

CS 157A Intro to Database Management Systems

Project Data Model & DB Design Document

Project Title: Stock Data Aggregation Web-App

TEAM 34

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ER-Model

For our Entity-Relationship Model diagram, we used red to represent entities, blue for attributes and green for relationships. As it shown on Figure 1 below, most of the relationships are Many-one relationships. For example, one user can have three entities search history list, favorite stock list, and deleted stock history list. And for all the lists that a single user has, their data all comes from the Stock entity. These are all typical One-Many(or Many-one) relationships. Since every single stock many information that we needed, we decided to split them into two entities, info and price.

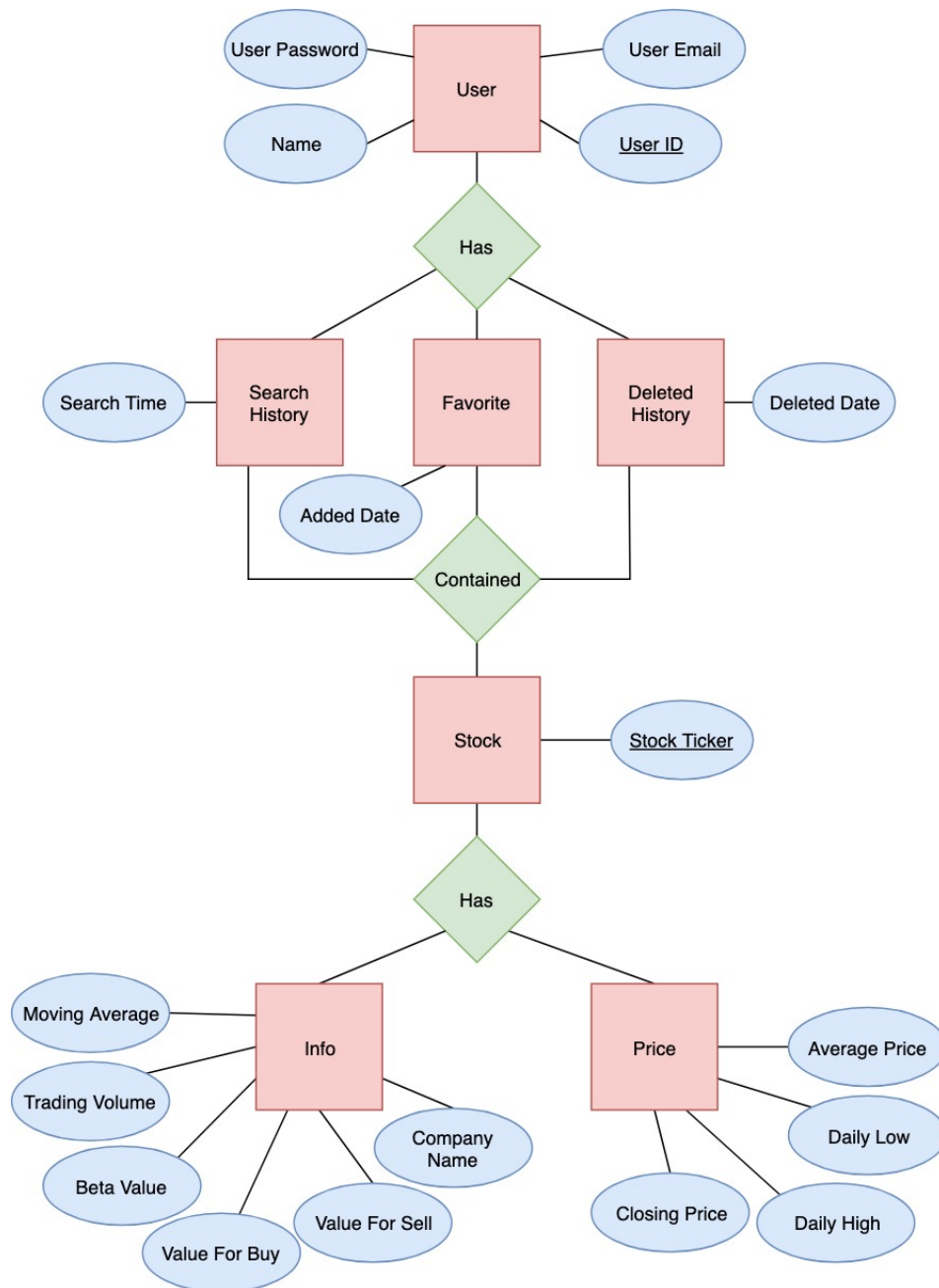


Figure 1. ER-Model

Table

Table 1) User (User ID, Name, User Email, User Password)

There are many users of our application, and this table is an example of how that information would be stored.

```
mysql> SELECT * FROM User;
```

User_id	User_name	User_email	User_password
1	Dal Tregear	dtregear0@zimbio.com	9rRQnRx
2	Dene Merring	dmerring1@bluehost.com	aED8WfG
3	Merrill Smeeton	msmeeton2@icio.us	4F5qCbGzJP
4	Nataline Newvill	nnewvill3@wordpress.org	lLorTJK
5	Annie Totterdell	atotterdell4@naver.com	IZmqHCe8NF
6	Gertie Konzel	gkonzel5@ezinearticles.com	t3qrSnbpnJ
7	Mame Hoffner	mhoffner6@goo.gl	srb2U41Y
8	Coraline Hattiff	chattiff7@e-recht24.de	3x18xJuKeE
9	Orbadiah Woolmington	owoolmington8@reuters.com	mDBt5IoV8Wh
10	Agna Erridge	aerridge9@samsung.com	6roISlARpoq
11	Addia Adenot	aadenota@pagesperso-orange.fr	uq2vGxZdZHue
12	Pearla Askaw	paskawb@newyorker.com	w0YaR6l3wF
13	Palmer Corcut	pcorcutc@gnu.org	dk6ya1
14	Noll Rochester	nrochesterd@devhub.com	lfbJBmIA4r3
15	Gino Kingcote	gkingcotee@oaic.gov.au	fEvMBCUs

Table 2) User Has (User, Favorite List, Search History, Deleted History)

Each unique user is associated with three more tables which contain the user's favorite stocks, the user's recent search history, and the user's recently deleted searches.

```
mysql> SELECT * FROM User_has;
```

User	Favorite_list	Search_history	Deleted_history
1	17Z97N5Epku1EiwzKfwYVRC2HX4dXVXqbd	13Tb6cRpzG4EXhqFCaZeUWAmRVhFuTsuW	19UdNaCAiH8LUne9E1VcmdJaK7k6RKzS1s
2	1EYSkelxHNK5srQmVHDQcUgpPUSjJKBfsX	1Mqb5JJfv8z2ry5U9p9MFRdLJC4wFgpJ61	1CF9WoXS5LtUUGLeXzU6WmEhLrNrXZWx1g
3	15qQTte2iP7471e9q4fmaoXJxxRKAFTRAY	1BsrmsVJEFLJ71aJHTM1wPuXaeADvrbPc	18DissGmDi5Zm5x7q2cpBLH2kjwqShXBF
4	1CiVCSQCoTtJCS4aqGtRqRUFRCSEwuaaX	1CVLZYT1dYuDTSvy7AWraQZcGCohtLjU1	165SYYjdaf1qKvHHKxABXx5bYipDjYiRjX
5	1AGJorjRiFhzcaYEodjcd8FC5ywUFUM4zL	1Ge9BULyzVgW5jQGeF4fiM41rATAbSsy3y	1DFMCAEbXkiGWEoLhiadSjdAMuX5NiWwFB
6	1DSTxr7FiRrPifc3sTyC6adeLAmiT25P1X	14v4KW6ByXHJqAd5troeWCbj5KLrnG9ADu	17p1oA3c19ze1BfYmN3z5LWFVjR8svSBrX
7	1HC1uzq6NMxm5izJNEatqu8qQ7AvGvW3CL	15PFKT5GKofWfrtNXsW59LQ4BVEcLsdskB	1DgUe7gjeU7ZZR1RHPMurpcMpTatYc3zmG
8	1MB51yqPd7BjqUdZTSwuThfArzkBVBjn5B	197yWgzAtxY7eWSvpkNVSLhCepK15ucTcH	1LQ2t6yvk52vMoi16ujEtKKKKZUxX3rdK
9	1Apx7Xuoxb2zAWdVvF7dWbGbhbnkufQU5j	138ctWQ7mviLxK5pTpsghkdRuj9cYdUv99	1JQ3vwjH1K2JtrdWDF2Rm6WaKYBwDFkNs3
10	1NTAbjaYtfD92qioFaLJznMyhiaMXkEAFW	1PjhwdED1apPH3838qqeqBU49Tkuujh8w1	1GszHs2zgVvniNne2otsjSyb1rbUzu57e
11	1HbtdKrVZd1pHJ3Fg7tbizBaL72f5Ad8h	196AwNYRBDhmEkqmiVywWVGJF9vdpH2bn	13xAY3SMXGdujZMBEtpXTWf53GZN1oDPN3
12	1NkBjCwp7a8Y9KgZwZmRPbAEbqzHkxV9H5	1jDDTHxNYTmochrircXivQka7KPZ9CYEm	1MZssdQU4ywQg4BakyV1kcd29HvAdjnB2T
13	16Q5SxyUMFiUqg4iA9tBSbai6oEG6FUap6	1DeYHooiuMjJq89JhsQeCYaaaEQW5cwFBA	16xBoVwhsBrJvHkGYxAFr3DPcUBbWM5Fvz
14	12uujqdDRKvpLRXtwhQqDTV9Fzz694wMvTy	1DsabDD9RmqHaGkSaUyifdD4Ve1fpzoG6x	19duYyDJmBarh1KPG6kyeY5D7DqWTFnwfw
15	1AgiswCVMLsAg6BCiRGZnsF1Q9cppMoVU8	1AMXnmGPGtT5DGjs8azcY1qkwcLfrLw5q3	1CJwzWV193NyBbtTMvW8Phykt9312sqdxy
17	1AgiswCVMLsAg6BCiRGZnsF1Q9cppMoVU8	1AMXnmGPGtT5DGjs8azcY1qkwcLfrLw5q3	1CJwzWV193NyBbtTMvW8Phykt9312sqdxy

Table 3) Search History (Stock, Search Time)

From each user's search history list, each stock will have a timestamp of when the user have searched for the search via the search bar.

```
mysql> select * from Search_history;
```

Stock	Search_time
29922	2018-11-24 20:39:09
60668	2019-07-05 05:49:22
105065	2018-12-19 09:10:02
167625	2019-10-03 04:24:05
207507	2018-11-20 20:07:57
227058	2019-01-22 14:09:49
230374	2019-05-26 22:47:41
431661	2019-05-05 10:09:52
449829	2018-12-11 02:22:02
478260	2019-01-29 06:22:38
577007	2019-02-17 15:54:48
718952	2019-08-26 06:42:45
763991	2019-07-11 04:30:27

Table 4) Favorite List (Stock, Added Date)

From each user's favorite list, each stock has a Stock ID and a timestamp of when it was added to the user's favorite list.

```
mysql> SELECT * FROM Favorite_list;
```

Stock	Added_date
241182	2019-07-21 17:47:28
339275	2019-08-18 11:54:53
428400	2019-04-05 09:01:46
529090	2019-06-21 12:17:20
563739	2019-03-07 08:04:20
573312	2019-02-18 18:56:57
593020	2019-05-11 09:08:57
681154	2019-04-14 05:23:38
811910	2019-03-22 07:16:32
947570	2019-08-14 10:33:13
956123	2018-11-30 19:17:50
983622	2018-11-13 11:45:37
997849	2019-09-22 17:08:53

Table 5) Deleted History (Stock, Deleted Date)

Deleted history table aggregates stock objects, primary key of the relationship is the Stock ID.

```
mysql> select * from Deleted_history;
+-----+-----+
| Stock | Deleted_date |
+-----+-----+
| 29024 | 2019-01-05 08:02:36 |
| 58594 | 2019-06-28 05:49:29 |
| 186690 | 2019-01-11 21:45:32 |
| 198129 | 2018-10-18 07:01:29 |
| 258264 | 2019-10-02 01:09:27 |
| 357605 | 2019-04-04 13:03:46 |
| 370760 | 2019-06-10 01:27:07 |
| 404796 | 2019-02-21 02:30:36 |
| 534952 | 2018-12-15 14:39:48 |
| 551670 | 2018-11-02 09:19:03 |
| 583356 | 2019-09-10 03:38:12 |
| 676214 | 2018-11-17 11:39:06 |
| 784233 | 2018-10-16 07:54:02 |
| 858346 | 2019-01-21 10:39:38 |
| 874273 | 2019-05-27 06:18:51 |
+-----+-----+
15 rows in set (0.00 sec)
```

Table 6) Contained (Stock, Favorite List, Search History, Deleted History)

In the relationship between Favorite List, Search History and deleted history, each of these tables aggregate stock objects so Stock is its own entity with attributes. In a one to many relationships, one of each of the tables mentioned can hold several stock objects.

```
mysql> select * from Contained;
+-----+-----+-----+-----+
| Stock | Favorite_list | Search_history | Deleted_history |
+-----+-----+-----+-----+
| 70981 | 1LtJpDmb9sGKiPxr6ij5Eo66taaYq5y29c | 1LBXq38xTnuN6TmQQ2Vyh3YTLNkfK7WpeX | 1NB9hXopbLgXeEQ6FnYRAor2dxE6MZxUTn |
| 223587 | 15qXeYQjtLJafyVJZUsnsZNRQ1HS7JEUqX | 15FDpYJgFAy94kfZiab4XHW97dG7mbsVzV | 198qnTY248u9hoYQj9hFYbhhZ8erbFPXxq |
| 229687 | 1MdFyAUsEJFvA5kL8Tvh55wdguEuihdaXL | 14C8vThH5z5i1FNQbSDTBahmtQYwQBq1Xi | 1NrHiCuF4ECVCXeYQkfwhuUEEJbBoauCjs |
| 314637 | 1muy7aW2bxY1wnns3nPfXSFgqhRPEksYk | 1JPKsa8PPNxedwR9WGFkwUbyya1qN6RMFW | 1GxbjE64EUCojEjkEnE44Cx7xyXGs1Kvmc |
| 474042 | 15t18HhAuJoRRL6bJsyZ4mpjEyyKAETGTV | 1C3Y53UeJHqnxto9RQaShhp9amo59sXK28 | 17tNQ4DMZ5Y4sfwuhepkro61FocByxkTQF |
| 488236 | 1ANSFiSsLDuqeynXVRbTuf6MWAoGMWpiXc | 18vT9jk18WR5smQWamR6RHxfUaK78nxoMX | 1Hxx1Cc4BVWc9VKudM861CSGsnMpEN3SqP |
| 562214 | 15UfwjwmYVtjLzXKe2JTQdEowhWb8ufMXV | 1Pq1hteQV8HogqnZjou83YWMqCyJJCzkNeP | 177hN1yuXYVhB8G2oRjfdxppm24FZPNiGu |
| 666497 | 17ZSYfdjrdVybHpf05PYp6vm1tbzwQbKiW | 1PagxS9SMdQNGfRxQDtYUHcrJ8JLQsquaH | 1LKqYNLy2WqnfeW4ozmRuXApWWLdFqxM3S |
| 682137 | 1Q2zXCM8WpKvBLKPQXYCfWTZTPpycTq3bj | 1Nop9zS93TewtUtXcJNemdYv38aTHpv14P | 1PsTYFR7MNRbQqar8vbooDS2CBCWWpL9Ut |
| 741461 | 1PHErq4zyXc5qr9wriEPay3RQNhHPVA3FX | 192mnhVnTzbg6k75btQx8UJoh2XjrDGweK | 189yJGf7okU7nCzmHnyV3mdb9uSwHsmPJt |
| 759706 | 1PS9s7XCbqrPG6HH23GWX41RVCUX4Vx7CW | 12QparJv5PfXqRqNCERTnWrrNcG5YSs7MEmx | 1ECfDxW2WW227J445WTF5T1PLgKTUYPCK |
| 844528 | 163zfWD7iJ5RhQ6P2dpg1WJ4x2dZuGCvjb | 1BWuuCXcDndFytoMHv9jNpgTHFTStoNRWM | 1KUKc7ogtbPr64dqyBJMkrhFcxjq7jSop |
| 914136 | 1DYvg4pJyWLL9BrRmYaYpxbaAriwMpias | 15My6uk5EB5yoDNwjiMiMgi2mo1pj6Hg65w | 1Bmi64Ln9u1ATvtYSJnapce2GwwTy9pfUS |
| 917173 | 17riVTBBeh4Gt7dATeFdXoyL4zQGQKpbSR | 1PCDTXpM8DBfEYRNEXf6PPUTAZGqfTgW7v | 13onjkybkrdeUYQzSPzNEBvwxPPGGdb4U |
+-----+-----+-----+-----+
```

Table 7) Stock (Stock ID, Stock Ticker)

Each Stock has a table called information associated with it, Stock ID is again the primary key of the relationship.

```
mysql> select * from Stock;
```

Stock_id	Stock_ticker
1	RMTI
2	SNH
3	GGP
4	BIT
5	AKR
6	UMH^A
7	BBGI
8	AFI
9	SBNY
10	DSKEW
11	UIS
12	DSX^B
13	GTT
14	KBWP
15	CWAY

Table 8) Stock has (Stock, Info, Price)

This is a table demonstrating a join between Stock, and its two entities Information and Price.

```
mysql> select * from Stock_has;
```

Stock	Info	Price
64223	1JrTvY38Jx5pwrY9gCwyVjApFfM8Zs1N1Z	12yD3N249cmxa1RAfUJzDtMxmm7iD1xmvx
200209	18yt9dZJGCeB27R9BkUg5zZKLjKW455ZNE	1PH45Fmq3oPFmUzeV2mm35yJZhkfJibu5b
279816	1KsgQEXDpxVw3DSSneRsMxVns5vNxbsFhj	1D3SpgUaTA8rN3exrRLhfEai9oWW6gsiXB
484875	17TD6P1iHbvNDxUJo3dmCmfnXJ83n4Hjcs	16SJW7thbTyBaiziMfH4MoUbQwppzDAzb3
519422	1J9Nc4BVSh7223o5oxpoUBeH67AvGRuFe1	19tPRwgTtcr6dtKq7nvi89JHnZnAZXjjAn
609016	1GD4M7UEvmG9GTWKxFNZHhr8EXN2Usuasb	19qJCj38vr6kUicctfBCMVLWWaeVyD7zmX
681574	1AWgdXSXY7MiF9B64HN4zV1iEiQnmoe91un	1KvoX6okw68Mdavrbzh5Jnv2xs27sfWep3
685883	1Bfs1Mhd75PBvKerdPu2PVJYLgQ6yxV812	19WT49PK9s5uShrXKY3P5d3PoSy6pcxNy1
709662	1GsJg36GJxGtzkc2VMof3KHkjb3Q2Gna94	17J21PBsFt9KxRWdudw7GZDYa3S6sUWk7c
755827	17iDHUHnf2HEE1agXZmZ45zX5QNC8ZpDFc	18DCkxLfrVuTyW9xDVA7oNcEuffeyM46Fy
792936	1HnHFhrJDBYs2HeWfEH9ZJ4udHXyrfJQiP	1CJ4oqWg7jE69q8JSWEQ6gyGHCap9wpReY

Table 9) Info (Stock, Moving Average, Trading Volume, Beta Value, Value for Buy, Value for Sell)

Each Stock has a table called information(info) associated with it, Stock ID is again the primary key of the relationship.

```
mysql> select * from info;
```

Stock	Moving_average	Trading_volume	Beta_value	Value_for_buy	Value_for_sell
1090	\$20.79	\$19781091.00	\$190.36	\$68.96	\$155.95
207075	\$14.53	\$17132879.82	\$184.81	\$3.34	\$288.15
211472	\$237.10	\$14736648.14	\$136.20	\$226.32	\$67.60
357466	\$142.00	\$2510452.66	\$135.73	\$138.68	\$121.16
378231	\$284.61	\$1593165.02	\$148.06	\$257.25	\$232.35
463091	\$277.74	\$8700351.48	\$107.82	\$183.43	\$29.68
464198	\$102.63	\$1053706.48	\$114.41	\$161.45	\$272.85
464219	\$269.55	\$17483379.65	\$193.24	\$99.58	\$89.36
479373	\$244.14	\$4241269.42	\$142.05	\$188.08	\$160.92
491134	\$30.88	\$9972580.48	\$169.82	\$40.95	\$182.76
524162	\$286.36	\$4402902.59	\$133.37	\$182.36	\$40.13
716635	\$29.89	\$7581936.01	\$188.49	\$194.97	\$44.74
717477	\$185.75	\$2481886.11	\$129.85	\$248.53	\$37.42
759573	\$274.93	\$2925158.25	\$190.60	\$4.13	\$229.22
807626	\$148.92	\$4101948.10	\$146.78	\$121.25	\$172.12

15 rows in set (0.00 sec)

Table 10) Price (Stock, Closing Price, Daily Low, Daily High, Average Price)

Each Stock also has a table called price associated with it to store information about the price.

```
mysql> select * from price;
```

Stock	Closing_price	Daily_low	Daily_high	Average_price
67589	\$42.14	\$164.00	\$284.51	\$212.40
100199	\$279.86	\$129.59	\$249.60	\$218.85
110190	\$11.74	\$181.92	\$251.90	\$236.88
188620	\$298.71	\$33.06	\$277.92	\$122.35
189741	\$50.46	\$257.42	\$60.34	\$117.05
242760	\$192.36	\$107.25	\$104.44	\$181.70
307560	\$58.12	\$8.96	\$11.99	\$256.12
403070	\$259.14	\$297.67	\$113.23	\$249.82
421486	\$8.98	\$96.90	\$140.33	\$146.20
425566	\$220.81	\$195.13	\$88.36	\$291.24
441526	\$174.31	\$21.26	\$13.20	\$201.11
452912	\$118.43	\$270.32	\$28.44	\$149.62
482449	\$127.51	\$184.81	\$227.26	\$106.49
496001	\$181.42	\$179.04	\$180.97	\$145.77
503106	\$231.91	\$185.38	\$262.93	\$20.15
517015	\$82.57	\$13.16	\$188.22	\$223.24
679612	\$40.93	\$245.04	\$65.08	\$156.63
726411	\$137.33	\$100.37	\$80.67	\$41.12
783448	\$35.10	\$209.56	\$226.32	\$247.77
857561	\$283.76	\$279.07	\$157.76	\$176.20
863422	\$73.44	\$267.79	\$140.18	\$208.29
901290	\$107.96	\$292.55	\$159.89	\$40.22

22 rows in set (0.00 sec)