



NYC Water Charges

Rachel Friedman | rfriedman113@gmail.com

CISC 3810 | Project 2 | Documentation

[Click here to access the web application](#)

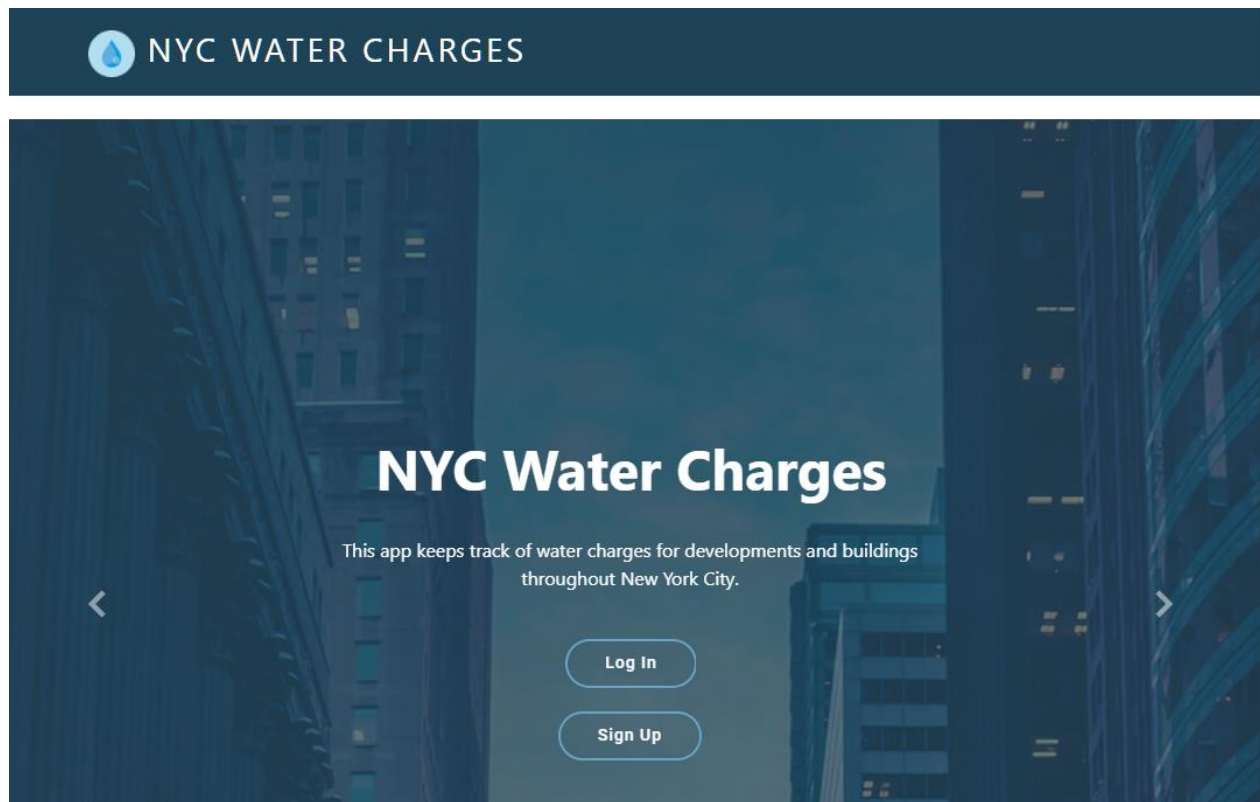
Important! Please note:

Since I am using the free tiers of Heroku:

1. The initial load time of the application may take up to a full minute. Please be patient.
2. Since the maximum records allowed was 10K, I had to combine some tables and set it up differently than my original schema in order to save rows. I also had to eliminate some data, so I kept bills going back to 2018 only (instead of 2013).

Table of Contents

• About this Project	2
• What is the purpose of this software?	2
• NYCHA Users (Admin users)	
○ Log In	3
○ View Buildings	4
○ View Charges	6
○ Delete Bill	7
○ Edit Charge	9
• Development / Building Managers (Other users)	
○ Create an account	12
○ Log In	11
○ View Buildings	15
○ View Charges	16
• List of Developments and Development IDs	12
• Schemas and ER Diagrams	18
• Implementing CRUD features	17
• Technical Documentation	17
• Hosting on Heroku	19



About this Project

This web application was created for CISC 3810. The goal of this project was to create a full stack application, complete with a database layer, business layer and a user-friendly front end interface. I stored the data in a PostgreSQL database, which I then hosted on Heroku. I used Python for the business layer, with Flask for the web framework, along with SQLAlchemy as an Object Relational Mapper and flask-login to handle user authentication and sessions. I used HTML 5, CSS, Javascript (some jQuery) to create the front end. I used some Bootstrap features for the design, as well as the data tables.

What purpose does this software serve?

The primary purpose of this software is for the New York City Housing Authority to keep track of all water charges related bills for all developments and buildings in New York City.

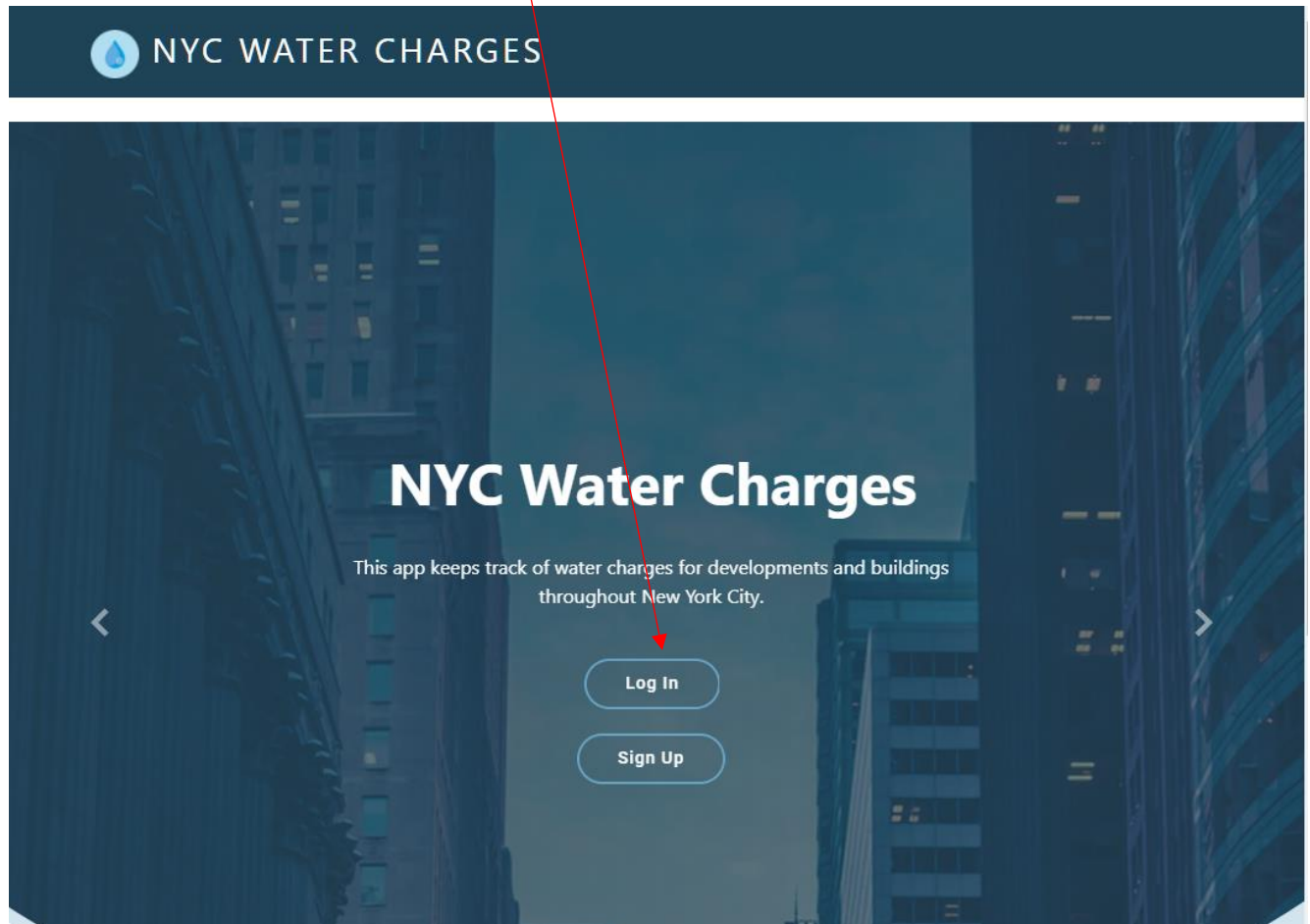
The secondary purpose of this software is for managers of those developments and buildings to be able to view the water service charges associated with their developments and buildings.

The software provides different levels of access for NYCHA users and for development/building users. NYCHA users have the ability to edit and delete charges. Development/Building users have the ability to view (but not edit or delete) charges.

Login (NYCHA Users)

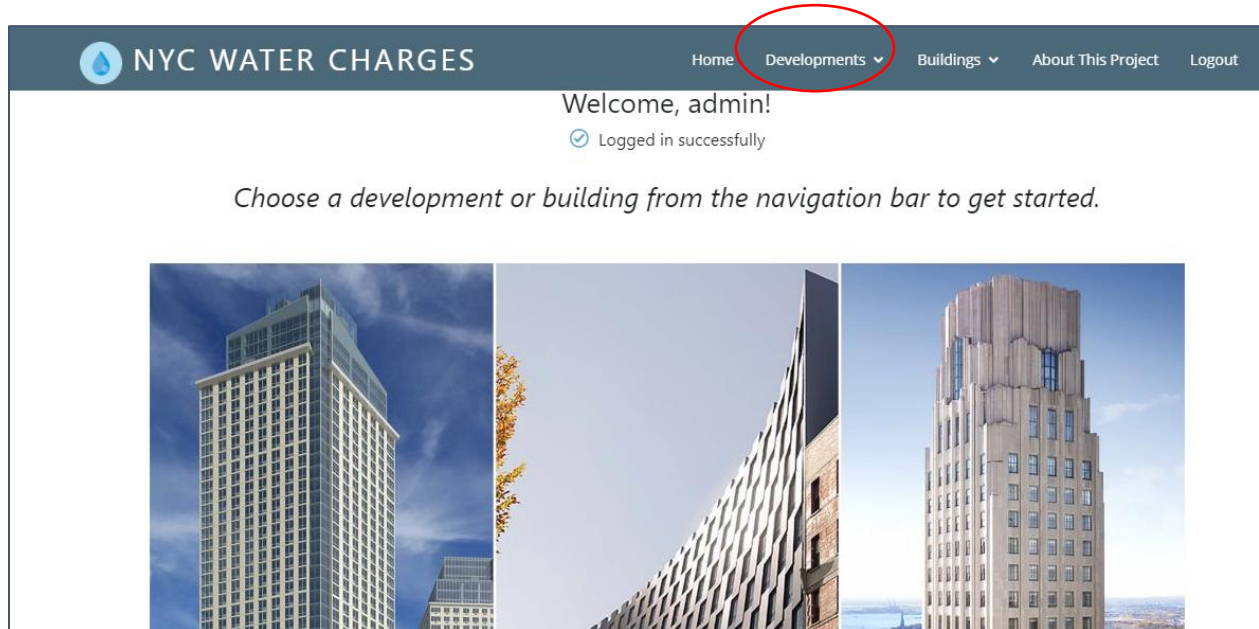
Log In with the following credentials:

- Username: admin
- Password: nycha

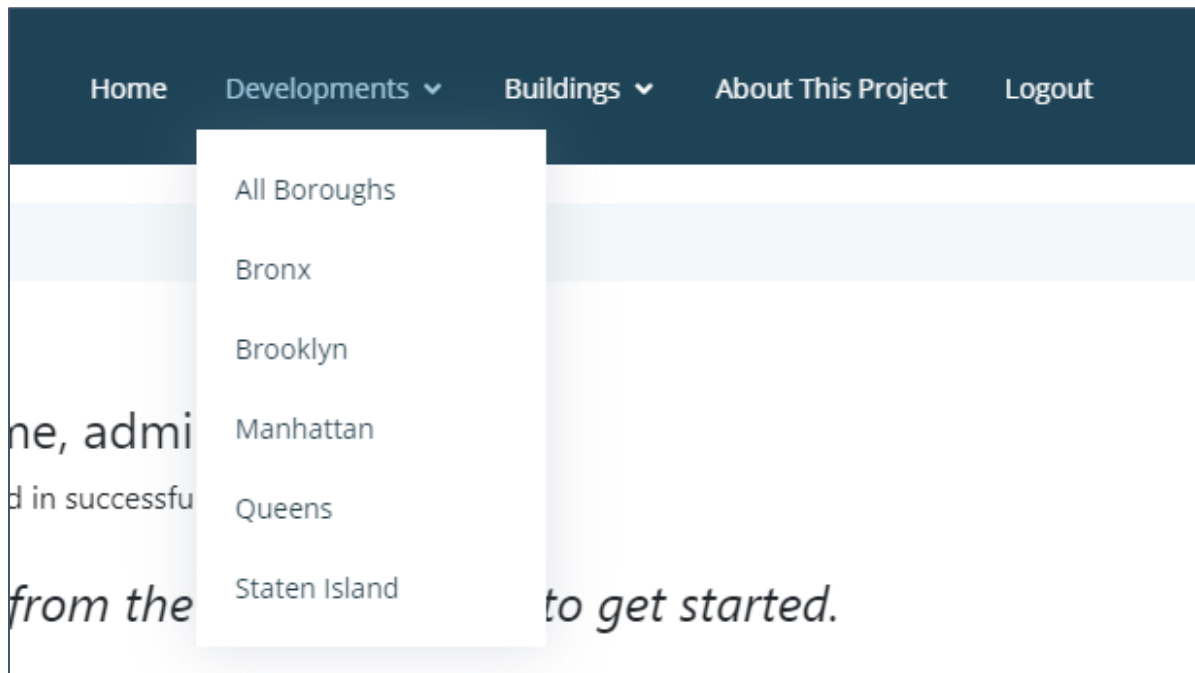


View Developments and Buildings (NYCHA Users)


1. Click on development (or Building) from the navigation bar.



2. Choose a borough.



- You will be presented with a list of all developments in that borough.


NYC WATER CHARGES


[Home](#)
[Developments](#)
[Buildings](#)
[About This Project](#)
[Logout](#)

Developments
[Home](#) / [Developments](#) / BROOKLYN

List of Developments

Borough: **BROOKLYN**


✓ Logged in as: admin



Search:

ID	Name	Borough	TDS	EDP	AMP
2	ARMSTRONG I	BROOKLYN	210	325	NY005012100P
4	BAY VIEW	BROOKLYN	92	670	NY005020920P
5	BELMONT-SUTTER AREA	BROOKLYN	345	761	NY005010460P
6	BERRY STREET-SOUTH 9TH STREET	BROOKLYN	357	777	NY005011310P
9	BOULEVARD	BROOKLYN	46	637	NY005020460P
12	BUSHWICK II (GROUPS A & C)	BROOKLYN	302	565	NY005012470P
13	BUSHWICK II (GROUPS B & D)	BROOKLYN	303	566	NY005012470P
14	BUSHWICK II CDA (GROUP E)	BROOKLYN	324	758	NY005012470P
19	CROWN HEIGHTS	BROOKLYN	312	331	NY005013510P
24	EAST NEW YORK CITY LINE	BROOKLYN	263	378	NY005010700P
25	FENIMORE-LEFFERTS	BROOKLYN	205	322	NY005011670P
47	HOWARD AVENUE	BROOKLYN	339	782	NY005013510P

- Click on a development to see a list of buildings owned by that development.


NYC WATER CHARGES

[Home](#)
[Developments](#)
[Buildings](#)
[About This Project](#)
[Logout](#)


Buildings
[Home](#) / [Developments](#) / [BROOKLYN](#) / Development: BELMONT-SUTTER AREA / Buildings: All

List of Buildings

Borough: **BROOKLYN**

Development: **BELMONT-SUTTER AREA**

✓ Logged in as: admin



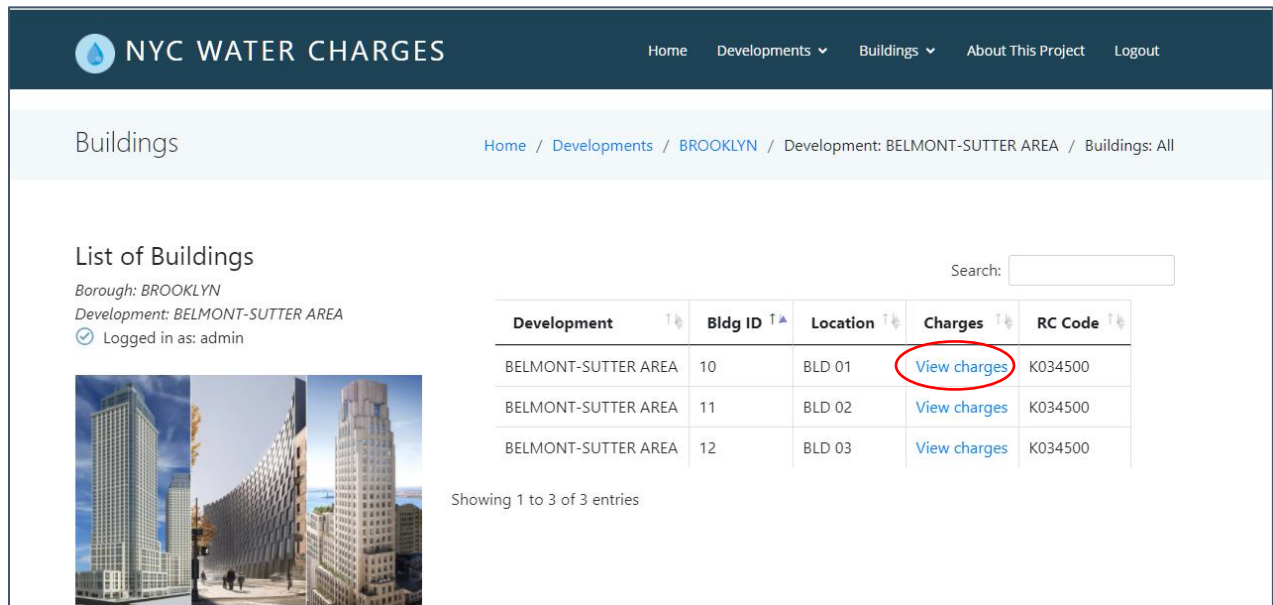
Search:

Development	Bldg ID	Location	Charges	RC Code
BELMONT-SUTTER AREA	10	BLD 01	View charges	K034500
BELMONT-SUTTER AREA	11	BLD 02	View charges	K034500
BELMONT-SUTTER AREA	12	BLD 03	View charges	K034500

Showing 1 to 3 of 3 entries

View Charges (NYCHA User)

1. When viewing a list of buildings, click on **View charges** to view charges associated with that building.



NYC WATER CHARGES

Home Developments Buildings About This Project Logout

Buildings

Home / Developments / BROOKLYN / Development: BELMONT-SUTTER AREA / Buildings: All

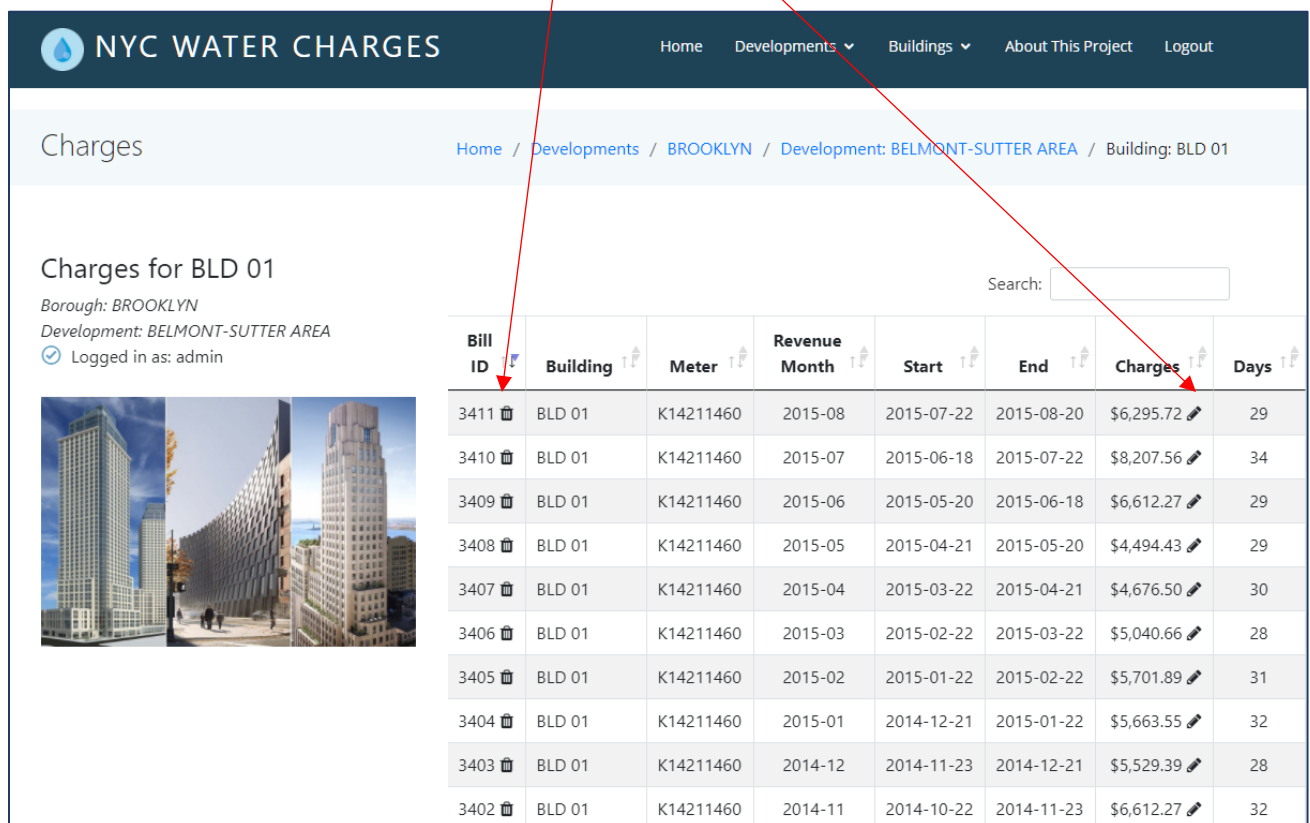
List of Buildings

Borough: BROOKLYN
Development: BELMONT-SUTTER AREA
Logged in as: admin

Development	Bldg ID	Location	Charges	RC Code
BELMONT-SUTTER AREA	10	BLD 01	View charges	K034500
BELMONT-SUTTER AREA	11	BLD 02	View charges	K034500
BELMONT-SUTTER AREA	12	BLD 03	View charges	K034500

Showing 1 to 3 of 3 entries

2. As a NYCHA/admin user, you are able to **delete** a bill, or **edit** a charge.



NYC WATER CHARGES

Home Developments Buildings About This Project Logout

Charges

Home / Developments / BROOKLYN / Development: BELMONT-SUTTER AREA / Building: BLD 01

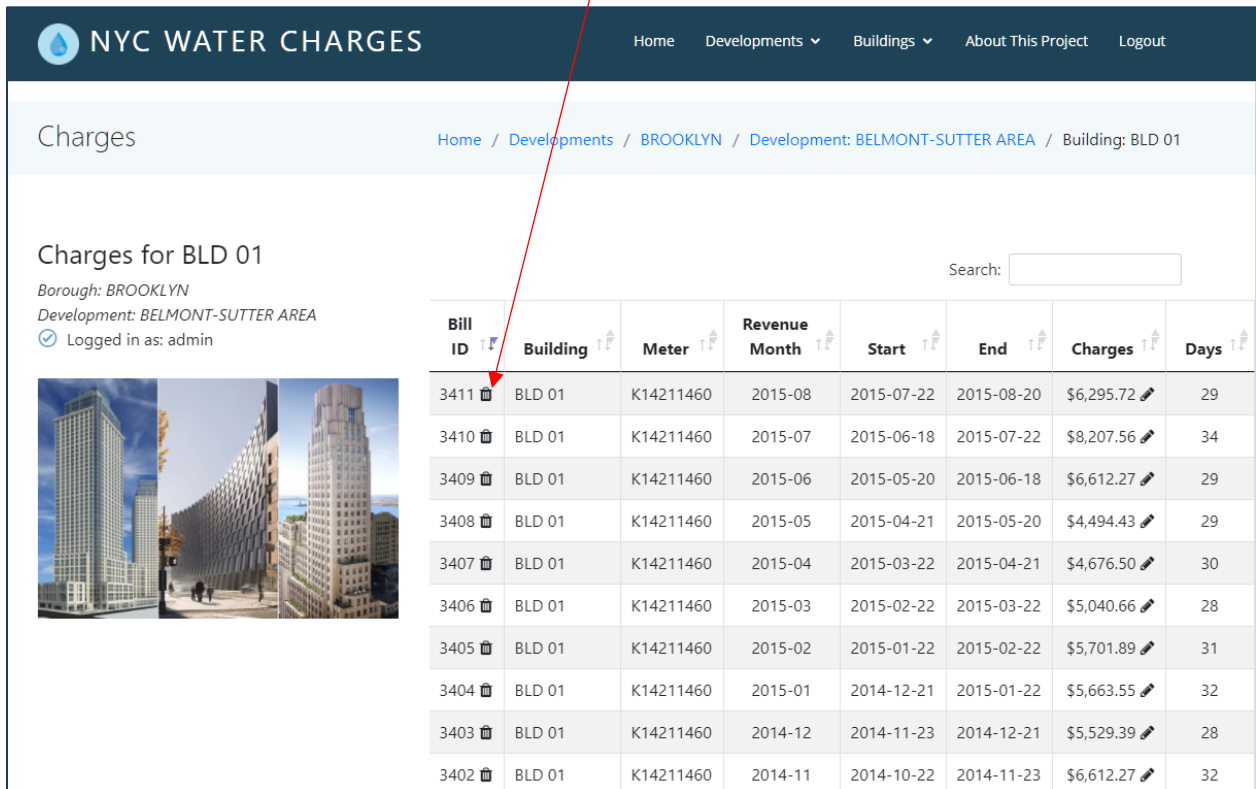
Charges for BLD 01

Borough: BROOKLYN
Development: BELMONT-SUTTER AREA
Logged in as: admin

Bill ID	Building	Meter	Revenue Month	Start	End	Charges	Days
3411	BLD 01	K14211460	2015-08	2015-07-22	2015-08-20	\$6,295.72	29
3410	BLD 01	K14211460	2015-07	2015-06-18	2015-07-22	\$8,207.56	34
3409	BLD 01	K14211460	2015-06	2015-05-20	2015-06-18	\$6,612.27	29
3408	BLD 01	K14211460	2015-05	2015-04-21	2015-05-20	\$4,494.43	29
3407	BLD 01	K14211460	2015-04	2015-03-22	2015-04-21	\$4,676.50	30
3406	BLD 01	K14211460	2015-03	2015-02-22	2015-03-22	\$5,040.66	28
3405	BLD 01	K14211460	2015-02	2015-01-22	2015-02-22	\$5,701.89	31
3404	BLD 01	K14211460	2015-01	2014-12-21	2015-01-22	\$5,663.55	32
3403	BLD 01	K14211460	2014-12	2014-11-23	2014-12-21	\$5,529.39	28
3402	BLD 01	K14211460	2014-11	2014-10-22	2014-11-23	\$6,612.27	32

Delete a Bill (NYCHA User)

1. After viewing the list of charges, click on the Delete symbol next to the Bill ID.



NYC WATER CHARGES

Home Developments Buildings About This Project Logout

Charges

Home / Developments / BROOKLYN / Development: BELMONT-SUTTER AREA / Building: BLD 01

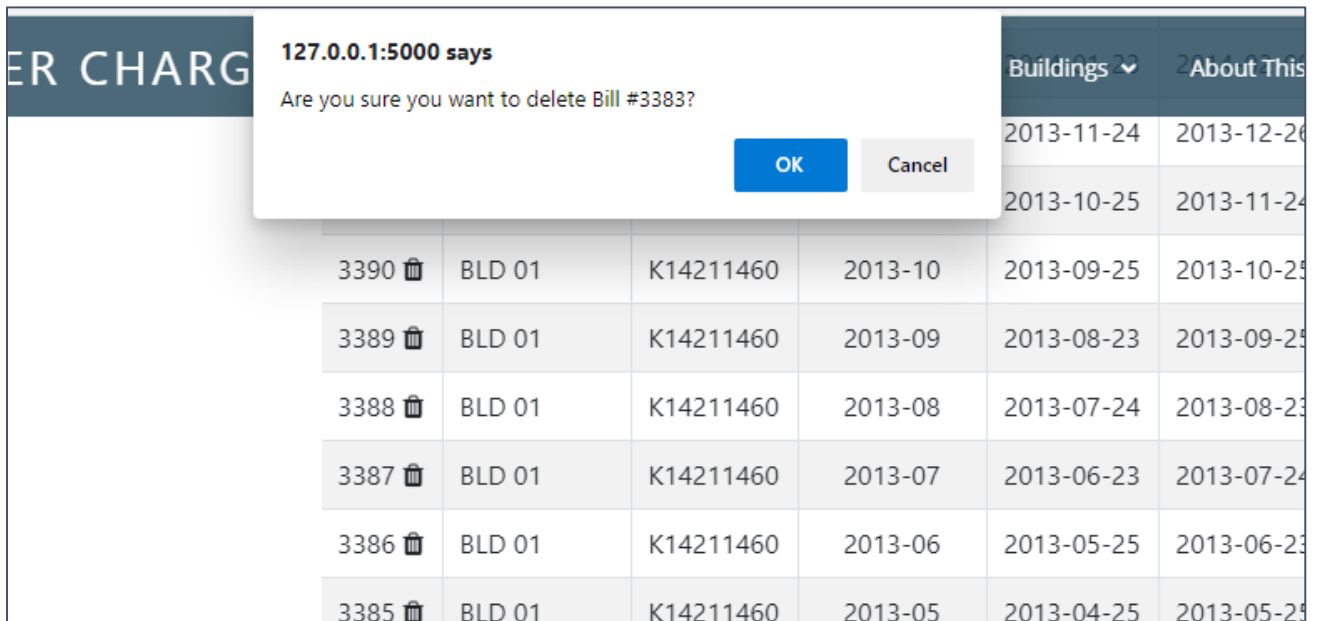
Charges for BLD 01

Borough: BROOKLYN
Development: BELMONT-SUTTER AREA
Logged in as: admin

Search:

Bill ID	Building	Meter	Revenue Month	Start	End	Charges	Days
3411	BLD 01	K14211460	2015-08	2015-07-22	2015-08-20	\$6,295.72	29
3410	BLD 01	K14211460	2015-07	2015-06-18	2015-07-22	\$8,207.56	34
3409	BLD 01	K14211460	2015-06	2015-05-20	2015-06-18	\$6,612.27	29
3408	BLD 01	K14211460	2015-05	2015-04-21	2015-05-20	\$4,494.43	29
3407	BLD 01	K14211460	2015-04	2015-03-22	2015-04-21	\$4,676.50	30
3406	BLD 01	K14211460	2015-03	2015-02-22	2015-03-22	\$5,040.66	28
3405	BLD 01	K14211460	2015-02	2015-01-22	2015-02-22	\$5,701.89	31
3404	BLD 01	K14211460	2015-01	2014-12-21	2015-01-22	\$5,663.55	32
3403	BLD 01	K14211460	2014-12	2014-11-23	2014-12-21	\$5,529.39	28
3402	BLD 01	K14211460	2014-11	2014-10-22	2014-11-23	\$6,612.27	32

2. Press OK to confirm that you wish to delete, or cancel if you wish to cancel.



ER CHARG


127.0.0.1:5000 says

Are you sure you want to delete Bill #3383?

OK Cancel

Bill ID	Building	Meter	Revenue Month	Start	End	Charges	Days
3390	BLD 01	K14211460	2013-10	2013-09-25	2013-10-25		
3389	BLD 01	K14211460	2013-09	2013-08-23	2013-09-25		
3388	BLD 01	K14211460	2013-08	2013-07-24	2013-08-23		
3387	BLD 01	K14211460	2013-07	2013-06-23	2013-07-24		
3386	BLD 01	K14211460	2013-06	2013-05-25	2013-06-23		
3385	BLD 01	K14211460	2013-05	2013-04-25	2013-05-25		

- 3. A message will pop up on your screen, notifying you that the bill was deleted. That bill will no longer appear in the list of charges.



NYC WATER CHARGES

[Home](#)[Developments](#) ▾[Buildings](#) ▾[About This Project](#)[Log Out](#)

Bill#3383 was successfully deleted.

Charges

[Home](#) / [Developments](#) / [BROOKLYN](#) / [Development: BELMONT-SUTTER AREA](#) / [Building: BLD 01](#)


Charges for BLD 01

Borough: BROOKLYN
















Development: BELMONT-SUTTER AREA

✓

 Logged in as: admin



Search:

Bill ID 	Building 	Meter 	Revenue Month 	Start 	End 
3411 	BLD 01	K14211460	2015-08	2015-07-22	2015-08-22
3410 	BLD 01	K14211460	2015-07	2015-06-18	2015-07-18
3409 	BLD 01	K14211460	2015-06	2015-05-20	2015-06-20
3408 	BLD 01	K14211460	2015-05	2015-04-21	2015-05-21
3407 	BLD 01	K14211460	2015-04	2015-03-22	2015-04-22
3406 	BLD 01	K14211460	2015-03	2015-02-22	2015-03-22
3405 	BLD 01	K14211460	2015-02	2015-01-22	2015-02-22
3404 	BLD 01	K14211460	2015-01	2014-12-21	2015-01-21
3403 	BLD 01	K14211460	2014-12	2014-11-22	2014-12-22

Edit a Charge (NYCHA User)

1. Click on the Edit symbol next to the charge to edit the charge.

NYC WATER CHARGES

[Home](#)
[Developments](#)
[Buildings](#)
[About This Project](#)
[Logout](#)

Charges
[Home](#) / [Developments](#) / [BROOKLYN](#) / [Development: BELMONT-SUTTER AREA](#) / [Building: BLD 01](#)

Charges for BLD 01

Borough: BROOKLYN

Development: BELMONT-SUTTER AREA

Logged in as: admin

Search:

Bill ID	Building	Meter	Revenue Month	Start	End	Charges	Days
3411	BLD 01	K14211460	2015-08	2015-07-22	2015-08-20	\$6,295.72	29
3410	BLD 01	K14211460	2015-07	2015-06-18	2015-07-22	\$8,207.56	34
3409	BLD 01	K14211460	2015-06	2015-05-20	2015-06-18	\$6,612.27	29
3408	BLD 01	K14211460	2015-05	2015-04-21	2015-05-20	\$4,494.43	29
3407	BLD 01	K14211460	2015-04	2015-03-22	2015-04-21	\$4,676.50	30
3406	BLD 01	K14211460	2015-03	2015-02-22	2015-03-22	\$5,040.66	28
3405	BLD 01	K14211460	2015-02	2015-01-22	2015-02-22	\$5,701.89	31
3404	BLD 01	K14211460	2015-01	2014-12-21	2015-01-22	\$5,663.55	32
3403	BLD 01	K14211460	2014-12	2014-11-23	2014-12-21	\$5,529.39	28
3402	BLD 01	K14211460	2014-11	2014-10-22	2014-11-23	\$6,612.27	32

2. Enter the amount of the new charge.

R CHARGE
127.0.0.1:5000 says

Enter amount of new balance for Bill #3391

OK
Cancel

	Buildings	About This Project
3394	BLD 01	K14211460
3393	BLD 01	K14211460
3392	BLD 01	K14211460
3391	BLD 01	K14211460
3390	BLD 01	K14211460
3389	BLD 01	K14211460

- Press OK to confirm, or cancel if you change your mind.

CHARGE

127.0.0.1:5000 says


Change balance for Bill #3391 to \$2020.75?

OK

Cancel

				Buildings	About This Project	Logout
				2014-05-06	2014-06-22	\$6,907.79
				2014-04-06	2014-05-06	\$4,311.57
3395	BLD 01	K14211460	2014-03	2014-03-06	2014-04-06	\$4,357.93
3394	BLD 01	K14211460	2014-02	2014-02-09	2014-03-06	\$3,606.89
3393	BLD 01	K14211460	2014-01	2014-01-23	2014-02-09	\$2,800.20
3392	BLD 01	K14211460	2013-12	2013-11-24	2013-12-26	\$3,236.00
3391	BLD 01	K14211460	2013-11	2013-10-25	2013-11-24	\$3,032.01
3390	BLD 01	K14211460	2013-10	2013-09-25	2013-10-25	\$3,032.01
3389	BLD 01	K14211460	2013-09	2013-08-23	2013-09-25	\$3,337.99
3388	BLD 01	K14211460	2013-08	2013-07-24	2013-08-23	\$3,032.01
3387	BLD 01	K14211460	2013-07	2013-06-23	2013-07-24	\$3,096.40

- After confirming, a message will pop up on the screen, confirming that the amount was updated.



NYC WATER CHARGES

[Home](#)
[Developments](#)
[Buildings](#)
[About This Project](#)
[Logout](#)


Bill#3391 was successfully edited with new amount \$2020.75

Charges

[Home](#) / [Developments](#) / [BROOKLYN](#) / [Development: BELMONT-SUTTER AREA](#) / [Building: BLD 01](#)

Charges for BLD 01

Borough: BROOKLYN
Development: BELMONT-SUTTER AREA
Logged in as: admin



Search:

Bill ID	Building	Meter	Revenue Month	Start	End	Char
3411	BLD 01	K14211460	2015-08	2015-07-22	2015-08-20	\$6,29
3410	BLD 01	K14211460	2015-07	2015-06-18	2015-07-22	\$8,20
3409	BLD 01	K14211460	2015-06	2015-05-20	2015-06-18	\$6,61
3408	BLD 01	K14211460	2015-05	2015-04-21	2015-05-20	\$4,49
3407	BLD 01	K14211460	2015-04	2015-03-22	2015-04-21	\$4,67

Log In (Dev/Building Users)

For demonstration purposes, I created some development accounts. Feel free to skip the Sign In section and log in with one of the following accounts:

Username: bay4

Password: bay4

Username: belmont5

Password: belmont5

Username: berry6

Password: berry6

The screenshot shows the 'NYC WATER CHARGES' application interface. At the top is a dark blue header with a water drop icon and the text 'NYC WATER CHARGES'. Below the header is a light blue banner with 'Welcome' on the left and a 'Sign Up' link on the right. The main content area is white and contains a 'Log In' section. This section has a 'Username' label above a text input field containing 'bay4', and a 'Password' label above a password input field with four dots. Below the password field is a 'Remember Me' checkbox and a 'Login' button. At the bottom of the login section is a link: 'Need An Account? Sign Up Now'. Below the login section is a light blue bar with four statistics: '107 Developments', '523 Buildings', '757 Meters', and '34,627 Bills'. At the very bottom is a white bar with the text 'About this Project'.

NYC WATER CHARGES

Welcome [Sign Up](#)

Log In

Username

bay4

Password

....

☐ Remember Me

[Login](#)

Need An Account? [Sign Up Now](#)

107
Developments

523
Buildings

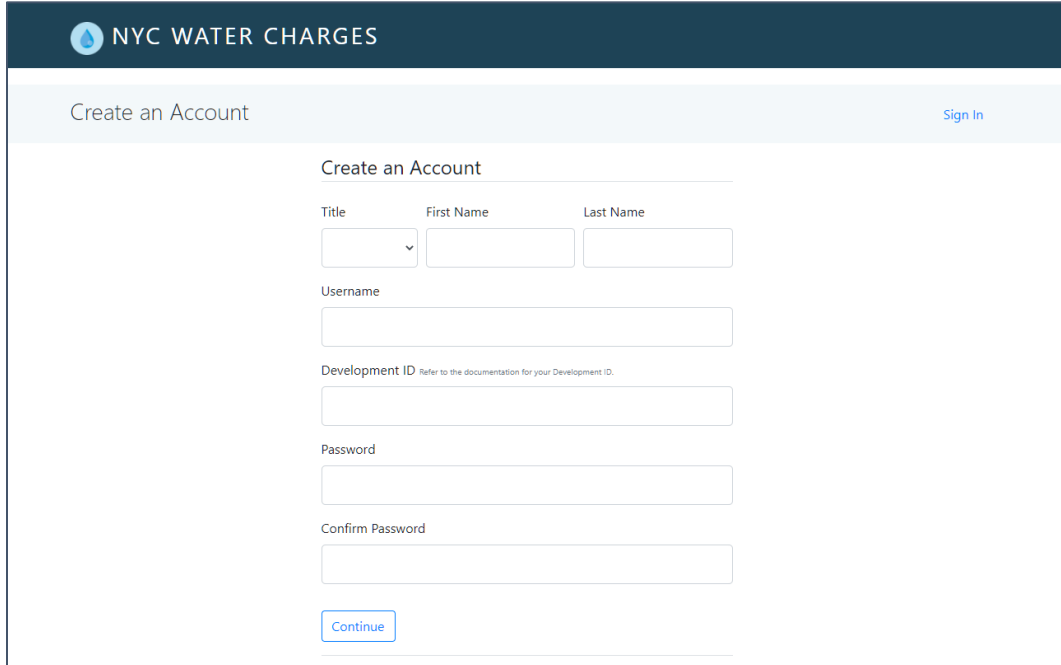
757
Meters

34,627
Bills

About this Project

Sign Up (Dev/Building Users)

Note that there is only 1 admin account, which has already been created. Any user signing up will be signing up as a development/building manager and will have to use the associated development id.



The screenshot shows the 'Create an Account' form for NYC Water Charges. The form is titled 'Create an Account' and has a 'Sign In' link in the top right corner. The form fields are: Title (a dropdown menu), First Name (a text input), Last Name (a text input), Username (a text input), Development ID (a text input with a note 'Refer to the documentation for your Development ID.'), Password (a text input), and Confirm Password (a text input). A 'Continue' button is located at the bottom of the form.

To create an account for a specific development, create a username and password and choose the associated development id. Only numbers 1-127 can be used. Refer to list of developments and development id's below:

List of Developments and Development IDs

Dev_id	Name	Borough
1	154 WEST 84TH STREET	MANHATTAN
2	ARMSTRONG I	BROOKLYN
3	BAISLEY PARK	QUEENS
4	BAY VIEW	BROOKLYN
5	BELMONT-SUTTER AREA	BROOKLYN
6	BERRY STREET-SOUTH 9TH STREET	BROOKLYN
7	BETANCES III, 9A	BRONX
8	BETANCES VI	BRONX
9	BOULEVARD	BROOKLYN
10	BOYNTON AVENUE REHAB	BRONX
11	BRYANT AVENUE-EAST 174TH STREET	BRONX
12	BUSHWICK II (GROUPS A & C)	BROOKLYN


13	BUSHWICK II (GROUPS B & D)	BROOKLYN
14	BUSHWICK II CDA (GROUP E)	BROOKLYN
15	CLAREMONT REHAB (GROUP 2)	BRONX
16	CLAREMONT REHAB (GROUP 4)	BRONX
17	CLINTON	MANHATTAN
18	CONLON LIHFE TOWER	QUEENS
19	CROWN HEIGHTS	BROOKLYN
20	EAST 004TH STREET REHAB	MANHATTAN
21	EAST 152ND STREET-COURTLANDT AVENUE	BRONX
22	EAST 165TH STREET-BRYANT AVENUE	BRONX
23	EAST 173RD STREET-VYSE AVENUE	BRONX
24	EAST NEW YORK CITY LINE	BROOKLYN
25	FENIMORE-LEFFERTS	BROOKLYN
26	FHA REPOSSESSED HOUSES (GROUP I)	FHA
27	FHA REPOSSESSED HOUSES (GROUP II)	FHA
28	FHA REPOSSESSED HOUSES (GROUP III)	FHA
29	FHA REPOSSESSED HOUSES (GROUP IV)	FHA
30	FHA REPOSSESSED HOUSES (GROUP IX)	FHA
31	FHA REPOSSESSED HOUSES (GROUP V)	FHA
32	FHA REPOSSESSED HOUSES (GROUP V)	FHA
33	FHA REPOSSESSED HOUSES (GROUP VI)	FHA
34	FHA REPOSSESSED HOUSES (GROUP VII)	FHA
35	FHA REPOSSESSED HOUSES (GROUP VII)	FHA
36	FHA REPOSSESSED HOUSES (GROUP VIII)	FHA
37	FHA REPOSSESSED HOUSES (GROUP X)	FHA
38	FHA REPOSSESSED HOUSES (GROUP X)	FHA
39	FIRST HOUSES	MANHATTAN
40	FORT WASHINGTON AVENUE REHAB	MANHATTAN
41	FRANKLIN AVENUE I CONVENTIONAL	BRONX
42	FRANKLIN AVENUE II CONVENTIONAL	BRONX
43	FRANKLIN AVENUE III CONVENTIONAL	BRONX
44	GOMPERS	MANHATTAN
45	HARRISON AVENUE REHAB (GROUP B)	BRONX
46	HIGHBRIDGE REHABS (ANDERSON AVENUE)	BRONX
47	HOWARD AVENUE	BROOKLYN
48	HOWARD AVENUE-PARK PLACE	BROOKLYN
49	HUNTS POINT AVENUE REHAB	BRONX
50	INGERSOLL	BROOKLYN
51	INGERSOLL	BROOKLYN
52	INTERNATIONAL TOWER	QUEENS
53	LONGFELLOW AVENUE REHAB	BRONX
54	LOWER EAST SIDE I INFILL	MANHATTAN
55	LOWER EAST SIDE II	MANHATTAN
56	LOWER EAST SIDE III	MANHATTAN

57	LOWER EAST SIDE REHAB (GROUP 5)	MANHATTAN
58	MANHATTANVILLE REHAB (GROUP 2)	MANHATTAN
59	MARCY AVENUE-GREENE AVENUE SITE B	BROOKLYN
60	MARLBORO	BROOKLYN
61	MELROSE	BRONX
62	MORRISANIA AIR RIGHTS	BRONX
		NON DEVELOPMENT
63	NDF - CENTRAL MAINTENANCE SHOP, 23 ASH ST	FACILITY
64	NOSTRAND	BROOKLYN
65	OCEAN BAY APARTMENTS (OCEANSIDE)	QUEENS
66	OCEAN HILL-BROWNSVILLE	BROOKLYN
67	PARK ROCK REHAB	BROOKLYN
68	POLO GROUNDS TOWERS	MANHATTAN
69	QUEENSBRIDGE NORTH	QUEENS
70	QUEENSBRIDGE SOUTH	QUEENS
71	RALPH AVENUE REHAB	BROOKLYN
72	RANGEL	MANHATTAN
73	RED HOOK EAST	BROOKLYN
74	REHAB PROGRAM (COLLEGE POINT)	QUEENS
75	REHAB PROGRAM (TAFT REHABS)	MANHATTAN
76	REID APARTMENTS	BROOKLYN
77	SAMUEL (CITY)	MANHATTAN
78	SAMUEL (MHOP) I	MANHATTAN
79	SAMUEL (MHOP) II	MANHATTAN
80	SHELTON HOUSE	QUEENS
81	SMITH	MANHATTAN
82	SOTOMAYOR HOUSES	BRONX
83	SOUTH BRONX AREA (SITE 402)	BRONX
84	SOUTH JAMAICA I	QUEENS
85	SOUTH JAMAICA II	QUEENS
86	STANTON STREET	MANHATTAN
87	STAPLETON	STATEN ISLAND
88	STEBBINS AVENUE-HEWITT PLACE	BRONX
89	STERLING PLACE REHABS (SAINT JOHNS-STERLING)	BROOKLYN
90	STERLING PLACE REHABS (STERLING-BUFFALO)	BROOKLYN
91	STUYVESANT GARDENS II	BROOKLYN
92	TAFT	MANHATTAN
93	TAPSCOTT STREET REHAB	BROOKLYN
94	TAPSCOTT STREET REHAB	FHA
95	THOMAS APARTMENTS	MANHATTAN
96	UNION AVENUE-EAST 166TH STREET	BRONX
97	UPACA (SITE 5)	MANHATTAN
98	UPACA (SITE 6)	MANHATTAN
99	VAN DYKE I	BROOKLYN

100	WASHINGTON HEIGHTS REHAB (GROUPS 1&2)	MANHATTAN
101	WASHINGTON HEIGHTS REHAB PHASE III	MANHATTAN
102	WASHINGTON HEIGHTS REHAB PHASE IV (C)	MANHATTAN
103	WASHINGTON HEIGHTS REHAB PHASE IV (D)	MANHATTAN
104	WEST FARMS ROAD REHAB	BRONX
105	WEST FARMS SQUARE CONVENTIONAL	BRONX
106	WHITMAN	BROOKLYN
107	WILLIAMSBURG	BROOKLYN

View Your Buildings (Dev/Building Users)

After you log in, you will automatically be redirected to your list of buildings. Note that as a dev/building user, you do not have the option to view other developments or other buildings.


NYC WATER CHARGES

[Home](#)
[About This Project](#)
[Logout](#)

Buildings


/ Development: BERRY STREET-SOUTH 9TH STREET / Buildings: All

List of Buildings

Borough: **BROOKLYN**

Development: **BERRY STREET-SOUTH 9TH STREET**

✓ Logged in as: berry6



Search:

Development	Bldg ID	Location	Charges	RC Code
BERRY STREET-SOUTH 9TH STREET	13	BLD 01	View charges	K035700
BERRY STREET-SOUTH 9TH STREET	14	BLD 02	View charges	K035700
BERRY STREET-SOUTH 9TH STREET	15	BLD 03	View charges	K035700
BERRY STREET-SOUTH 9TH STREET	16	BLD 04	View charges	K035700

Showing 1 to 4 of 4 entries

107

Developments

523

Buildings

757

Meters

34,627


Bills

About this Project

Monthly consumption and cost data by borough and development. Data set includes utility vendor and meter information. Data retrieved from NYC Open Data. Data provided by New York City Housing Authority (NYCHA).

View Your Bills (Dev/Building Users)


1. To view the charges associated with that building, click on View charges. Note that as a user, you do NOT have the option to delete or edit a bill.


NYC WATER CHARGES
Home About This Project Logout

Buildings

/ Development: BERRY STREET-SOUTH 9TH STREET / Buildings: All


List of Buildings
 Borough: BROOKLYN
 Development: BERRY STREET-SOUTH 9TH STREET
 Logged in as: berry6



Development	Bldg ID	Location	Charges	RC Code
BERRY STREET-SOUTH 9TH STREET	13	BLD 01	View charges	K035700
BERRY STREET-SOUTH 9TH STREET	14	BLD 02	View charges	K035700
BERRY STREET-SOUTH 9TH STREET	15	BLD 03	View charges	K035700
BERRY STREET-SOUTH 9TH STREET	16	BLD 04	View charges	K035700

Showing 1 to 4 of 4 entries


2. You will be presented with a list of bills associated with that building.


NYC WATER CHARGES
Home About This Project Logout

Charges

Home / Development: BERRY STREET-SOUTH 9TH STREET / Building: BLD 01

Charges for BLD 01
 Borough: BROOKLYN
 Development: BERRY STREET-SOUTH 9TH STREET
 Logged in as: berry6



Bill ID	Building	Meter	Revenue Month	Start	End	Charges	Days
4952	BLD 01	V31960443	2016-12	2016-12-24	2017-01-03	\$2,170.94	10
4951	BLD 01	V31960443	2016-12	2016-11-24	2016-12-24	\$6,512.81	30
4950	BLD 01	V31960443	2016-11	2016-10-22	2016-11-24	\$7,164.10	33
4949	BLD 01	V31960443	2016-10	2016-09-22	2016-10-22	\$6,512.81	30
4948	BLD 01	V31960443	2016-09	2016-08-21	2016-09-22	\$6,947.00	32
4947	BLD 01	V31960443	2016-08	2016-07-21	2016-08-21	\$6,443.74	31
4946	BLD 01	V31960443	2016-07	2016-06-20	2016-07-21	\$6,453.60	31
4945	BLD 01	V31960443	2016-06	2016-05-19	2016-06-20	\$7,341.72	32
4944	BLD 01	V31960443	2016-05	2015-06-30	2016-05-19	\$68,443.75	324
4943	BLD 01	V31960443	2015-06	2014-10-22	2015-06-30	\$51,508.63	251
4942	BLD 01	V31960443	2014-10	2014-09-24	2014-10-22	\$7,973.06	28
4941	BLD 01	V31960443	2014-09	2014-08-23	2014-09-24	\$5,519.81	32
4940	BLD 01	V31960443	2014-08	2014-07-24	2014-08-23	\$5,174.82	30
4939	BLD 01	V31960443	2014-07	2014-06-22	2014-07-24	\$4,946.54	32

CRUD Implementation

This software incorporates all the CRUD functionality associated with a typical database application. Below is how these functionalities were implemented.

Create: This is implemented by allowing the creation of new accounts. A new user is added to the Users database table. The process is initiated when a user signs up to create a new account.

Read: This is implemented by querying the database to display all relevant information. The data is displayed and formatted using Bootstrap datatables and jQuery.

Update: This is implemented by allowing NYCHA users to edit the charges associated with a specific bill. This process is triggered when a user with an admin account clicks on the “Edit” icon next to a bill. This feature is only available to admin users and will not appear when logged in as a building user.

Delete: This is implemented by allowing NYCHA users to delete a bill. This process is triggered when a user with an admin account clicks on the “Delete” icon next to the bill id. This feature is only available to admin users and will not appear when logged in as a building owner.

Technical Documentation

The technology stack is as follows:

The business layer was created in Python. I used Flask as the web framework and SQLAlchemy as the ORM. In addition, I used flask-login to implement user authentication and session management.

The data was provided by [NYC OpenData](#) in the form of a csv file with 42.6K rows and 25 columns. I normalized the data and then stored it in a Postgres database, hosted on Heroku.

The Front End was created using HTML, CSS, Javascript, Bootstrap and some jQuery.

Both the database and the application are hosted on Heroku.

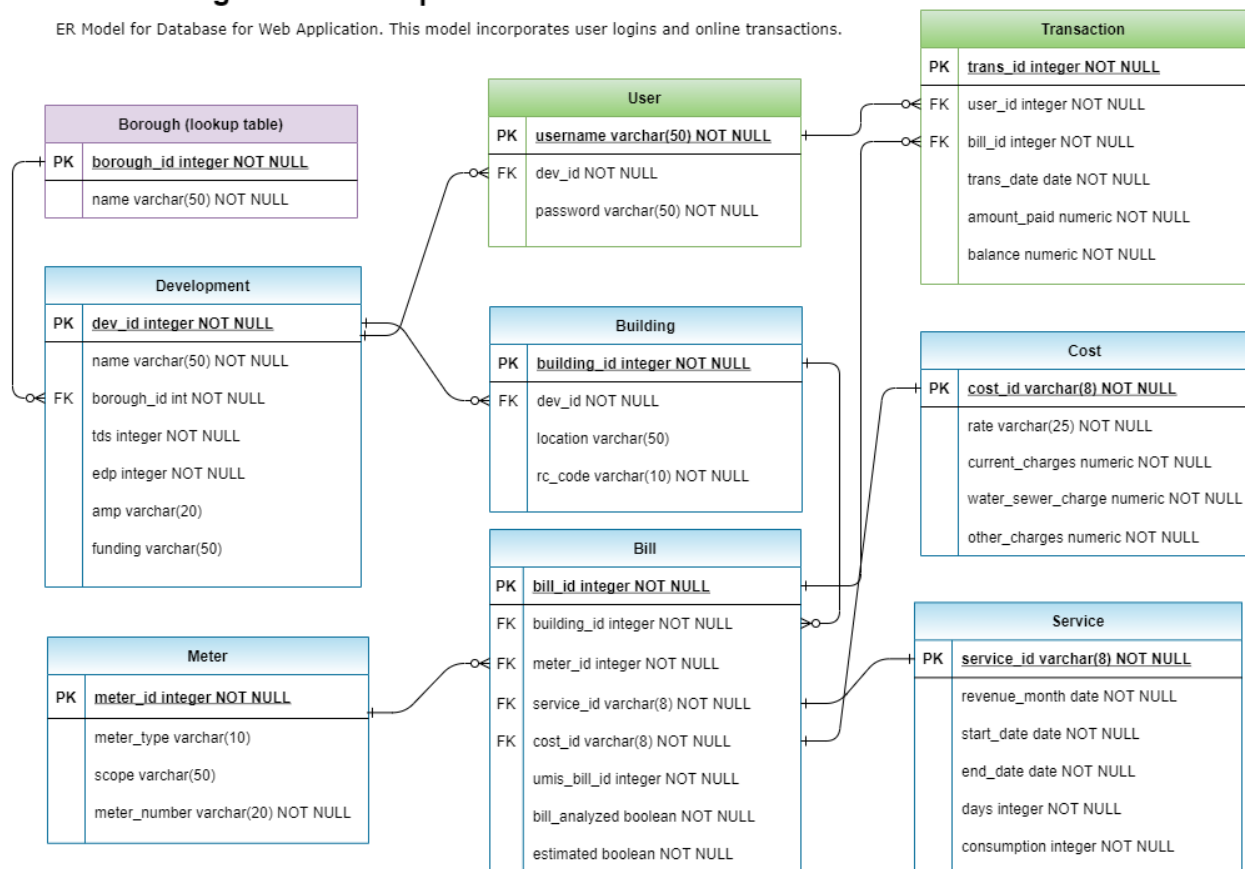
Schemas and ER Diagram

The following tables and attributes (primary key, *foreign key*) are included in this database:

- **Development** (dev_id, name, borough_id, tds, edp, amp, funding)
- **Borough** (borough_id, name)
- **Building** (building_id, dev_id, location, rc_code)
- **Meter** (meter_id, type, scope, meter_number)
- **Service** (service_id, vendor_id, revenue_month, start_date, end_date, days, consumption)
- **Cost** (cost_id, rate_id, current_charges, water_sewer_charge, other_charges)
- **Rate** (rate_id, class)
- **Bill** (bill_id, building_id, meter_id, service_id, cost_id, umis_bill_id, estimated, bill_analyzed)
- **User** (username, dev_id, password)
- **Transaction** (trans_id, user_id, bill_id, trans_date, amount_paid, balance)

Water Charges for Developments

ER Model for Database for Web Application. This model incorporates user logins and online transactions.



Extra Credit: Hosting on Heroku

Both the database and the web application are hosted on Heroku.

How to host a **web application** with a Python backend on Heroku:

1. In your project directory, run `pip freeze > requirements.txt` to gather all the Python dependencies used in the project.
2. Create a file named `Procfile` and add the following content to ensure that Heroku knows what commands it needs to run the application: `web: gunicorn run:app`
3. Create a new repository in Github to upload all your necessary files for the application.
4. Initialize your current directory and the remote branch by running the following git commands:
 - `git init`
 - `git remote add origin addressgoeshere`
5. Use the following commands to add, then commit, then push your files to your repository:
 - `git add .`
 - `git commit -m "Message goes here"`
 - `git push origin master`
6. Create a new application on Heroku.
7. Click on Deploy, and for the deployment method, choose Github.
8. Search for the repository created in the previous steps.
9. Run `heroku git:remote -a yourapplication` to add the Heroku remote to your local repository
10. Now you can deploy to Heroku by simply running `git add`, `git commit`, then `git push heroku master`.

How to provision the **database** on Heroku:

1. In the Overview section of the relevant Heroku app, click on Configure Add-ons then search for Postgres.
2. Select the Heroku Postgres add-on.
3. Click on it to edit.
4. Click on Settings → View Credentials to view all the settings needed to connect to the database.
5. Log in to the database using those settings and create all the necessary tables.
6. In Python, retrieve the database connection string by calling the appropriate environment variable.
For example: `DB_URL = os.environ['NYC_WATER_DATABASE_URL']`
7. Use that URL to configure the app in Python/Flask:
`app.config['SQLALCHEMY_DATABASE_URI'] = DB_URL`
8. Your app can now communicate with your database.
9. Optional: use SQLAlchemy as your ORM to communicate with your database.

```
app = Flask(__name__)  
db = SQLAlchemy(app)  
engine = create_engine(DB_URL)
```