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|  | | Project Update 2 | | | | |  | |
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|  | | | | Graphical user interface, text  Description automatically generated  Database |  | | | |
|  | | | | March 27, 2022IST 659Chad Harper |  | | | |
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|  | | Part One | | | | | |  | |
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|  | Summary **Ashley Lew** has over ten years of experience working in the Real Estate Industry. She decided to start her own Real Estate business in October 2019. Since then, she’s been using her website to track her sales data. I want to build a database for Property by Ashley to provide her with a more effective way of monitoring sales data allowing her to gain insights from her past sales.  **What problem am I solving?** Most Realtor Database Software systems focus on Marketing and Customer Relationship Management. The platforms provide a way to track the sales process (monitoring Sales Leads, Contacts, and next steps)[[1]](#footnote-1). Realtor Database systems lack the data analysis portion: how can we use previous sales data to make intelligent business decisions? | | | | | | | |  |
|  | StakeholdersAshley Lew **Business Rules**   * **Representation**: Ashley Lew represents the Buyer, the Seller, or Both. * Ashley Lew represents many Buyers and many Sellers. All Sellers and Buyers are represented by Realtor, Ashley Lew. * One House sells for one Amount. * Each House also has one Sales Percentage. * Many Sell Prices can be found in one city and one city can have many Sell Prices. | |  | | |  | | |  |
|  | Data Questions  * What is the Minimum, Average, and Maximum Home Sales Price? * What is the Average Home Sales Price for each month? * What are the Average Number of Days on the Market per year? Per month? Per City? * Which City produces the Highest Sales Rates? * Evaluating Sales Rates: What is the ideal Sales Rate for a specific city? * Which homes should you showcase on your website? (Long Term question) | | | |  | Ashley   podcast cover NEW | | |  |

**Communicating Insights**

**How will Ashley access the answers to Data Questions?** After meeting with Ashley to discuss the project, I couldn't help but wonder what the best way will be to communicate findings to Data Questions. Furthermore, it would be ideal if these findings were constantly communicated once a new transaction is inputted into the database. Ashley is not a SQL user; therefore, it would be impractical to give her a document of SQL queries that she can run on her own to find answers to her questions. Instead, a Tableau Dashboard that automatically updates as we input data will prove to be a wise way to communicate findings.

**Conceptual Model**

Diagram

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**Logical Model**

**Translating from Conceptual to Logical:** When translating from Conceptual to Logical Model, it was essential to select Data types for each attribute. Surrogate keys were introduced in the Conceptual Model to avoid any Primary Key problems. Datetime data type will be used for all dates. I struggled to choose a datatype for the property\_amount attribute in the property relation. My Logical Model shows Money as the data type selected for property\_amount. However, after this week's material, I plan to update this value to decimal. Property\_sales\_percentage is another attribute I struggled with when selecting the data type. My Logical Model shows Integer as the chosen data type but, after giving it some thought, decimal might be a better choice for this attribute as well.

**Diagram

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|  | | Part Two | | |  | |
|  | |  |  |  |  | |
|  | Updates to the Logical Model Updates were made to the Logical Model while creating database tables.   * **Client Table:** Different numerical values were selected to represent VARCHAR attributes. For example, Client\_first\_name VARCHAR(10) was changed to VARCHAR(15). * **Property Table:** Initially, buyer\_id int and seller\_id\_int were both required attributes. However, this won’t work when Ashley is representing only the Seller or only the Buyer. Therefore, both Foreign Keys are no longer required atrributes.   Buyer and Seller tables were normalized:   * **Buyer Table:** Creating Buyer\_First\_Name, Buyer\_Last\_Name, Buyer\_Middle\_Initial attributes would create redundancy. Instead, I’ll rely on a SQL query to bring those values in from the Client table via the Client\_id Foreign Key. Every time a buyer buys a home, they will be assigned a buyer\_id for the specific transaction. * **Seller Table:** Creating Seller\_First\_Name, Seller\_Last\_Name, Seller\_Middle\_Initial attributes would also create redundancy. Instead, I’ll rely on a SQL query to bring those values in from the Client table. Every time a seller sells a home, they will be assigned a seller\_id for the specific transaction. * **Client Table:** TheAddress is no longer an attribute. * **Property Table:** Sales Percentage is no longer a required attribute. | | | | |  |

Diagram

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|  | Data Definition Language – Creating Tables and Constraints | | | | |  |
|  | |  |  |  |  | |

--drop Property table before creating it

DROP TABLE IF EXISTS Property

GO

--drop Seller table before creating it

DROP TABLE IF EXISTS Seller

GO

--drop buyer table before creating it

DROP TABLE IF EXISTS Buyer

GO

--drop client table before creating it

DROP TABLE IF EXISTS Client

GO

--Creating the Client table

CREATE TABLE Client(

--Columns for Client Table

Client\_id int identity,

Client\_First\_Name VARCHAR(15) NOT NULL,

Client\_Middle\_Initial VARCHAR(1) NULL,

Client\_Last\_Name VARCHAR(15) NOT NULL,

CONSTRAINT PK\_Client\_ID PRIMARY KEY (Client\_id)

)

GO

--End creating the Client Table

--Creating the Buyer Table

CREATE TABLE Buyer(

--Columns for Buyer Table

Buyer\_id int identity,

Buyer\_1 int not null,

Buyer\_2 int null,

CONSTRAINT PK\_Buyer\_ID PRIMARY KEY(Buyer\_id),

CONSTRAINT FK1\_Buyer\_1 FOREIGN KEY (Buyer\_1) REFERENCES Client(Client\_id),

CONSTRAINT FK2\_Buyer\_2 FOREIGN KEY (Buyer\_2) REFERENCES Client(Client\_id)

)

GO

--End creating Buyer Table

--Creating Seller Table

CREATE TABLE Seller(

--Columns for Seller Table

Seller\_id int identity,

Seller\_1 int NOT NULL,

Seller\_2 int NULL,

CONSTRAINT PK\_Seller\_ID PRIMARY KEY(Seller\_id),

CONSTRAINT FK1\_Seller\_1 FOREIGN KEY (Seller\_1) REFERENCES Client(Client\_id),

CONSTRAINT FK2\_Seller\_2 FOREIGN KEY (Seller\_2) REFERENCES Client(Client\_id)

)

GO

--End creating Seller Table

--Creating Property Table

CREATE TABLE Property(

--Column for Property Table

Property\_id int identity,

Property\_Address VARCHAR(50) NOT NULL,

Property\_City VARCHAR(15) NOT NULL,

Property\_Zipcode VARCHAR(5) NOT NULL,

Property\_Sell\_Price DECIMAL(30,2) NOT NULL,

Property\_Commission\_Percentage DECIMAL(3,2) NULL,

Property\_To\_Market\_Date DATETIME NOT NULL,

Property\_Sold\_Date DATETIME NOT NULL,

Buyer\_id int NULL,

Seller\_id int NULL,

CONSTRAINT PK\_Property\_ID PRIMARY KEY (Property\_id),

CONSTRAINT FK1\_Buyers FOREIGN KEY (Buyer\_id) REFERENCES Buyer(Buyer\_id),

CONSTRAINT FK2\_Sellers FOREIGN KEY (Seller\_id) REFERENCES Seller(Seller\_id)

)

GO

--End creating Property Table

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|  | Data Manipulation Language – INSERT Statements | | | | |  |
|  | |  |  |  |  | |

--Adding data to Client Table

INSERT INTO dbo.Client (Client\_First\_Name, Client\_Last\_Name)

VALUES

('Joseph', 'Momich'),

('Michelle', 'Momich'),

('Khristian', 'Avelar'),

('Larry', 'Paskow'),

('Inguss', 'Strikaitis'),

('Gabriel', 'Williams'),

('Stephanie', 'Banh'),

('Edwin', 'Lew'),

('Janelle', 'Bode'),

('Lee', 'Austria'),

('Amber', 'McCurry'),

('Beverly', 'Calpito'),

('Scott', 'Saling'),

('Lora', 'Graham'),

('Ann', 'Berg'),

('Lilian','Lew'),

('Josephine', 'Cheung'),

('Bob', 'Tang')

--End adding data to Client Table

--Adding data to Buyer Table

INSERT INTO Buyer (Buyer\_1, Buyer\_2) VALUES

(1,2), (4,5), (6,7), (10,11), (12,13)

INSERT INTO Buyer (Buyer\_1) VALUES (8),(15),(16),(17),(16),(18)

--End adding data to Buyer Table

--Adding data to Seller Table

INSERT INTO Seller (Seller\_1) VALUES (3), (9), (14), (16)

--Adding data to Property Table

--Inserting properties with sellers represented in the transaction

INSERT INTO Property (Property\_Address, Property\_City, Property\_Zipcode, Property\_Sell\_Price,

Property\_To\_Market\_Date, Property\_Sold\_Date, Seller\_id) VALUES

('272 Magda Way', 'Pachecho', '94553', 150000.00, '9/9/2021', '9/29/2021', 2),

('1404 Henry Street', 'Berkeley', '94709', 668000.00, '6/17/2021', '8/18/2021', 3),

('2925 Grande Corte', 'Walnut Creek', '94598', 1225000.00, '09/08/2020', '10/13/2020', 4)

--Inserting properties with buyers and sellers represented in single transaction

INSERT INTO Property (Property\_Address, Property\_City, Property\_Zipcode, Property\_Sell\_Price,

Property\_To\_Market\_Date, Property\_Sold\_Date, Buyer\_id, Seller\_id) VALUES

('1505 Kirker Pass Road, #161', 'Concord', '94521', 325000.00, '12/01/2021', '12/22/2021', 1,1)

--Inserting properties where the buyers was reperesented in transcations

INSERT INTO Property (Property\_Address, Property\_City, Property\_Zipcode, Property\_Sell\_Price,

Property\_To\_Market\_Date, Property\_Sold\_Date, Buyer\_id) VALUES

('1255 Detroit Avenue, #22', 'Concord', '94520', 470000.00, '11/29/2021', '12/22/2021', 2),

('378 Topaz Street', 'Brentwood', '94513', 740888.00, '11/02/2021', '12/07/2021', 3),

('4710 Colorado Court', 'Camino', '95709', 615000.00, '09/17/2021', '10/26/2021', 6),

('840 Flores Way', 'Rio Vista', '94571', 470000.00, '08/05/2021', '09/02/2021', 4),

('1312 Tuolumne Way', 'Oakley', '94561', 756000.00, '07/22/2021', '08/20/2021', 5),

('5212 Clovis Court', 'Concord', '94521', 945000.00, '06/01/2021', '07/09/2021', 7),

('1325 Rimer Drive', 'Moraga', '94556', 1041000.00, '11/30/2020', '12/18/2020', 10),

('3191 Tiffanie Lane', 'Napa', '94558', 1200000.00, '09/22/2020', '11/16/2020', 9),

('2925 Grande Corte', 'Walnut Creek', '94598', 910000.00, '03/04/2020', '03/05/2020', 10),

('50 Rainbow Circle', 'Danville', '94506', 885000.00, '09/18/2019', '11/22/2019', 11)

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|  | SELECT Statements & Answering Data Questions | | | | |  |
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--View all Buyers

SELECT Buyer.Buyer\_id, Client.Client\_First\_Name, Client.Client\_Last\_Name FROM Buyer JOIN Client

on Buyer.Buyer\_1 = Client.Client\_id OR Buyer.Buyer\_2 = Client.Client\_id

--Results:

Table

Description automatically generated

--View all Sellers

SELECT Seller.Seller\_id, Client.Client\_First\_Name, Client.Client\_Last\_Name FROM Seller JOIN Client on Seller.Seller\_1 = Client.Client\_id OR Seller.Seller\_2 = Client.Client\_id

GO

--Results:

Graphical user interface, application, table

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--What is the Minimum, Average, and Maximum Home Sales Price?

SELECT MIN(Property.Property\_Sell\_Price) AS MinSalesPrice,

AVG(Property.Property\_Sell\_Price) AS AvgSalesPrice,

MAX(Property.Property\_Sell\_Price) AS MaxSalesPrice

FROM Property

--Results:

Graphical user interface, text, application

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--What is the Average Home Sales Price for each Month?

SELECT MONTH(Property.Property\_Sold\_Date) AS SellMonth, YEAR(Property.Property\_Sold\_Date) AS SellYear,

AVG(Property.Property\_Sell\_Price) AS AvgSellPrice

FROM Property

GROUP BY MONTH(Property.Property\_Sold\_Date), YEAR(Property.Property\_Sold\_Date)

ORDER BY AvgSellPrice DESC

GO

--Results:

Table

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--What are the Average Number of days on the market per year?

SELECT YEAR(Property.Property\_Sold\_Date) AS YearofTransaction,

AVG(DATEDIFF(DAY, Property.Property\_To\_Market\_Date, Property.Property\_Sold\_Date)) AS AvgDaysOnMarket

FROM Property GROUP BY YEAR(Property.Property\_Sold\_Date)

--Results:

Table

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--What are the Average Number of days on the market per city?

SELECT Property.Property\_City AS City,

AVG(DATEDIFF(DAY, Property.Property\_To\_Market\_Date, Property.Property\_Sold\_Date)) AS AvgDaysOnMarket

FROM Property GROUP BY Property.Property\_City

--Results:

Table

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--What are the Average Number of days on the market for each month?

SELECT MONTH(Property.Property\_Sold\_Date) AS MonthofTransaction,

AVG(DATEDIFF(DAY, Property.Property\_To\_Market\_Date, Property.Property\_Sold\_Date)) AS AvgDaysOnMarket

FROM Property GROUP BY MONTH(Property.Property\_Sold\_Date)

GO

--Results:

Table

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|  | Programming Objects | | | | |  |
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--Creating a View to see All Buyers and Property Details

CREATE OR ALTER VIEW PropertyBuyers AS

SELECT Property.Property\_Address, Property.Property\_City, Property.Property\_Zipcode, Property.Property\_Sell\_Price, Client.Client\_First\_Name, Client.Client\_Last\_Name FROM Property

LEFT JOIN Buyer ON Property.Buyer\_id = Buyer.Buyer\_id JOIN Client ON Client.Client\_id = Buyer.Buyer\_1 OR Client.Client\_id = Buyer.Buyer\_2

GO

SELECT \* FROM PropertyBuyers

GO

--Results:

Table, Excel

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--Creating a View to see All Sellers and Property Details

CREATE OR ALTER VIEW PropertySellers AS

SELECT Property.Property\_Address, Property.Property\_City, Property.Property\_Zipcode, Property.Property\_Sell\_Price, Client.Client\_First\_Name, Client.Client\_Last\_Name FROM Property

LEFT JOIN Seller ON Property.Seller\_id = Seller.Seller\_id JOIN Client ON Client.Client\_id = Seller.Seller\_1 OR Client.Client\_id = Seller.Seller\_2

GO

SELECT \* FROM PropertySellers

--Results:

Table

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--Creating a procedure to add a new Client

CREATE OR ALTER PROCEDURE NewClient (@firstName varchar(30), @middleInitial varchar(30), @lastName varchar(30))

AS

BEGIN

INSERT INTO Client (Client.Client\_First\_Name, Client.Client\_Middle\_Initial, Client.Client\_Last\_Name)

VALUES (@firstName, @middleInitial, @lastName)

END

GO

EXEC NewClient 'Jazmin', 'M', 'Logrono'

SELECT \* FROM Client

--Results:

Table

Description automatically generated

--Creating a procedure for adding a Client to the Seller table

CREATE OR ALTER PROCEDURE NewSeller (@clientID int)

AS

BEGIN

INSERT INTO Seller (Seller.Seller\_1) VALUES (@clientID)

END

GO

EXEC NewSeller 19

GO

--Creating a procedure for adding a Client to the Buyer table

CREATE OR ALTER PROCEDURE NewBuyer (@clientID int)

AS

BEGIN

INSERT INTO Buyer (Buyer.Buyer\_1) VALUES (@clientID)

END

GO

EXEC NewBuyer 19

GO

--Creating a procedure for adding a Property to the Property table

CREATE OR ALTER PROCEDURE NewProperty (@propertyAddress varchar(30), @propertyCity varchar(30),

@propertyZipcode varchar(5), @propertySellPrice DECIMAL(30,2), @propertyToMarket DATETIME,

@propertySoldDate DATETIME)

AS

BEGIN

INSERT INTO Property (Property.Property\_Address, Property.Property\_City, Property.Property\_Zipcode,

Property.Property\_Sell\_Price, Property.Property\_To\_Market\_Date, Property.Property\_Sold\_Date)

VALUES (@propertyAddress, @propertyCity, @propertyZipcode, @propertySellPrice,

@propertyToMarket, @propertySoldDate)

END

GO

EXEC NewProperty '320 N Civic Drive', 'Walnut Creek', 94596, 260000.00, '05/12/2018', '6/28/2018'

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|  | User Interface I created a Tableau Dashboard as the User Interface. The goal of the dashboard is to inform the stakeholder of current values. Specifically, looking at the answers to Data Questions.  **Dashboard link:** <https://public.tableau.com/views/PropertyByAshleyDashboard/Dashboard1?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link> | | | | |  |
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A picture containing diagram

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|  | Reflection The next time you go through the process of creating a database, what will you do differently now that you have been through the whole process? | | | | |  |
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That was undoubtedly tougher than I thought it would be! I didn’t know how to normalize my data until I started creating tables. Next time, I will be more aware of normalizing before I begin to code. Also, I will think more about the User Interface during the earlier stages of design process.

1. Bourgeois, D. (2021, October 6). *6 best real estate database software*. Fit Small Business. Retrieved February 13, 2022, from https://fitsmallbusiness.com/best-real-estate-database-software/ [↑](#footnote-ref-1)