendar date on which the loan became relevant to the financial institution. This can be earlier than the appropriate instance of the entity according Accepted Loan Financial Status.	Loan_Effective_Date	DATE	Yes
Loan End Date	Date loan is paid in full and current, or the date of the recovery process has been completed. The calendar date on which the loan was actually formally completed or closed. This	Loan_End_Date	DATE	No
Renewal Date	For a recurring loan (e.g. an annual loan), the date on which the loan is renewed or the recovery process has been completed. The calendar date on which the loan was actually formally completed or closed. This	Renewal_Date	DATE	No
Active Status Indicator	Status indicating if a record is active or inactive for the moment. Active status indicates there was some	Active_Status_Indicator	CHAR(1)	No
Active Status Date	Date of current active/inactive	Active_Status_Status	DATE	No
Product Identifier	The unique identifier of a product.	Product_Id	INTEGER(10)	No Foreign
Product Type Identifier	The unique identifier for the product	Product_Type_Id	INTEGER(10)	No
Product Code	One or more numbers or codes by which a product can be identified; for example, code "#524" represents	Product_Code	CHAR(32)	No
Maturity Date	The date on which the loan is due to be completed. This value may be derived from loan term start date and term effective maturity date	Maturity_Date	DATE	No
Estimated Maturity Date	This attribute records the expected	Est_Maturity_Date	DATE	No
Last Statement Date	The calendar date on which the last statement date	Last_Statement_Date	DATE	No
Last Transaction Date	The most recent date on which an transaction occurred.	Last_Transaction_Date	DATE	No
Branch Number Text	Reporting branch number / cost center	Branch_No_Text	VARCHAR(32)	No
Description Text	A textual explanation or free-form comments about the loan.	Description_Text	VARCHAR(256)	No
<b>Entity Name</b>	<b>Entity Definition</b>			
<b>Products</b>	Product identifies goods and services that can be offered, sold, or purchased by the bank, and other involved parties, or in which the bank has an interest during the normal course of its business activity.			
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory Key</b>
Product Identifier	The unique identifier of a product	Product_Id	INTEGER(10)	Yes Primary
Source System Code	The unique identifier of the application or system from which the information last used to update	Source_System_Code	VARCHAR(20)	Yes
Source System Unique Key Text		Source_System_UIQUE_Key_Text	VARCHAR(32)	No
Product Code	One or more numbers or codes by which a product can be identified; for example, code "#524" represents	Product_Code	VARCHAR(20)	No
Product Name	The primary name assigned to the product. This name is used in	Product_Name	CHAR(36)	No
Product Description Text	Provides a textual explanation or free-form comments about a product.	Product_Description_Text	VARCHAR(256)	No

<b>Entity Name</b>		<b>Entity Definition</b>			
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory Key</b>	
Product Identifier	The unique identifier of a product.	Product_Id	INTEGER(10)	No	Primary
Source System Code	The unique identifier of the application or system from which the information last used to update the entity instance was populated.	Source_System_Code	VARCHAR(20)	No	
Source System Unique Key Text		Source_System_Uneque_Key_Text	VARCHAR(32)	No	
Product Code	One or more numbers or codes by which a product can be identified; for example, code '#524' represents a specific product.	Product_Code	VARCHAR(20)	No	
Product Name	The primary name assigned to the product. This name is used in reports and documents referring to the product.	Product_Name	CHAR(36)	No	
Product Description Text	Provides a textual explanation or free-form comments about a product.	Product_Description_Text	VARCHAR(256)	No	

## Customer Loan Reporting Dimensional Model—Entity-Relationship Diagram



## Customer Loan Reporting Dimensional—Entity-Attribute Report

Entity Name	Entity Definition				
<b>Customers</b>	A customer is a person or organization that uses services or products from the bank or one of its organization units, or who is a potential recipient of such services or products.				
Attribute Name	Attribute Definition	Column Name	Domain	Key	Aggregated / Calculated
Customer Identifier	The unique identifier assigned to an	Cust_Id	INTEGER(10)	Primary	
Customer Name	Customer name: specifies the primary current name (normally the legal name for the customer) as used by the financial	Cust_Name	VARCHAR(64)	No	
Gender	Gender of the customer. Data Quality Criteria: Male, Female,	Gender	VARCHAR(10)	No	
Customer Type Identifier	The unique identifier assigned to the customer type. For example,	Customer_Type_Id	SMALLINT	No	
Social Security Number	The government-issued identification.	Social_Security_No	INTEGER(9)	No	
Tax Identification Number	The government-issued identification for commercial customers.	Tax_Id_No	INTEGER(9)	No	
Employer Identification Number Text		Employer_Id_No_Text	CHAR(12)	No	
Customer Effective Date	The date on which the customer first became relevant to the financial	Cust_Effective_Date	DATE	No	
Address Number	The unique identifier assigned an address	Address_No	INTEGER(10)	Primary	
City Code	The city of the customer	City_Code	VARCHAR(20)	Yes	
Address Line 1	The first address line	Address_Line_1	VARCHAR(20)	No	
Address Line 2	The second address line	Address_Line_2	VARCHAR(20)	No	
State	The two-digit state code, e.g. "NY"	State	VARCHAR(2)	No	
Zip Code	The Zip code	Zip_Code	INTEGER(5)	No	
Zip Extension	The Zip extension	Zip_Ext	INTEGER(4)	No	
Customer End Date	The date on which the customer ceased to be relevant to the financial institution.	Cust_End_Date	DATE	No	
Total Number of Loans	The total number of loans held by a customer	Total_No_of_Loans	VARCHAR(256)	No	=Sum(Loan Numbers by
Average Daily Loan Balance	The average loan balances for the total portfolio of the customer	Avg_Daily_Loan_Balance	VARCHAR(256)	No	= Total Daily Loan Balances/Total

Entity Name	Entity Definition				
<b>Loans</b>	A loan represents an agreement, either potential or actual, involving two or more customers that provides and affirms the rules and obligations associated with the sale, exchange, or provision of				
Attribute Name	Attribute Definition	Column Name	Domain	Key	Aggregated/C
Loan Number	The unique identifier of an loan between two or more individuals, organizations or	Loan_No	INTEGER(10)	Primary	
Customer Name	Customer name: specifies the primary current name (normally the legal name for the Customer) as used by the Financial	Cust_Name	VARCHAR(64)	Foreign	
Source System Code	The unique identifier of the source	Source_System_Code	VARCHAR(20)	No	
Source System Unique Key Text	The unique identifier of the loan in the	Source_System_UIQUE_K	VARCHAR(32)	No	
Loan Name	The primary name assigned to the loan. This name is used in reports and documents referring to the loan.	Loan_Name	CHAR(36)	No	
Loan Type Identifier	The unique identifier of the loan type.	Loan_Type_Id	INTEGER(10)	No	
Loan Term Type Identifier	The unique identifier of the loan term type. This indicates product behavior -	Loan_Term_Type_Id	INTEGER(10)	No	
Loan Payment Type Identifier	The unique identifier of the loan payment	Loan_Payment_Type_Id	INTEGER(10)	No	
Loan Purpose Type Identifier	The unique identifier of the loan purpose type. Indicates the purpose for which the loan proceeds will be used	Loan_Purpose_Type_Id	INTEGER(10)	No	
Loan Effective Date	The calendar date on which the loan became relevant to the financial institution. This can be extracted from the appropriate instance of the entity recording 'accepted loan financial status' and its attribute effective_dateThe date at which	Loan_Effective_Date	DATE	No	
Loan End Date	Date loan is paid in full and commitments have expired, or recovery process has been completed.The calendar date on which the loan was actually formally completed or closed. This can be extracted from the appropriate instance of	Loan_End_Date	DATE	No	
Renewal Date	For a recurring loan (e.g. an insurance	Renewal_Date	DATE	No	
Active Status Indicator	Status indicating if a record is active or inactive for the month. Active status indicates there was some activity on the	Active_Status_Indicator	CHAR(1)	No	
Active Status Date	Date of current active/inactive status code	Active_Status_Date	DATE	No	
Product Identifier	The unique identifier of a product.	Product_Id	INTEGER(10)	Foreign	
Product Type Identifier	The unique identifier for the product type.	Product_Type_Id	INTEGER(10)	No	
Product Code	One or more numbers or codes by which a product can be identified; for example,	Product_Code	VARCHAR(20)	No	
Product Name	The primary name assigned to the product. This name is used in reports and	Product_Name	CHAR(36)	No	

## Case Study 1—Subject Area Files

### CUST.dat: Customer Subject Area File

Column Name	Column Definition	Target Domain	Note
<b>Customer Subject Area File: CUST.dat</b>			
Source_Sys_Unique_Key_Text	The unique identifier of the customer in the source system.	VARCHAR(32)	
Gender	Gender of the customer. Data Quality Criteria: Male, Female, Unknown	VARCHAR(10)	
Cust_Name	Customer Name: specifies the primary current name (normally the legal name for the Customer) as used by the Financial	VARCHAR(64)	
Customer_Type_Id	The unique identifier assigned to the customer type. For example, commercial, retail	SMALLINT	
Cust_Legal_Status_Type_Id	The unique identifier of the classification	INTEGER(10)	
Cust_Legal_Status_Date	Date of a change in legal status such as bankruptcy Chapter 11, 7	DATE	
Employer_Id_No_Text		CHAR(12)	
Cust_Effective_Date	The date on which the customer first became relevant to the financial institution.	DATE	
Cust_End_Date	The date on which the customer ceased to be relevant to the financial institution.	DATE	
Tax_Id_No	The government-issued identification for commercial customers.	INTEGER(9)	
Social_Security_No	The government-issued identification.	INTEGER(9)	
City_Code	The city of the customer	VARCHAR(20)	
State	The two-digit state code, e.g. "NY"	VARCHAR(2)	
Address_Line_1	The first address line	VARCHAR(20)	
Zip_Code	The Zip code	INTEGER(5)	
Zip_Ext	The Zip extension	INTEGER(4)	
Source_Sys_Code	The unique identifier of the source system.	VARCHAR(20)	
Source_Sys_Unique_Key_Text	The unique identifier of the customer in the source system.	VARCHAR(32)	
Last_Update_Run_Id		INTEGER(10)	
Created_Run_Id		INTEGER(10)	
Address_No	The unique identifier assigned an address	INTEGER(10)	
Address_Line_2	The second address line	VARCHAR(20)	

## LOAN.dat: Loan Subject Area File

Column Name	Column Definition	Target Domain	Note
<b>Loan Subject Area File: LOAN.dat</b>			
<b>Loan_No</b>	The unique identifier of an loan between two or more individuals, organizations, or organization units.	INTEGER(10)	
<b>Cust_Name</b>	Customer name: specifies the primary current name (normally the legal name for the customer) as used by the financial	VARCHAR(64)	
<b>Source_System_Code</b>	The unique identifier of the source system.	VARCHAR(20)	
<b>Source_System_Unique_Key_Text</b>	The unique identifier of the loan in the source	VARCHAR(32)	
<b>Loan_Name</b>	The primary name assigned to the loan. This name is used in reports and documents referring to the loan.	CHAR(36)	
<b>Loan_Type_Id</b>	The unique identifier of the loan type.	INTEGER(10)	
<b>Loan_Term_Type_Id</b>	The unique identifier of the loan term type. This indicates product behavior—fixed/revolving	INTEGER(10)	
<b>Loan_Payment_Type_Id</b>	The unique identifier of the loan payment type.	INTEGER(10)	
<b>Loan_Purpose_Type_Id</b>	The unique identifier of the loan purpose type. Indicates the purpose for which the loan proceeds will be used	INTEGER(10)	
<b>Loan_Effective_Date</b>	The calendar date on which the loan became relevant to the financial institution. This can be extracted from the appropriate instance of the entity recording 'accepted loan financial status' and its attribute effective date. The date at which the loan contract was effective	DATE	
<b>Loan_End_Date</b>	Date loan is paid in full and commitments have expired, or recovery process has been completed. The calendar date on which the Loan was actually formally completed or closed. This can be extracted from the appropriate instance of the entity recording completed loan financial status and its attribute effective date.	DATE	
<b>Renewal_Date</b>	For a recurring loan (e.g. an insurance loan), the	DATE	
<b>Active_Status_Indicator</b>	Status indicating if a record is active or inactive for the month. Active status indicates there was some activity on the account during the month	CHAR(1)	
<b>Active_Status_Date</b>	Date of current active/inactive status code	DATE	
<b>Product_Id</b>	The unique identifier of a product.	INTEGER(10)	
<b>Product_Type_Id</b>	The unique identifier for the product type.	INTEGER(10)	
<b>Product_Code</b>	One or more numbers or codes by which a product can be identified; for example, code	VARCHAR(20)	
<b>Product_Name</b>	The primary name assigned to the product. This name is used in reports and documents referring to the product.	CHAR(36)	
<b>Maturity_Date</b>	The date on which the loan is due to be completed. This value may be derived from loan fixed term. Effective maturity date.	DATE	
<b>Est_Maturity_Date</b>	This attribute records the expected maturity date	DATE	
<b>Last_Statement_Date</b>	The calendar date on which the customer loan	DATE	
<b>Last_Transaction_Date</b>	The most recent date on which an loan	DATE	
<b>Branch_No_Text</b>	Reporting branch number / cost center	VARCHAR(32)	
<b>Description_Text</b>	A textual explanation or free-form comments about the loan.	VARCHAR(256)	

## Case Study 1—Data Mappings

### Customer Hub-to-Subject Area File Mapping

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject Area File	Column Name	Target Domain
HEADER	Cust_Id	INTEGER(10)	Translate Integer to Varchar	CUST.dat	Source_Sys_Unique_Key_Text	VARCHAR(32)
HEADER	ID_Type_Code	VARCHAR(10)		CUST.dat		
HEADER	ID_Status_Type_Code	VARCHAR(10)		CUST.dat		
HEADER	Issue_Location	VARCHAR(10)		CUST.dat		
HEADER	Issuer_Id_Number	VARCHAR(10)		CUST.dat		
HEADER	Gender	VARCHAR(10)	Straight Move	CUST.dat	Gender	VARCHAR(10)
HEADER	Name	VARCHAR(10)	Pad to 64	CUST.dat	Cust_Name	VARCHAR(64)
HEADER	Customer_Type	VARCHAR(10)	Translate Varchar to Smallint	CUST.dat	Customer_Type_Id	SMALLINT
HEADER	Fin_Viability_Type	Date		CUST.dat		
HEADER	Fin_Viability_Date	VARCHAR(10)		CUST.dat		
HEADER	Legal_Status	Date	Translate Date to Integer	CUST.dat	Cust_Legal_Status_Type_Id	INTEGER(10)
HEADER	Legal_Status_Date	VARCHAR(10)	Reformat field to YYYYMMDD and move	CUST.dat	Cust_Legal_Status_Date	DATE
HEADER	Bus_Life_Cycle_Status	VARCHAR(10)		CUST.dat		
HEADER	Employee_ID	VARCHAR(10)	Translate VarChar to Char, truncate the last 2 digits	CUST.dat	Employer_Id_No_Text	CHAR(12)
HEADER	Effective_Date	Date	Straight Move	CUST.dat	Cust_Effective_Date	DATE
HEADER	End_Date	VARCHAR(10)	Translate Varchar to Date	CUST.dat	Cust_End_Date	DATE
HEADER	Legal_Structure	Date		CUST.dat		
HEADER	Legal_Structure_Date	Date		CUST.dat		
HEADER	Country_of_Incorporation_Date	VARCHAR(10)		CUST.dat		
HEADER	Duns_Number	VARCHAR(10)		CUST.dat		
HEADER	Tax_ID_Number	VARCHAR(10)	Translate Varchar to Integer, Truncate last digit	CUST.dat	Tax_Id_No	INTEGER(9)
HEADER	Country_of_Incorporation	VARCHAR(10)		CUST.dat		
HEADER	Primary_Industry	Date		CUST.dat		
HEADER	Org_Establishment_Date	Date		CUST.dat		
HEADER	Ind_Employ_Status_Date	VARCHAR(10)		CUST.dat		
HEADER	Ind_Employ_StatusCode	VARCHAR(10)		CUST.dat		
HEADER	Ind_Soc_Security_Number	VARCHAR(10)	Translate Varchar to Integer, Truncate last digit	CUST.dat	Social_Security_No	INTEGER(9)

### Customer Hub-to-Subject Area File Mapping (Continued)

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject Area File	Column Name	Target Domain
DETAIL	City_Name	VARCHAR()	Straight move	CUST.dat	City_Code	VARCHAR(20)
DETAIL	State_Code	VARCHAR()	Straight move	CUST.dat	State	VARCHAR(2)
DETAIL	Area_Code	VARCHAR()		CUST.dat		
DETAIL	Country_Code	VARCHAR()		CUST.dat		
DETAIL	Address_Line_1	VARCHAR()	Straight move	CUST.dat	Address_Line_1	VARCHAR(20)
DETAIL	Box_Number	VARCHAR()		CUST.dat		
DETAIL	Unit_Number	VARCHAR()		CUST.dat		
DETAIL	House_Number	VARCHAR()		CUST.dat		
DETAIL	Street_Number	VARCHAR()		CUST.dat		
DETAIL	Street_Name	VARCHAR()		CUST.dat		
DETAIL	Street_Type	VARCHAR()		CUST.dat		
DETAIL	Street_Direction	VARCHAR()		CUST.dat		
DETAIL	Street_Suffix	VARCHAR()		CUST.dat		
DETAIL	Residence_Type_Code	VARCHAR()		CUST.dat		
DETAIL	County_Code	VARCHAR()		CUST.dat		
DETAIL	Postal_Barcodes	VARCHAR()	1. Translate Varchar to Integer 2. Populate the first 5 into "Zip_Code," the final 4 into "Zip_Ext"	CUST.dat	Zip_Code	INTEGER(5)
					Zip_Ext	INTEGER(4)
DETAIL	Bankruptcy_Flag	VARCHAR()		CUST.dat		

### Calculated Customer Table Attributes

	Must be assigned "001"	CUST.dat	Source_Sys_Code	VARCHAR(20)
	Must be assigned "CUSTOMER HUB"	CUST.dat	Source_Sys_UIQUE_Key_Text	VARCHAR(32)
	Must be assigned "SYSTEM DATE"	CUST.dat	Last_Update_Run_Id	INTEGER(10)
	Must be assigned "SYSTEM DATE"	CUST.dat	Created_Run_Id	INTEGER(10)
	Must be system-generated by customer number	CUST.dat	Address_No	INTEGER(10)
	May or may not be populated	CUST.dat	Address_Line_2	VARCHAR(20)

## Commercial Loan Source-to-Subject Area Mappings

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject Area File	Column Name	Target Domain
<b>Customer File Columns</b>						
COM010	OIN-BANK OIN-APPL OIN-OBLIG-NO	PIC XX PIC 9 PIC 9(10)	Concatenate OIN-BANK, OIN-APPL, & OIN-OBLIG-NO	CUST.dat	Cust_Id	INTEGER(10)
COM010	MN100-FULL MN100-CONTINUATION	PIC X(30) PIC X(30)	Concatenate MN100-FULL & MN100-CONTINUATION	CUST.dat	Cust_Name	VARCHAR(64)
COM010	MN100-TAXID	PIC X(9)	If MN100-TAXID > 0, insert "Commercial," else insert "Retail."	CUST.dat	Customer_Type_Id	SMALLINT
COM010	COB-LEGAL-STATUS-DT	PIC S9(7)	Reformat field to YYYYMMDD and move	CUST.dat	Cust_Effective_Date	DATE
COM010	MN100-TAXID MN100-BIRTH-INC-DATE	PIC S9(9) PIC S9(7)	If MN100-TAXID > 0, Translate MN100-BIRTH-INC-DATE to YYYYMMDD and insert, else leave blank.	CUST.dat	Employer_Id_No_Text	CHAR(12)
COM010	MN100-TAXID	PIC X(9)	Direct Move	CUST.dat	Tax_Id_No	INTEGER(9)
COM010	MN100-SOC-SEC-NO	PIC S9(9)	Direct Move	CUST.dat	Social_Security_No	INTEGER(9)
COM010	MA100-CITY	PIC X(20)	Direct Move	CUST.dat	City_Code	VARCHAR(20)
COM010	MA100-STATE-PROVINCE	PIC X(2)	Direct Move	CUST.dat	State	VARCHAR(2)
COM010	MA100-ZIP	PIC X(9)	Filter the first 5 digits and insert	CUST.dat	Zip_Code	INTEGER(5)
			Insert second 4 digits	CUST.dat	Zip_Ext	INTEGER(4)
COM010	MA100-LINE-1	PIC X(30)	Direct Move	CUST.dat	Address_Line_1	VARCHAR(20)
COM010	MA100-LINE-2	PIC X(30)	Direct Move	CUST.dat	Address_Line_2	VARCHAR(20)
COM010	MA100-LINE-3	PIC X(30)	Not used in the DW			

## Commercial Loan Source-to-Subject Area Mappings (Continued)

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject Area File	Column Name	Target Domain
<b>Loan File Columns</b>						
COM200	COM-LOAN-ID	PIC X(20)	Straight Move	LOAN.dat	Loan_No	INTEGER(10)
COM200	COM-BANK COM-APPL-CODE COM-OBLIGOR COM-OBLIGATION	PIC 9(2) PIC 9 PIC 9(10) PIC S9(11)	1. Concatenate COM-BANK & COM-APPL-CODE & COM-OBLIGOR & COM-OBLIGATION. 2. Map the COM-BANK, COM-APPL-CODE, & last 5 digits of COM-OBLIGATION to Source_System_Code	LOAN.dat	Source_System_Code	VARCHAR(20)
COM200	COM-PRIME-NO-9	PIC S9(5)	Determine if code is "1," "2," or "3" else flag as reject.	LOAN.dat	Loan_Type_Id	INTEGER(10)
COM200	COM-TYPE	PIC S9(5)	Determine if code is "Fixed," or "Revolving" else flag as reject.	LOAN.dat	Loan_Term_Type_Id	INTEGER(10)
COM200	COM-METHOD-COLL	PIC X(2)	1. Reformat field to integer. 2. Pad the first 8 digits with zeroes, then insert into the field.	LOAN.dat	Loan_Payment_Type_Id	INTEGER(10)
	PURPOSE-NO	PIC S9(5)	1. Reformat field to integer. 2. Pad the first 5 digits with zeroes, then insert into the field.	LOAN.dat	Loan_Purpose_Type_Id	INTEGER(10)
COM200	COM-POSTED-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Last_Transaction_Date	DATE
COM200	COM-EFFECTIVE-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Last_Transaction_Date	DATE
COM200	COM-LGL-MATUR-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Loan_End_Date	DATE
COM200	COM-RENEWAL-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Renewal_Date	DATE
COM200	COM-MAT-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Maturity_Date	DATE
COM200	COM-EST-MAT-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Est_Maturity_Date	DATE
COM200	ACT_STAT-ID	PIC X(2)	1. Truncate the first digit and reformat to Char. 2. The remaining field must be either "A" for Active or "I" for Inactive.	LOAN.dat	Active_Status_Indicator	CHAR(1)
COM200	ACT-STAT-DT	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Active_Status_Date	DATE
COM200	COM-LAST_STMT-DATE	PIC S9(7)	Reformat the field to "YYYYMMDD," then insert into the field.	LOAN.dat	Last_Statement_Date	DATE
COM200	BRCH_NO	PIC 9(5)	1. Reformat the to VarChar. 2. Pad the last 27 digits with spaces <20>.	LOAN.dat	Branch_No_Text	VARCHAR(32)

## Commercial Loan Source-to-Subject Area Mappings (Continued)

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject Area File Column Name	Target Domain
<b>Calculated Loan Table Attributes for Commercial Loans</b>					
		Map as = "Commercial Loan"	LOAN.dat	Source_System_Code	VARCHAR(20)
		Match the Source_Sys.Unique.Key_Text of the loan table to the Source_Sys.Unique.Key_Text of the commercial loan table and derive the Source_Sys.Unique.Key_Text.	LOAN.dat	Source_System_Unique_Key_Text	VARCHAR(32)
		Match the Product_Id of the commercial loan system to the Product table Product_Id and derive the Product_Id.	LOAN.dat	Product_Id	INTEGER(10)
		Match the Product_Id of the commercial loan system to the product table Product_Id and derive the Product_Type_Id.	LOAN.dat	Product_Type_Id	INTEGER(10)
		Match the Product_Id of the commercial loan system to the product table Product_Id and derive the Product_Name.	LOAN.dat	Product_Name	CHAR(36)

### Retail Loan Source-to-Subject Area File Mapping

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject
<b>Customer File Columns</b>				
RETL 10	LEGAL-LOAN-STATUS	PIC X(20)	Convert to Integer and truncate the first 10 fields	CUST.dat
RETL 10	PRIMARY-LOAN-APPLICANT	PIC X(9)	Reformat field to YYYYMMDD and move	CUST.dat
RETL 10	PRIMARY-TAX-ID-NUM	PIC X(9)		CUST.dat
RETL 10	LOAN-EFFECTIVE-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	CUST.dat
RETL 10	LOAN-END-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	CUST.dat
RETL 10	PRIMARY-TAX-ID-NUM	PIC X(9)	Direct move	CUST.dat
RETL 10	SOC-SEC-TAX-ID	PIC X(9)	Direct move	CUST.dat
RETL 10	MAIL-STREET-NUM	PIC X(20)	Convert to Varchar, then move	CUST.dat
RETL 10	MAIL-STREET-NAME	PIC X(20)	Convert to Varchar, then move	CUST.dat
RETL 10	MAIL-ZIP-CODE	PIC X(09)	Split first 5	CUST.dat
			Load second 4	
RETL 10	MAIL-CITY-NAME	PIC X(20)	Direct move	CUST.dat
RETL 10	MAIL-STATE-NAME	PIC X(20)	Map to the state table, find the match then populate the two-digit value (e.g. "NY" or "CA")	CUST.dat

## Retail Loan Source-to-Subject Area Mappings (Continued)

Calculated Customer Table Attributes for Retail Loans		
	Match the customer ID of the customer table to the customer ID of the retail loan customer ID and derive the gender from the customer table	CUST.dat
	Move "Retail" to the field	CUST.dat
	Match the customer ID of the customer table to the customer ID of the retail loan customer ID and derive the Address_No from the customer table	CUST.dat
	Match the customer ID of the customer table to the customer ID of the retail loan customer ID and derive the Source_Sys_Code from the customer table	CUST.dat
	Match the customer ID of the customer table to the customer ID of the retail loan customer ID and derive the Source_Sys_Unique_Key_Text from the customer table	CUST.dat
	Must be assigned "SYSTEM DATE"	CUST.dat
	Must be assigned "SYSTEM DATE"	CUST.dat

## Retail Loan Source-to-Subject Area Mappings (Continued)

Source File/ Table	Source Field	Source Domain	Mapping Rule	Subject Area File	Column Name	Target Domain
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Loan File Columns						
RETL20	LOAN-LAST-NAME	PIC X(25)	Convert to Char and move to the field, pad the last 11 with spaces	LOAN.dat	Loan_Name	CHAR(36)
RETL20	TERM-ID	PIC X(9)	Move to the field, pad the last digit with a space	LOAN.dat	Loan_Term_Type_Id	INTEGER(10)
RETL20	PAY-TYPE	PIC X(15)	Move to the field, truncate the first 5 digits	LOAN.dat	Loan_Payment_Type_Id	INTEGER(10)
RETL20	LOAN-RECORD-TYPE-CODE	PIC X(15)	Move to the field, truncate the first 5 digits	LOAN.dat	Loan_Purpose_Type_Id	INTEGER(10)
RETL20	ACTIVE-LOAN-TYPE	PIC X(5)	Move to the field, truncate the last 4 digits	LOAN.dat	Active_Status_Indicator	CHAR(1)
RETL20	ACTIVE-LOAN-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Active_Status_Date	DATE
RETL20	STMT-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Last_Statement_Date	DATE
RETL20	LOAN-RECEIVED-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Loan_Effective_Date	DATE
RETL20	LOAN-DATE-SENT-INACTIVE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Loan_End_Date	DATE
RETL20	LOAN-UPDATE-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Renewal_Date	DATE
RETL20	BRANCH-CODE	PIC X(05)	Reformat field to VarChar, move to field, pad 27 digits with spaces	LOAN.dat	Branch_No_Text	VARCHAR(32)
RETL20	RET-LOAN-APPL-DESC	PIC X(100)	Reformat field to VarChar, move to field, pad 156 digits with spaces	LOAN.dat	Description_Text	VARCHAR(256)
RETL20	LOAN-MATURITY-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Maturity_Date	DATE
RETL20	LOAN-EXPECTED-MATURITY-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Est_Maturity_Date	DATE
RETL20	LAST-UPDATE-DATE	PIC S9(08)	Reformat field to YYYYMMDD and move	LOAN.dat	Last_Transaction_Date	DATE
RETL20	LOAN-PRODUCT-CODE	PIC X(05)	Match the Product_Id of the retail loan system to the product table Product_Id and derive the Product_Code	LOAN.dat	Product_Code	VARCHAR(20)

## Retail Loan Source-to-Subject Area Mappings (Continued)

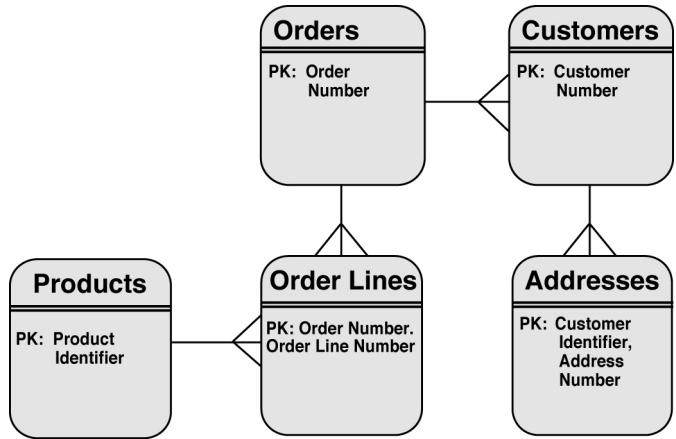
**Calculated Loan Table Attributes for Retail Loans**

	Map as = "Retail Loan"	LOAN.dat	Source_System_Code	VARCHAR(20)
	Match the Source_Sys_Unique_ Key_Text of the loan table to the Source_Sys_Unique_ Key_Text of the retail loan table and derive the Source_Sys_Unique_ Key_Text	LOAN.dat	Source_System_Unique _Key_Text	VARCHAR(32)
	Match the Product_Id of the retail loan system to the product table Product_Id and derive the Product_Id	LOAN.dat	Product_Id	INTEGER(10)
	Match the Product_Id of the retail loan system to the product table Product_Id and derive the Product_Type_Id	LOAN.dat	Product_Type_Id	INTEGER(10)
	Match the Product_Id of the retail loan system to the product table Product_Id and derive the Product_Name	LOAN.dat	Product_Name	CHAR(36)

## Case Study 2: Wheeler Data Warehouse Project

### Case Study 2—Data Models

Wheeler Data Warehouse Model—Entity-Relationship Diagram



## Wheeler Data Warehouse Model—Entity-Attribute Report

Entity Name	Entity Definition	Column Name	Domain	Mandatory	Key
<b>Products</b>	Product identifies the automotive goods and services that can be offered to Wheeler				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Product Identifier	The unique identifier of a Wheeler	Product_Id	INTEGER(10)	Yes	Primary
Source System Identifier	The identifier of the source system that the data was sourced.	Source_System_Identifier	VARCHAR(4)	Yes	Primary
Source System Code	The unique identifier of the application or system from which the information last used to update the entity instance was	Source_System_Code	VARCHAR(10)	Yes	Primary
Product Name	The primary name assigned to the product. This name is used in reports	Product_Name	CHAR(40)	Yes	
Product Type	The type of product being offered by Wheeler. Domain ranges include	Product_Type	CHAR(40)	Yes	
Product Code	One or more numbers or codes by which a product can be identified; for example, code '101' represents a specific	Product_Code	VARCHAR(20)	Yes	
Product Cost	The per unit cost of the product item to	Product_Cost	Decimal 7,2	Yes	
Product Price	The per unit price that Wheeler charges	Product_Price	Decimal 7,2	Yes	
Inventory	The per unit price that Wheeler charges	Inventory	Decimal 7,2	Yes	

Entity Name	Entity Definition	Column Name	Domain	Mandatory	Key
<b>Customer</b>	The organizations that purchase Wheeler products.				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Customer Number	The unique identifier assigned to an	Customer_Number	INTEGER(10)	Yes	Primary
Source System Identifier	The identifier of the source system that the data was sourced.	Source_System_Identifier	VARCHAR(4)	Yes	Primary
Source System Code	The unique identifier of the application or system from which the information last used to update the entity instance was	Source_System_Code	VARCHAR(10)	Yes	Primary
Customer Organization Name	The name of the customer organization	Customer_Org_Name	Varchar(20)	Yes	
Purchaser First Name	The first name of the purchaser	Purchaser_First_Name	Varchar(20)	Yes	
Purchaser Last Name	The last name of the purchaser	Purchaser_Last_Name	Varchar(20)	Yes	

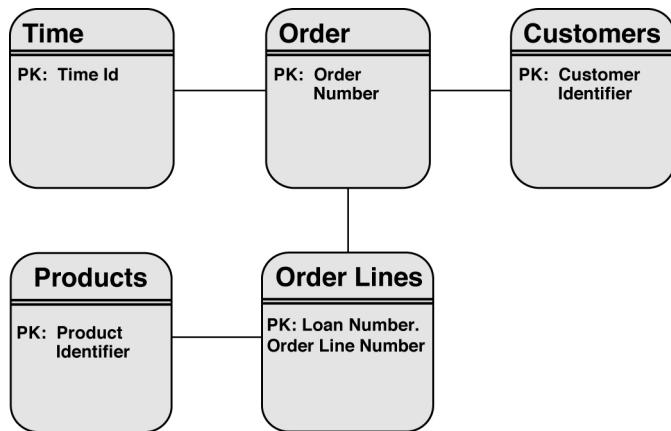
Entity Name	Entity Definition	Column Name	Domain	Mandatory	Key
<b>Address</b>	Addresses of the Wheeler customers.				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Address Number	The unique identifier assigned an	Address_Number	INTEGER(10)	Yes	Primary
Customer_Number	The unique identifier assigned to an	Cust_Id	INTEGER(10)	Yes	Primary
Address_Line_1	The first address line	Address_Line_1	VARCHAR(20)	Yes	
Address_Line_2	The second address line	Address_Line_2	VARCHAR(20)	No	
Address_Line_3	The third address line	Address_Line_3	VARCHAR(20)	No	
City	The city of the customer	City_Code	VARCHAR(20)	Yes	
State	The two-digit state code, e.g. "NY"	State	VARCHAR(2)	Yes	
Zip	The Zip code	Zip_Code	INTEGER(5)	Yes	
Zip_Plus_4	The Zip extension	Zip_Plus_4	INTEGER(4)	No	

## Wheeler Data Warehouse Model—Entity-Attribute Report (Continued)

<b>Entity Name</b>	<b>Entity Definition</b>				
<b>Order</b>	The financial instrument used by Wheeler customers to order Wheeler products.				
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory</b>	<b>Key</b>
Order Number	This number represents a single	Order_Number	INTEGER(07)	Yes	Primary
Source System Identifier	The identifier of the source system that the data was sourced.	Source_System_Identifier	VARCHAR(4)	Yes	Primary
Source System Code	The unique identifier of the application or system from which the information last used to update the entity instance was	Source_System_Code	VARCHAR(10)	Yes	Primary
Status Code	The unique identifier for one occurrence of a status code on an order.	Status_Code	VARCHAR(10)	Yes	No
Order Date	The date that the order was placed.	Order_Date	Date	Yes	No
Effective Date	The date that the order will take effect.	Effective_Date	Date	Yes	No
Customer_Number	The unique identifier assigned to an	Cust_Id	INTEGER(10)	Yes	Foreign
Terms	The terms of payment for the order.	Terms	VARCHAR(30)	Yes	No

<b>Entity Name</b>	<b>Entity Definition</b>				
<b>Order Lines</b>	This entity contains the individual order line that carries a Wheeler product.				
<b>Attribute Name</b>	<b>Attribute Definition</b>	<b>Column Name</b>	<b>Domain</b>	<b>Mandatory</b>	<b>Key</b>
Order Number	This number represents a single	Order_Number	INTEGER(07)	Yes	Primary
Order Line Number	The unique identifier for one occurrence of a status code on an order.	Order_Line_Number	INTEGER(04)	Yes	Primary
Product Identifier	The unique identifier of a Wheeler	Product_Id	INTEGER(10)	Yes	Foreign
Product Price	The per unit price that Wheeler charges	Product_Price	Decimal 7,2	Yes	No
Quantity Ordered	The per unit quantity of the product	Quantity_Ordered	INTEGER(07)	Yes	No
Line Amount	The product price * quantity ordered	Line_Amount	Decimal 9,2	Yes	No

### Product Line Profitability Dimensional—Entity-Relationship Diagram



## Product Line Profitability Dimensional—Entity-Attribute Report

Dimension Name	Dimension Definition				
<b>Products</b>	Product identifies the automotive goods and services that can be offered to Wheeler				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Product Identifier	The unique identifier of a Wheeler	Product_Id	INTEGER(10)	Yes	Primary
<b>Source System Code</b>	<b>The unique identifier of the application or system from which the</b>	<b>Source_System_Code</b>	<b>VARCHAR(10)</b>	<b>Yes</b>	<b>Unneeded</b>
Product Name	The primary name assigned to the product. This name is used in reports	Product_Name	CHAR(40)	Yes	
Product Type	The type of product being offered by Wheeler. Domain ranges include	Product_Type	CHAR(40)	Yes	
Product Code	One or more numbers or codes by which a Product can be identified; for example, code '1101' represents a specific	Product_Code	VARCHAR(20)	Yes	
Product Cost	The per unit cost of the product item to	Product_Cost	Decimal 7,2	Yes	
Product Price	The per unit price that Wheeler charges	Product_Price	Decimal 7,2	Yes	

Dimension Name	Dimension Definition				
<b>Customer</b>	The organizations that purchase Wheeler products.				
Attribute Name	Attribute Definition	Column Name	Domain	Mandatory	Key
Customer Number	The unique identifier assigned to an	Customer_Number	INTEGER(10)	Yes	Primary
Customer Organization Name	The name of the customer organization	Customer_Org_Name	Varchar(20)	Yes	
Purchaser First Name	The first name of the purchaser	Purchaser_First_Name	Varchar(20)	Yes	
Purchaser Last Name	The last name of the Purchaser	Purchaser_Last_Name	Varchar(20)	Yes	
Address Number	The unique identifier assigned an address	Address_Number	INTEGER(10)	Yes	Primary
Customer_Number	The unique identifier assigned to an	Cust_Id	INTEGER(10)	Yes	Primary
Address_Line_1	The first address line	Address_Line_1	VARCHAR(20)	Yes	
Address_Line_2	The second address line	Address_Line_2	VARCHAR(20)	No	
Address_Line_3	The third address line	Address_Line_3	VARCHAR(20)	No	
City	The city of the customer	City_Code	VARCHAR(20)	Yes	
State	The two-digit state code, e.g. "NY"	State	VARCHAR(2)	Yes	
Zip_Plus_4	The Zip Plus 4	Zip_Plus_4	INTEGER(9)	Yes	

## Product Line Profitability Dimensional—Entity-Attribute Report (Continued)

Fact Name	Fact Definition	Column Name	Domain	Mandatory	Key
Attribute Name	Attribute Definition				
Order Number	This number represents a single	Order_Number	INTEGER(07)	Yes	Primary
Status Code	The unique identifier for one occurrence of a status code on an order.	Status_Code	VARCHAR(10)	Yes	No
Order Date	The date that the order was placed.	Order_Date	Date	Yes	No
Effective Date	The date that the order will take effect.	Effective_Date	Date	Yes	No
Customer_Number	The unique identifier assigned to an	Cust_Id	INTEGER(10)	Yes	Foreign
Terms	The terms of payment for the order.	Terms	VARCHAR(30)	Yes	No
Order Total	sum(All Order Lines)	Order_Total	Decimal 9,2	Yes	No

Dimension Name	Dimension Definition	Column Name	Domain	Mandatory	Key
Attribute Name	Attribute Definition				
Order Lines	This entity contains the individual order line that carries a Wheeler product.				
Order Number	This number represents a single	Order_Number	INTEGER(07)	Yes	Primary
Order Line Number	The unique identifier for one occurrence of a status code on an order.	Status_Code	INTEGER(04)	Yes	Primary
Product Identifier	The unique identifier of a Wheeler	Product_Id	INTEGER(10)	Yes	Foreign
Product Price	The per unit price that Wheeler charges	Product_Price	Decimal 7,2	Yes	No
Quantity Ordered	The per unit quantity of the product	Quantity_Ordered	INTEGER(07)	Yes	No
Line Amount	The product price * quantity ordered	Line_Amount	Decimal 9,2	Yes	No

## Case Study 2—Subject Area Files

### Wheeler Enterprise Data Warehouse Subject Area Files

Customer Subject Area File: CUST.dat			
Column Name	Column Definition	Domain	Note
Customer_Number	The unique identifier assigned to a customer.	INTEGER(10)	
Source_System_Identifier	The identifier of the source system that the data was sourced.	VARCHAR(4)	
Source_System_Code	The unique identifier of the application or system from which the information last used to update the entity instance was populated.	VARCHAR(10)	
Customer_Org_Name	The name of the customer organization	VARCHAR(20)	
Purchaser_First_Name	The first name of the purchaser	VARCHAR(20)	
Purchaser_Last_Name	The last name of the purchaser	VARCHAR(20)	
Address_Number	The unique identifier assigned an address	INTEGER(10)	
Address_Line_1	The first address line	VARCHAR(20)	
Address_Line_2	The second address line	VARCHAR(20)	
Address_Line_3	The third address line	VARCHAR(20)	
City_Code	The city of the customer	VARCHAR(20)	
State	The two-digit state code, e.g. "NY"	VARCHAR(2)	
Zip_Code	The Zip code	INTEGER(5)	
Zip_Plus_4	The Zip extension	INTEGER(4)	

Product Subject Area File: PROD.dat			
Column Name	Column Definition	Domain	Note
Product_Id	The unique identifier of a Wheeler product.	INTEGER(10)	
Source_System_Identifier	The identifier of the source system that the data was sourced.	VARCHAR(4)	
Source_System_Code	The unique identifier of the application or system from which the information last used to update the entity instance was populated.	VARCHAR(10)	
Product_Name	The primary name assigned to the product. This name is used in reports and documents referring to the product.	CHAR(40)	
Product_Type	The type of product being offered by Wheeler. Domain ranges include "Rubber," "Wheels," "Bearing."	CHAR(40)	
Product_Code	One or more numbers or codes by which a product can be identified; for example, code '1101' represents a specific product.	VARCHAR(20)	
Product_Cost	The per unit cost of the product item to Wheeler	Decimal 7,2	
Product_Price	The per unit price that Wheeler charges their customers.	Decimal 7,2	
Inventory	The amount of the product Wheeler has available to sell.	Decimal 7,2	

Order Subject Area File: ORDR.dat			
Column Name	Column Definition	Domain	Note
Order_Number	This number represents a single occurrence of an order.	INTEGER(07)	
Source_System_Identifier	The identifier of the source system that the data was sourced.	VARCHAR(4)	
Source_System_Code	The unique identifier of the application or system from which the information last used to update the entity instance was populated.	VARCHAR(10)	
Status_Code	The unique identifier for one occurrence of a status code on an order.	VARCHAR(10)	
Order_Date	The date that the order was placed.	Date	
Effective_Date	The date that the order will take effect.	Date	
Cust_Id	The unique identifier assigned to a Customer.	INTEGER(10)	
Terms	The terms of payment for the order.	VARCHAR(30)	
Order_Number	This number represents a single occurrence of a order for this order line.	INTEGER(07)	
Order_Line_Number	The unique identifier for one occurrence of a status code on an order.	INTEGER(04)	
Product_Id	The unique identifier of a Wheeler Product.	INTEGER(10)	
Product_Price	The per unit price that Wheeler charges their customers.	Decimal (7,2)	
Quantity_Ordered	The per unit quantity of the product ordered	INTEGER(07)	
Line_Amount	The product price * quantity ordered	Decimal (9,2)	

## Global Product Line Profitability Data Mart Subject Area Files

Customer Subject Area File: CUST.dat			
Column Name	Column Definition	Domain	Note
Customer_Number	The unique identifier assigned to a customer.	INTEGER(10)	
Customer_Org_Name	The name of the customer organization.	VARCHAR(20)	
Purchaser_First_Name	The first name of the purchaser.	VARCHAR(20)	
Purchaser_Last_Name	The last name of the purchaser.	VARCHAR(20)	
Address_Number	The unique identifier assigned an address.	INTEGER(10)	
Cust_Id	The unique identifier assigned to a customer.	INTEGER(10)	
Address_Line_1	The first address line.	VARCHAR(20)	
Address_Line_2	The second address line.	VARCHAR(20)	
Address_Line_3	The third address line.	VARCHAR(20)	
City_Code	The city of the customer.	VARCHAR(20)	
State	The two-digit state code, e.g. "NY".	VARCHAR(2)	
Zip_Plus_4	The Zip plus 4.	INTEGER(9)	

Product Subject Area File: PROD.dat			
Column Name	Column Definition	Domain	Note
Product_Id	The unique identifier of a Wheeler product.	INTEGER(10)	
Product_Name	The primary name assigned to the product. This name is used in reports and documents referring to the product.	CHAR(40)	
Product_Type	The type of product being offered by Wheeler. Domain ranges include "Rubber," "Wheels," "Bearing."	CHAR(40)	
Product_Code	One or more numbers or codes by which a product can be identified; for example, code '1101' represents a specific product.	VARCHAR(20)	
Product_Cost	The per unit cost of the product item to Wheeler.	Decimal 7,2	
Product_Price	The per unit price that Wheeler charges their customers.	Decimal 7,2	

Product Subject Area File: ORD.dat			
Column Name	Column Definition	Domain	Note
Order_Number	This number represents a single occurrence of an order.	INTEGER(07)	
Status_Code	The unique identifier for one occurrence of a status code on an order.	VARCHAR(10)	
Order_Date	The date that the order was placed.	Date	
Effective_Date	The date that the order will take effect.	Date	
Cust_Id	The unique identifier assigned to a customer.	INTEGER(10)	
Terms	The terms of payment for the order.	VARCHAR(30)	
Line_Amount	sum(All Order Lines)	Decimal 9,2	

Product Subject Area File: ORLN.dat			
Column Name	Column Definition	Domain	Note
Order_Number	This number represents a single occurrence of an order.	INTEGER(07)	
Order_Line_Number	The unique identifier for one occurrence of a status code on an order.	INTEGER(04)	
Product_Id	The unique identifier of a Wheeler Product.	INTEGER(10)	
Product_Price	The per unit price that Wheeler charges their customers.	Decimal 7,2	
Quantity_Ordered	The per unit quantity of the product ordered.	INTEGER(07)	
Line_Amount	The product price * quantity ordered.	Decimal 9,2	

## Case Study 2—Source System File Layouts

### Source System 1 File Layouts

System 1 Customer File				
Field Name	Domain	Length	Mandatory	Key
CUST_#	VARCHAR	4	Y	Y
ORG	VARCHAR	40	N	N
CUST_NAME	VARCHAR	40	N	N
ADDRESS	VARCHAR	20	N	N
CITY	VARCHAR	20	N	N
STATE	VARCHAR	20	N	N
ZIP		9	N	N

System 1 Rubber Product File				
Field Name	Domain	Length	Mandatory	Key
Item Number	VARCHAR	4	Y	Y
Description	CHAR	30	N	N
Cost	DECIMAL	12	N	N
Price	DECIMAL	12	N	N
Inventory	DECIMAL	12	N	N

System 1 Order File				
Field Name	Domain	Length	Mandatory	Key
ORDER_NO	DECIMAL	5	Y	Y
STATUS	CHAR	11	N	N
DATE	INTEGER	8	N	N
CUST_#	VARCHAR	4	Y	N
TERMS_CD	CHAR	5	Y	N
ITEM_NO	VARCHAR	4	Y	Y
PROD_PRICE	DECIMAL	5	Y	N
AMNT_ORDR	DECIMAL	8	Y	N

## Source System 2 File Layouts

System 2 Customer File				
Field Name	Domain	Length	Mandatory	Key
ID	Decimal	10	Y	Y
O_NAME	Char	15	Y	N
F_NAME	Char	15	Y	N
L_NAME	Char	15	Y	N
ADDRSS 1	Char	20	Y	N
ADDRSS 2	Char	20	N	N
CITY	Char	15	N	N
STATE	Char	2	N	N
ZIP	Decimal	9	N	N

System 2 Wheels Product File				
Field Name	Domain	Length	Mandatory	Key
Item ID	Integer	6	N	N
Inventory Name	Char	30	N	N
Cost	Decimal	12	N	N
Price	Decimal	12	N	N
Inventory	Decimal	12	N	N

System 2 Order File				
Field Name	Domain	Length	Mandatory	Key
ORD_NUM	Decimal	5	Y	Y
STATUS	Char	8	N	N
DATE	Integer	8	N	N
CUST #	Varchar	4	Y	Y
LINE 1	Decimal	2	Y	N
TERMS_CD	Char	5	Y	N
ITEM_ID	Integer	6	N	N
PROD_PRICE	Decimal	5	Y	N
AMNT_ORDR	Decimal	8	Y	N
LINE 2	Decimal	2	Y	N
TERMS_CD	Char	5	Y	N
ITEM_ID	Integer	6	N	N
PROD_PRICE	Decimal	5	Y	N
AMNT_ORDR	Decimal	8	Y	N

### Source System 3 File Layouts

System 3 Customer File				
Field Name	Domain	Length	Mandatory	Key
CUST_ID	Decimal	10	Y	Y
ORGANIZATION	VARCHAR	20	Y	N
FRST	VARCHAR	20	Y	N
LAST	VARCHAR	20	Y	N
ADDR 1	Char	20	Y	N
ADDR 2	Char	20	N	N
ADDR 3	Char	20	N	N
CITY	Char	15	N	N
STATE	VARCHAR	2	N	N
ZIP	Integer	5	N	N
EXT	Integer	4	N	N

System 3 Bearing Product File				
Field Name	Domain	Length	Mandatory	Key
ID Number	Integer	6	N	N
Name	Char	30	Y	N
Cost	Decimal	12	N	N
Price	Decimal	12	N	N
Inventory	Decimal	12	N	N

System 3 Order File				
Field Name	Domain	Length	Mandatory	Key
ORD #	Decimal	5	Y	Y
STS	Char	7	N	N
DTE	Integer	8	N	N
CUST #	VARCHAR	4	Y	Y
LN 1	Decimal	2	Y	N
ID NUMBER	Integer	6	N	N
PROD PRICE	Decimal	5	Y	N
AMNT ORDR	Decimal	8	Y	N
LN 2	Decimal	2	Y	N
ID NUMBER	Integer	6	N	N
PROD PRICE	Decimal	5	Y	N
AMNT ORDR	Decimal	8	Y	N
LN 3	Decimal	2	Y	N
ID NUMBER	Integer	6	N	N
PROD PRICE	Decimal	5	Y	N
AMNT ORDR	Decimal	8	Y	N

**Note:** The order file does not contain a terms field.

## Case Study 2—Sample Source System Data

### Source System 1 Sample Data

System 1 Rubber Product File					
Item Number	Description	Cost	Price	Inventory	
1301	Rubber Joints, Type 1	\$7	\$12	100,000	
1302	Rubber Joints, Type 2	\$8	\$14	76,000	
1303	Rubber Joints, Type 3	\$10	\$15	46,000	
1304	Rubber Joints, Type 1	\$5	\$7	58,000	

System 1 Customer File						
CUST_#	ORG	CUST_NAME	ADDRESS	CITY	STATE	ZIP
410	General Motors	Mr. Jones	1230 Main Street	Warren	Michigan	48010
520	Toyota	Ms. Smith	444 Elm Street	Pontiac	Michigan	48120
660	Ford Motor	Mr. Cartwright	510 Amber St	Detroit	Michigan	48434
200	Nissan	Ms. Wheelright	626 Anderson	Lansing	Michigan	48232

System 1 Order File							
ORDER_NO	STATUS	DATE	CUST_#	TERMS_CD	ITEM_NO	PROD_PRI	AMNT_OR
10001	Shipped	03032010	410	Fixd	1302	\$14	2,000
10002	Ordered	03112010	520	Open	1303	\$15	5,000
10003	Ordered	03122010	660	Open	1303	\$15	3,000
10004	Shipped	03122010	200	Fixd	1301	\$12	20,000

### Source System 2 Sample Data

System 2 Wheels Product File					
Item ID	Inventory Name	Cost	Price	Inventory	
1101	Steel Wheels, Type 1	\$100	\$125	20,000	
1101	Steel Wheels, Type 2	\$120	\$147	6,000	
1103	Steel Wheels, Type 3	\$150	\$175	7,500	
1111	Alum Wheels Type 1	\$70	\$90	12,000	
<null>	Alum Wheels Type 2	\$90	\$135	11,500	
1113	Alum Wheels Type 3	\$65	\$89	8,900	

System 2 Customer File								
ID	O_NAME	F_NAME	L_NAME	ADDRSS 1	ADDRSS 2	CITY	STATE	ZIP
11100011	General Motors	Jasper	Jones	1230 Main St		Warren	Michigan	48010
11100012	Chrysler	Katie	Harvey	03 Daimler	Gate 2	Pontiac	Michigan	48120
<null>	Ford Motor	Mr. Cartwright	Mr. Cartwright	510 Amber St		Dearborn	Michigan	48012
1110001A	Nissan	Kelsie	Harvey	626 Anderson		Lansing	Michigan	48232

System 2 Order File													
ORD_NUM	STATUS	DATE	CUST_#	LINE_1	TERMS_CD	ITEM_ID	PROD_PRI	AMNT_O	LINE_2	TERMS_CD	ITEM_ID	PROD_AMNT_PRICE	ORDR
22221	Shipped	03042010	11100011	1	02/10, net 30	1101	\$125	100	2	02/10, net 30	1111	\$135	550
22222	Ordered	03222010	11100012	1	02/10, net 30	1101	\$147	230	2	02/10, net 30	1103	\$175	400
22223	Ordered	03142010	<null>	1	02/10, net 30	1111	\$135	1,000	2	02/10, net 30	<null>	\$135	400
22224	Shipped	03212010	1110001A	1	02/10, net 30	1113	\$89	2,000	2	02/10, net 30	1101	\$125	200

## Source System 3 Sample Data

### Source System 3

#### System 3 Bearing Product File

ID Number	Name	Cost	Price	Inventory
1201	Wheel Bearing, Type 1	\$10	\$30	110,000
1101	Wheel Bearing, Type 2	\$14	\$32	110,000
1203	Wheel Bearing, Type 3	<null>	<null>	110,000
1204	Alum Wheels Type 2	\$7	\$25	110,000

#### System 3 Customer File

CUST_ID	ORGANIZATION	FRST	LAST	ADDR_1	ADDR_2	ADDR_3	CITY	STATE	ZIP	EXT
310001	Ford Motor	Mr.	Cartwright	Mr. Cartwright	510 Amber St		Dearborn	Michigan	48012	1234
310002	Chrysler	June	Jones	03 Daimler	Gate 2	Dock 1	Pontiac	Michigan	48120	4321
310003	General Motors	Jasper	Jones	1230 Main St		Warren	Michigan	Michigan	48012	1232
310004	Nissan	Kelsie	Harvey	626 Anders		Lansing	Michigan	Michigan	48232	2331

#### System 3 Order File

ORD_#	STS	DTE	CUST_#	LN_1	ID_NUMBER	PROD	AMNT	LN_2	ID_NUMBER	PROD	AMNT	LN_3	ID_NUM	PROD	AMNT	PRICE_ORDR
					_PRICE	_ORDR			_PRICE	_ORDR			_PRICE	_ORDR		
30010	Ordered	03302010	310001	1	1201	\$30	500	2	1204	\$25	3,500					
30020	Ordered	03152010	310002	1	1101	\$32	320									
30030	Ordered	03222010	310003	1	1203	<null>	2,000	2	1204	\$25	5,000	3	1201	\$30	300	
30040	Ordered	03232010	310004	1	1204	\$25	4,000	2	1101	\$32	500					