

Project Step 6 - Zedfin Portfolio

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Executive Summary

The summary of feedback and changes from the initial to final version is as follows:

- The project had 4 entities in the original ERD (Customers, Agents, Properties, Property_Transactions). In applying the normalization process, Listing_Details was added to eliminate partial transitive dependencies with the Customers and Properties entities.
- When implementing CRUD features, we realized that we needed to add unique identifiers like property_name so that users could select properties based on recognized names instead of ID numbers.
- We had added buttons for full CRUD functionality for all of the entity table pages. We removed buttons and links that were not functional so that users could better navigate the webpages and click on only working features.
- We had originally tried to keep the webpages clean by only showing the add section if the user clicked on a button for a new entry. Feedback from our peers showed strong preference to see the section below the main tables. For each of the entity table pages, the add section was added to the bottom so that users would know that capability was available.
- Each property interaction has multiple agents and agents can be on multiple transactions. An intersection table called Property_Transaction_has_Agents was added to show the M:N relationship between Property_Transactions and Agents.
- Based on feedback about the SQL insertions, they were broken down to smaller statements to simplify any modifications or troubleshooting issues.
- There was an issue adding phone numbers to the database. After trial and error, small numbers were accepted but not full phone numbers. All large numeric input data was changed from int(11) to bigint(11) because of issues with adding data. This greatly reduced internal server errors.
- We had dropdown boxes for "Buying Property" that used "1" to indicate True and "0" to indicate false. Based on feedback from peers, CASE statements were added to SQL query for entries so that users would see "Yes" or "No" while the database would interpret as "1" or "0".
- Many of the fields have inputs that cannot be null. We originally provided no feedback if users did not input all mandatory fields. Based on feedback from peers, we added indicators (*) to mandatory input fields to improve user experience.
- A "Reset Database" button was added to the home page so that the database could be reset with just one click.

Overview

Zedfin is a small Bay Area Real Estate company we created. Zedfin has 4 agents and has at least 20 housing transactions a year. Zedfin needs a database driven website to keep track of their agents, properties, customers, and transactions. Zedfin agents will be able to help their customers sell their property by listing their property on the website. The website allows customers to see the company's real estate agents and property listings details. There will be around 100 customers using this website monthly. This database will enable the Zedfin to list properties quickly for customers to view. The customers can access basic details about the property like number of rooms, sq ft, and price. The customers can see which agent is taking care of which property listing and contact them to buy the property. Zedfin agents can record their property transactions on the website after the property has been sold.

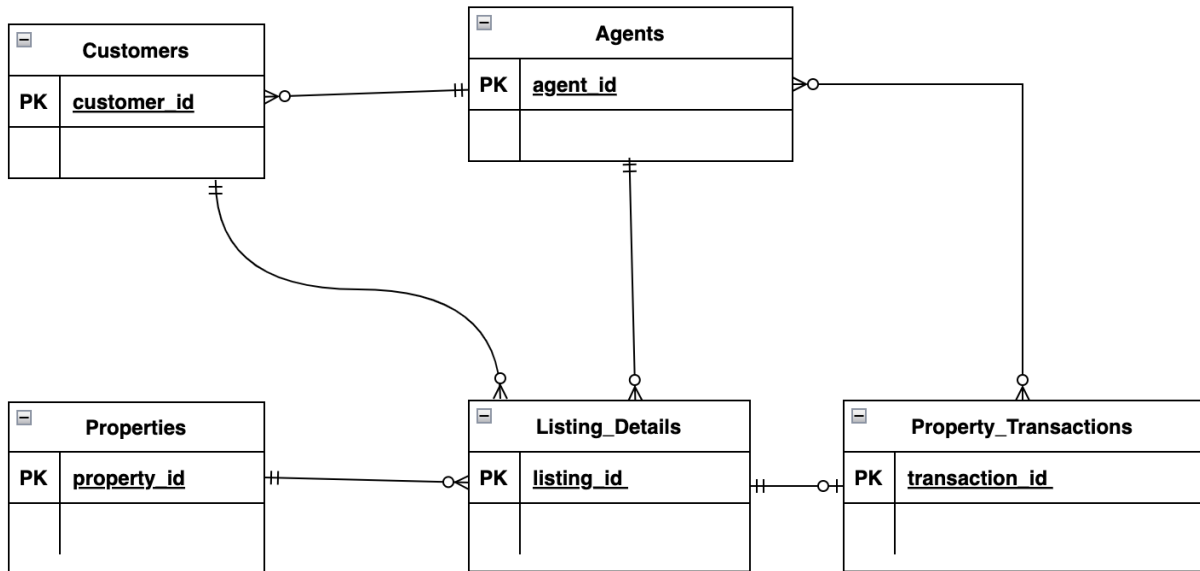
Database Outline

- Agents: Zedfin agent information
 - agent_id: int, auto_increment, unique, not NULL, PK
 - agent_first_name: varchar, not NULL
 - agent_last_name: varchar, not NULL
 - agent_phone: bigint, not NULL
 - agent_email: varchar, not NULL
 - Relationship
 - 1:M Customers
 - Each agent can have more than one customer
 - 1:M Listing_Details
 - Each agent can be associated with more than one listing detail
 - M:N Property_Transactions
 - Many agents can have many transactions and multiple agents may be on a transaction
- Customers: Zedfin buyers and sellers information
 - customer_id: int, auto_increment, unique, not NULL, PK
 - customer_first_name: varchar, not NULL
 - customer_last_name: varchar, not NULL
 - customer_phone: bigint, default NULL
 - customer_email: varchar, not NULL
 - buying_property: boolean, default NULL
 - buying_budget: bigint, default NULL
 - buying_agent: int, FK, default NULL
 - Agents.agent_id
 - on update cascade

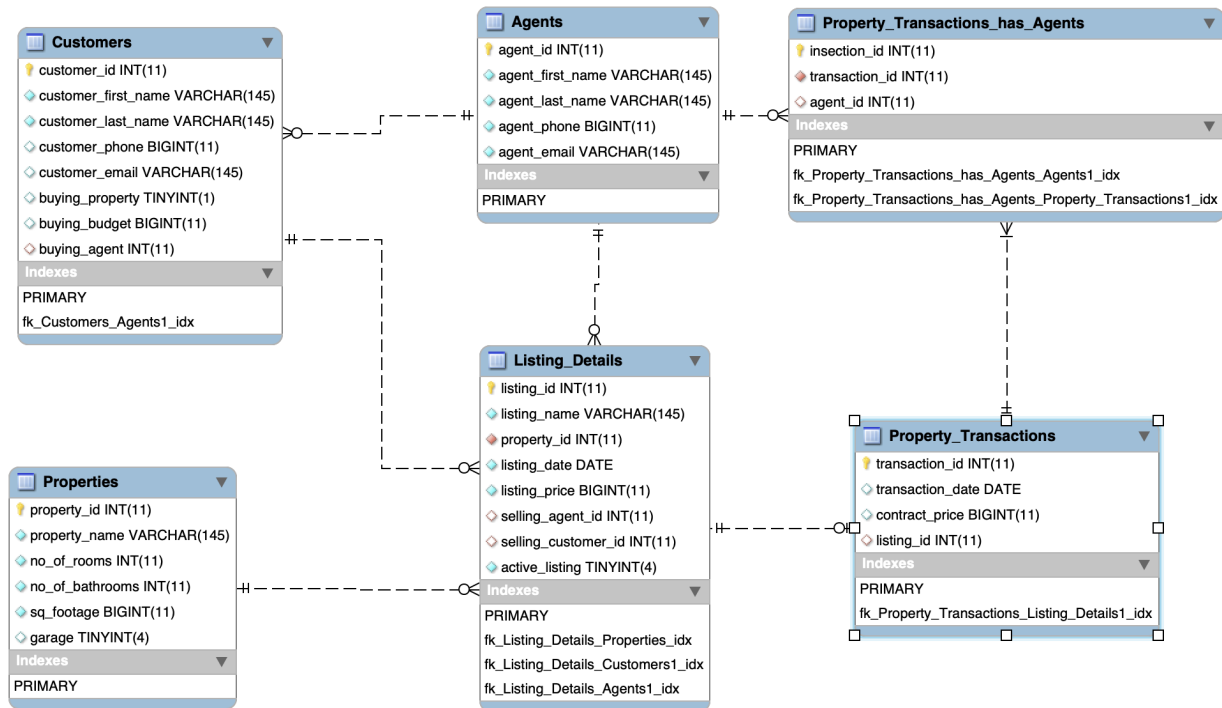
- on delete set null
 - Relationship
 - M:1 Agents
 - Many customers can have the same agent
 - 1:M Listing_Details
 - Each customer can have more than one property listing details
- Properties: List of Zedfin properties
 - property_id: int, auto_increment, unique, not NULL, PK
 - property_name: varchar, unique, not NULL
 - no_of_rooms: int, not NULL
 - no_of_bathrooms: int, not NULL
 - sq_footage: bigint, not NULL
 - garage: tinyint, default NULL
 - Relationship
 - 1:M Listing_Details
 - Each property can appear more than once in the listing details archive
- Listing_Details: Details about a property listing
 - listing_id: int, auto_increment, unique, not NULL, PK
 - listing_name: varchar, unique, not NULL
 - property_id: int, not NULL, FK
 - Properties.property_id
 - on update cascade
 - on delete cascade
 - listing_date: date, not NULL
 - listing_price: bigint, not NULL
 - selling_agent_id: int, default NULL, FK
 - Agents.agent_id
 - on update cascade
 - on delete set null
 - selling_customer_id: int, default NULL, FK
 - Customers.customer_id
 - on update cascade
 - on delete set null
 - active_listing: boolean, not NULL
 - Relationship:
 - M:1 Properties
 - Multiple listing details can relate to the same property
 - M:1 Agents
 - Multiple listing details could share the same agent
 - M:1 Customers
 - Multiple listings details can have the same customer
 - 1:1 Property_Transactionins

- Each listing detail can relate to zero or one Property_Transactions.transactions_id
- Property_Transactions: Property transaction details for any listing where transactions are complete
 - transaction_id: int, auto_increment, unique, not NULL, PK
 - transaction_date: date, not NULL
 - contract_price: bigint, not NULL
 - listing_id: int, FK
 - Listing_Details.listing_id
 - on update cascade
 - on delete cascade
 - Relationship:
 - 1:1 listing_details
 - Each Transactions.transaction_id has one Listing_Details.listing_id but not all Listing_Details.listing_id has a Property_Transactions associated with it
- Property_Transaction_has_Agents: intersection table for the M:N relationship between Property_Transactions and Agents. Each transaction can have more than one agent and each agent may have multiple transactions.
 - intersection_id: PK, not NULL, auto_increment
 - transaction_id: FK, not NULL
 - Transactions.transaction_id
 - on update cascade
 - on delete cascade
 - agent_id: FK
 - Agents.agent_id
 - on update cascade
 - on delete set null

ERD



Schema



Example Data

Agents

agent_id	agent_first_name	agent_last_name	agent_phone	agent_email
1	Avery	Anderson	4152450381	avery.anderson@zedfin.com
2	Barney	Bird	4157546042	barney.bird@zedfin.com
3	Chris	Candy	4156346897	chris.candy@zedfin.com
4	Dan	Duncan	4153438106	dan.duncan@zedfin.com
5	Ethan	Esty	4156731938	ethan.esty@zedfin.com

Customers

customer_id	customer_first_name	customer_last_name	customer_phone	customer_email	buying_property	buying_budget	buying_agent
1	Molly	Mason	6506323079	molly.mason@somemail.com	1	1,000,000	2
2	Nelson	Nile	3105519347	nelson.nile@somemail.com	1	1,100,000	1
3	Orla	Olson	7077945706	orla.olson@somemail.com	0	NULL	NULL
4	Patricia	Parson	8187509045	patricia.parson@somemail.com	0	NULL	NULL
5	Quentin	Quail	8189961249	quentin.quail@somemail.com	1	900,000	5

Properties

property_id	property_name	no_of_rooms	no_of_bathrooms	sq_footage	garage
1	567 Square St	2	1	1,500	0
2	123 Circle Ave	3	1	1,600	0
3	456 Triangle Pl	4	3	2,200	1
4	789 Star St	3	2	1,550	1
5	321 Line Dr	2	2	1,600	1

Property_Transactions

transaction_id	transaction_date	contract_price	listing_id
1	2018-08-07	949,000	3
2	2021-03-15	1,175,000	4
3	2019-06-30	845,000	2
4	2022-09-15	980,000	1
5	2021-10-31	1,105,000	5

Listing_Details

listing_id	listing_name	property_id	listing_date	listing_price	selling_agent_id	selling_customer_id	active_listing
1	2022-123 Circle Ave	2	2022-08-01	950,000	5	2	0
2	2019-567 Square St	1	2019-05-01	880,000	1	NULL	0
3	2018-321 Line Dr	5	2018-06-23	950,000	3	NULL	0
4	2021-456 Triangle Pl	3	2021-02-13	1,150,000	2	5	0
5	2021-789 Star St	4	2021-10-01	1,080,000	1	1	0
6	2023-123 Circle Ave	2	2023-09-03	950,000	5	3	1
7	2023-789 Star St	4	2023-08-06	1,050,000	4	4	1

Property_Transactions_has_Agents

intersection_id	transaction_id	agent_id
1	1	5
2	2	1
3	3	3
4	4	2
5	5	1
6	1	3
7	2	4
8	3	2
9	4	1
10	5	4

UI Screen Shots

Home Page with a database reset button

Welcome to Zedfin!

[[Home Page](#) | [Agents](#) | [Customers](#) | [Properties](#) | [Listings](#) | [Transactions](#)]

Zedfin is a small Bay Area Real Estate company we created. Zedfin has 4 agents and has at least 20 housing transactions a year. Zedfin needs a database driven website to keep track of their agents, properties, customers, and transactions. Zedfin agents will be able to help their customers sell their property by listing their property on the website. The website allows customers to see the company's real estate agents and property listings details. There will be around 100 customers using this website monthly. This database will enable the Zedfin to list properties quickly for customers to view. The customers can access basic details about the property like number of rooms, sq ft, and price. The customers can see which agent is taking care of which property listing and contact them to buy the property. Zedfin agents can record their property transactions on the website after the property has been sold.

Reset Database

Agents Page:

READ/BROWSE/DISPLAY and CREATE/INSERT/ADD and EDIT and DELETE on Agents page

Zedfin

Agents

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Browse Agents

New		Agent ID	First Name	Last Name	Phone Number	Email
Edit	Delete	1	Avery	Anderson	2147485467	avery.anderson@zedfin.com
Edit	Delete	2	Barney	Bird	2147483647	barney.bird@zedfin.com
Edit	Delete	3	Chris	Candy	2147482132	chris.candy@zedfin.com
Edit	Delete	4	Dan	Duncan	2147489654	dan.duncan@zedfin.com
Edit	Delete	5	Ethan	Esty	2147486625	ethan.esty@zedfin.com

Add Agent

First Name *

Last Name *

Phone *

Email *

* signifies mandatory field

Add Agent

Clicking on Edit or Delete in Agents will change Transactions M:N updates

Zedfin

Agents

[[Home Page](#) | [Agents](#) | [Customers](#) | [Properties](#) | [Listings](#) | [Transactions](#)]

Browse Agents

New		Agent ID	First Name	Last Name	Phone Number	Email
Edit	Delete	1	Avery	Anderson	2147485467	avery.anderson@zedfin.com
Edit	Delete	2	Barney	Bird	2147483647	barney.bird@zedfin.com
Edit	Delete	3	Chris	Candy	2147482132	chris.candy@zedfin.com
Edit	Delete	4	Dan	Duncan	2147489654	dan.duncan@zedfin.com
Edit	Delete	5	Ethan	Esty	2147486625	ethan.esty@zedfin.com

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Agent

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Edit Agent

first name:

last name:

phone:

email:

Zedfin

Transactions

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Browse Transactions

Transaction ID	Transaction Date	Contract Price	Listing Name	Agents
1	2018-08-07	949000	2018-321 Line Dr	Ethan Esty, Chris Candy
2	2021-03-15	1175000	2021-456 Triangle Pl	Avery Anderson, Dan Duncan
3	2019-06-30	845000	2019-567 Square St	Chris Candy, Ethan Esty
4	2022-09-15	980000	2022-123 Circle Ave	Ethan Esty, Avery Anderson
5	2021-10-31	1105000	2021-789 Star St	Avery Anderson, Dan Duncan

Deleting an Agent from the Agents table will not cause issues for the Transactions Page

Ex. Ethan Etsy and Chris Candy has been deleted from the Agents table. In the intersection table, those agents FKs have been set to NULL

Zedfin

Agents

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Browse Agents

New		Agent ID	First Name	Last Name	Phone Number	Email
Edit	Delete	1	Avery	Anderson	2147485467	avery.anderson@zedfin.com
Edit	Delete	2	Barney	Bird	2147483647	barney.bird@zedfin.com
Edit	Delete	4	Dan	Duncan	2147489654	dan.duncan@zedfin.com

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Transactions

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Browse Transactions

Transaction ID	Transaction Date	Contract Price	Listing Name	Agents
1	2018-08-07	949,000	2018-321 Line Dr	None
2	2021-03-15	1,175,000	2021-456 Triangle Pl	Dan Duncan, Avery Anderson
3	2019-06-30	845,000	2019-567 Square St	None
4	2022-09-15	980,000	2022-123 Circle Ave	Avery Anderson
5	2021-10-31	1,105,000	2021-789 Star St	Avery Anderson, Dan Duncan

Add Transaction

Transaction Date *

Contract Price *

Listing Name *

Browse Transaction-Agents

	Intersection ID	Listing Name	Agent
Delete	6	2018-321 Line Dr	Null
Delete	1	2018-321 Line Dr	Null
Delete	8	2019-567 Square St	Null
Delete	3	2019-567 Square St	Null
Delete	7	2021-456 Triangle Pl	Duncan, Dan
Delete	2	2021-456 Triangle Pl	Anderson, Avery
Delete	10	2021-789 Star St	Duncan, Dan
Delete	5	2021-789 Star St	Anderson, Avery
Delete	4	2022-123 Circle Ave	Null
Delete	9	2022-123 Circle Ave	Anderson, Avery

Add Transaction-Agent

Listing Name *

Agent *

Customers Page:

READ/BROWSE/DISPLAY and CREATE/INSERT/ADD NEW Customers page

Zedfin

Customers

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Browse Customers

Customer ID	First Name	Last Name	Phone Number	Email	Is buying property?	Buying Budget (\$)	Buying Agent
1	Molly	Mason	2147487465	molly.mason@somemail.com	Yes	1000000	Bird, Barney
2	Nelson	Nile	2147483352	nelson.nile@somemail.com	Yes	1100000	Anderson, Avery
3	Orla	Olson	2147483434	orla.olson@somemail.com	No	None	None
4	Patricia	Parson	2147482008	patricia.parson@somemail.com	No	None	None
5	Quentin	Quail	2147483699	quentin.quail@somemail.com	Yes	900000	Esty, Ethan

Add Customer

First Name *

Last Name *

Phone

Email *

Buying Property?

Yes ▾

Buying Budget

Buying Agent

▾

* signifies mandatory field

Add Customer

DYNAMIC DROPDOWN functionality for Agents FKs in adding a new Customer

Buying Agent

✓

Bird, Barney

Candy, Chris

Duncan, Dan

Esty, Ethan

mandatory field

Add Customer

Properties Page:

READ/BROWSE/DISPLAY and CREATE/INSERT/ADD NEW Properties page

Zedfin

Properties

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Browse Properties

Property ID	Property Name	# Bedrooms	# Bathrooms	Sq Footage	Has Garage?
1	567 Square St	2	3	1500	No
2	123 Circle Ave	3	1	1600	No
3	456 Triangle Pl	4	3	2200	Yes
4	789 Star St	3	2	1550	Yes
5	321 Line Dr	2	2	1600	Yes

Add Property

Property Name *

Bedrooms *

Bathrooms *

Sq Footage *

Garage?

Yes ▾

* signifies mandatory field

Add Property

Listing Page:

READ/BROWSE/DISPLAY and CREATE/INSERT/ADD NEW Listings page

Zedfin

Listing Details

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Browse Listing Details

Listing ID	Listing Name	Property Name	Listing Date	Listing Price	Agent	Seller	Active Listing?
5	2021-789 Star St	789 Star St	2021-10-01	1080000	Anderson, Avery	Mason, Molly	No
4	2021-456 Triangle Pl	456 Triangle Pl	2021-02-13	1150000	Bird, Barney	Quail, Quentin	No
7	2023-789 Star St	789 Star St	2023-08-06	1050000	Duncan, Dan	Parson, Patricia	Yes
1	2022-123 Circle Ave	123 Circle Ave	2022-08-01	950000	Esty, Ethan	Nile, Nelson	No
6	2023-123 Circle Ave	123 Circle Ave	2023-09-03	950000	Esty, Ethan	Olson, Orla	Yes

Add Listings

Listing Name *

Property Name *

Listing Date *

Listing Price *

Agent Name

Customer Name

Active Listing? *

* signifies mandatory field

Add Listing

DYNAMIC DROPDOWN functionality for Properties, Agents, Customers FKs in adding a new Listing

Property Name *

✓

123 Circle Ave

321 Line Dr

456 Triangle Pl

567 Square St

789 Star St

Agent Name

✓

Bird, Barney

Candy, Chris

Duncan, Dan

Esty, Ethan

Customer Name

✓

Mason, Molly

Nile, Nelson

Olson, Orla

Parson, Patricia

Quail, Quentin

Transactions Page with (M:N):

READ/BROWSE/DISPLAY and CREATE/INSERT/ADD NEW Transactions page including Transaction-Agents intersection table

Zedfin


Transactions

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Browse Transactions

Transaction ID	Transaction Date	Contract Price	Listing Name	Agents
1	2018-08-07	949000	2018-321 Line Dr	Ethan Esty, Chris Candy
2	2021-03-15	1175000	2021-456 Triangle Pl	Dan Duncan, Avery Anderson
3	2019-06-30	845000	2019-567 Square St	Chris Candy, Ethan Esty
4	2022-09-15	980000	2022-123 Circle Ave	Ethan Esty, Avery Anderson
5	2021-10-31	1105000	2021-789 Star St	Avery Anderson, Dan Duncan

Add Transaction

Transaction Date *
 

Contract Price *

Listing Name *

Add Transaction

Browse Transaction-Agents

	Intersection ID	Listing Name	Agent
Delete	3	2019-567 Square St	Candy, Chris
Delete	8	2019-567 Square St	Esty, Ethan
Delete	7	2021-456 Triangle Pl	Duncan, Dan
Delete	2	2021-456 Triangle Pl	Anderson, Avery
Delete	10	2021-789 Star St	Duncan, Dan
Delete	5	2021-789 Star St	Anderson, Avery
Delete	4	2022-123 Circle Ave	Esty, Ethan
Delete	9	2022-123 Circle Ave	Anderson, Avery

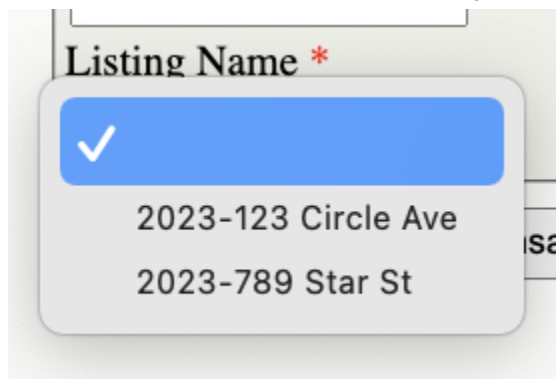
Add Transaction-Agent

Listing Name *

Agent *

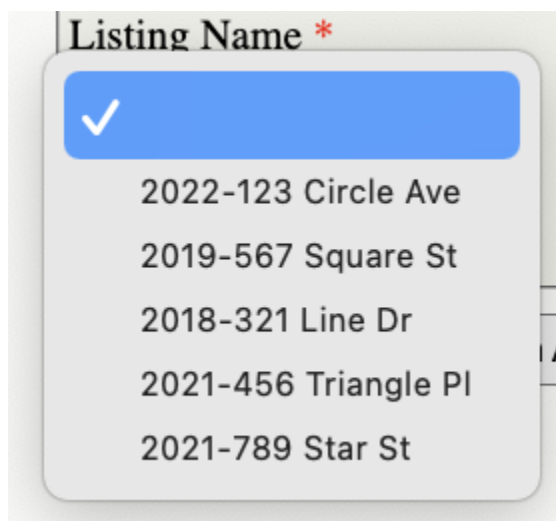
Add Transaction Agent

DYNAMIC DROPDOWN functionality for Listing FKs in adding a new Transaction

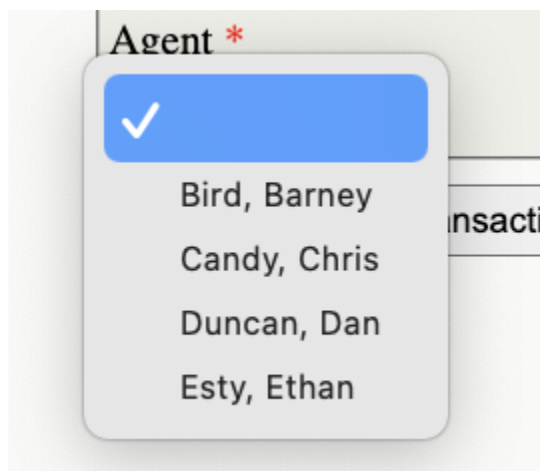


A screenshot of a web form showing a dropdown menu for the 'Listing Name' field. The field is labeled 'Listing Name *' in black text. The dropdown menu is open, displaying a blue header bar with a white checkmark icon. Below the header, the menu lists two options: '2023-123 Circle Ave' and '2023-789 Star St'. The background of the form is light gray.

DYNAMIC DROPDOWN functionality for Listing and Agents FKs in adding a new Transaction-Agents intersection table entry



A screenshot of a web form showing a dropdown menu for the 'Listing Name' field. The field is labeled 'Listing Name *' in black text. The dropdown menu is open, displaying a blue header bar with a white checkmark icon. Below the header, the menu lists five options: '2022-123 Circle Ave', '2019-567 Square St', '2018-321 Line Dr', '2021-456 Triangle Pl', and '2021-789 Star St'. The background of the form is light gray.



A screenshot of a web form showing a dropdown menu for the 'Agent' field. The field is labeled 'Agent *' in black text. The dropdown menu is open, displaying a blue header bar with a white checkmark icon. Below the header, the menu lists four options: 'Bird, Barney', 'Candy, Chris', 'Duncan, Dan', and 'Esty, Ethan'. The background of the form is light gray.

DELETE functionality (one M:N) - the delete of a M:N with no data anomaly
Deleted Intersection ID #1 and #6 and Transaction ID #1's Agents are now Null

Zedfin

Transactions

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Browse Transactions

Transaction ID	Transaction Date	Contract Price	Listing Name	Agents
1	2018-08-07	949,000	2018-321 Line Dr	None
2	2021-03-15	1,175,000	2021-456 Triangle Pl	Avery Anderson, Dan Duncan
3	2019-06-30	845,000	2019-567 Square St	Ethan Esty, Chris Candy
4	2022-09-15	980,000	2022-123 Circle Ave	Avery Anderson, Ethan Esty
5	2021-10-31	1,105,000	2021-789 Star St	Dan Duncan, Avery Anderson

Add Transaction

Transaction Date *
 ☐

Contract Price *

Listing Name *

Add Transaction

Browse Transaction-Agents

	Intersection ID	Listing Name	Agent
Delete	8	2019-567 Square St	Esty, Ethan
Delete	3	2019-567 Square St	Candy, Chris
Delete	7	2021-456 Triangle Pl	Duncan, Dan
Delete	2	2021-456 Triangle Pl	Anderson, Avery
Delete	5	2021-789 Star St	Anderson, Avery
Delete	10	2021-789 Star St	Duncan, Dan
Delete	4	2022-123 Circle Ave	Esty, Ethan
Delete	9	2022-123 Circle Ave	Anderson, Avery

Add Transaction-Agent

Listing Name *

Agent *

Add Transaction Agent