

Name	Address	Phone	Purchases(ArtistId, ArtistName, ArtTitle, PurchaseDate, Price)
Jackson, Elizabeth	123 - 4th Avenue Fonthill ON L3J4S4	(206) 284-6783	03, Carol Channing, Laugh with Teeth, 9/17/2000, \$7000.00 15, Dennis Frings, South toward Emerald Sea, 5/11/2000, \$1800.00 03, Carol Channing, At the Movies, 2/14/2002, \$5550.00 15, Dennis Frings, South toward Emerald Sea, 7/15/2003, \$2200.00
Smith, John	123 Main Street New York, NY 10001	(123) 867-5309	02, Rick Steves, Travels through Europe, 9/01/2002, \$1050.00

CUSTOMERS							
CustomerID (PK)	Name	Address	Phone				
1	Jackson, Elizabeth	123 - 4th Avenue Fonthill ON L3J4S4	(206) 284-6783				
2	Smith, John	123 Main Street New York, NY 10001	(123) 867-5309				
CUSTOMER PURCHASES							
CustomerID (PK, FK)	ArtCode (PK)	Purchase Date (PK)	ArtistId	ArtistName	Title	Price	
1	LWT	9/17/2000	3	Carol Channing	Laugh with Teeth	\$7,000.00	
1	STES	5/11/2000	15	Dennis Frings	South toward Emerald Sea	\$1,800.00	
1	ATM	2/14/2002	3	Carol Channing	At the Movies	\$5,550.00	
1	STES	7/15/2003	15	Dennis Frings	South toward Emerald Sea	\$2,200.00	
2	TTE	9/1/2002	2	Rick Steves	Travels through Europe	\$1,050.00	
1NF							
In 1st Normal Form, no table should contain duplicative columns (purchase 1, purchase 2, ... purchase n) that one could use to get other types of information.							
Every table is organized in rows with primary keys that uniquely identify it.							

CUSTOMERS			
CustomerID (PK)	Name	Address	Phone
1	Jackson, Elizabeth	123 - 4th Avenue Fonthill ON L3J4S4	(206) 284-6783
2	Smith, John	123 Main Street New York, NY 10001	(123) 867-5309
CUSTOMER PURCHASES			
CustomerID (PK, FK)	ArtCode (PK, FK)	Purchase Date (PK)	Price
1	LWT	9/17/2000	\$7,000.00
1	STES	5/11/2000	\$1,800.00
1	ATM	2/14/2002	\$5,550.00
1	STES	7/15/2003	\$2,200.00
2	TTE	9/1/2002	\$1,050.00
ART			
ArtCode (PK)	Title	ArtistID	ArtistName
LWT	Laughing with Teeth	3	Carol Channing
STES	South toward Emerald Sea	15	Dennis Frings
ATM	At the Movies	3	Carol Channing
TTE	Travels through Europe	2	Rick Steves
2NF			
In 2nd Normal Form, the table must already be in 1NF.			
Any Non-key Attribute must be dependent on the primary key.			

CUSTOMERS						
CustomerID (PK)	Name	Address	Phone			
1	Jackson, Elizabeth	123 - 4th Avenue Fonthill ON L3J4S4	(206) 284-6783			
CUSTOMER PURCHASES						
CustomerID (PK, FK)	ArtCode (PK, FK)	Purchase Date (PK)	Price			
1	LWT	9/17/2000	\$7,000.00			
1	STES	5/11/2000	\$1,800.00			
1	ATM	2/14/2002	\$5,550.00			
1	STES	7/15/2003	\$2,200.00			
2	TTE	9/1/2002	\$1,050.00			
ART						
ArtCode (PK)	Title	ArtistID (FK)				
LWT	Laughing with Teeth	3				
STES	South toward Emerald Sea	15				
ATM	At the Movies	3				
TTE	Travels through Europe	2				
ARTIST						
ArtistID (PK)	First Name	Last Name				
2	Rick	Steves				
3	Carol	Channing				
15	Dennis	Frings				
3NF						
In 3rd Normal Form, the table must already be in 2NF.						
There cannot be any transitive dependency between columns (e.g. in 2NF Artist Name was dependent on Artist Id which was dependent on ArtCode)						

[1] The key chosen for the repeating group is the piece of art itself. We could have used the title as well but a code is a better choice for a key.

The purchase date was added as a PK because the same piece of art may be purchased at a later date.

[2] The key chosen for the repeating group is the piece of art itself. We could have used the title as well but a code is a better choice for a key.

The purchase date was added as a PK because the same piece of art may be purchased at a later date.

[3] The key chosen for the repeating group is the piece of art itself. We could have used the title as well but a code is a better choice for a key.

The purchase date was added as a PK because the same piece of art may be purchased at a later date.