



Bowie State Bank

By Phillip Nguyen and Marisa Ruffin



Requirements

The project our team developed is a banking website. It allows a user to navigate to the sign-in page. If they do not have an account, they are able to navigate to the sign-up page in order to create an account. Once an account has been created, the user is able to navigate back to the sign-in page and log into their bank account. This system has security measures in place to verify correct username, password, and password strength. If the user enters the incorrect information, the system will block the user from logging in, and require them to try again by reentering their username and password. Once the correct information is input, the user will be brought to the homepage of the website. From the homepage, the user is able to view their bank balance, add funds, and withdraw funds. Any information the user adds/changes is updated in our connected MySQL database.

Languages/Tools Used

- HTML
- JavaScript
- CSS
- MySQL
- Heroku

Security Features

- **Account Does Not/Already Exist(s):** When a user creates an account, their email becomes the primary key in the database and is used to verify account status at login. If a user attempts to sign into our website without first creating an account, they will be notified that their username does not exist. The user will not be able to log in, rather, they will remain on the sign-in page, notified that their username does not exist, and given a chance to navigate to the signup page to create an account. If the username already exists in the database, the user will be notified the account already exists and can navigate to the login page to sign in. Once an account is created, only then will the user be able to sign in and access their banking information.
- **Incorrect Password:** After the user has created an account, their username and password are saved in the database table for future verification. At the sign-in page, the user is required to enter their email and password. The email and password entered is then cross referenced with the data stored in the database. If the password does not match the associated email in the table, the login process is blocked, and the user is notified that they've entered the wrong password. The user will remain on the sign in page until they've entered the correct combination of username and password. Once they enter the correct information, only then will the user be able to sign in and access their banking information.
- **BSU Email & Password Strength Requirement:** When a user is creating an account on the sign-up page, they must enter a valid Bowie State Email AND a strong password. The website verifies the domain name of the email matches either "@bowiestate.edu" or "@students.bowiestate.edu". If the email does not match one of those domain names, the user will be notified that the email is not valid and will be asked to try again. Once the user enters a valid email, they must enter a valid password. As the user is entering their password, the website actively notifies them of the password strength. If the user tries to use a password that is not "Strong", they will receive a notification stating, "Please use a strong password". An account will not be created unless the email meets the requirement AND the password meets the strength requirement.
- **Passwords Do Not Match:** When a user is creating an account, they must enter their password twice. The website verifies that both passwords match before creating an account. If the passwords do not match, the user will be notified and asked to retry. An account will not be created unless the passwords match.

Sign-Up Page

If this is the first time a user has visited our website, they will need to navigate to this page. The Sign-Up page is where the user can create an account.

Sign Up | By Code Info

nodejs-cleardb-heroku.herokuapp.com

Blackboard Bulldog Connection Oracle Live SQL SQL Online IDE Chegg Spotify GroupMe BSU Wellness Portal Workday Northrop 00Phillipr/BSUbank... w3schools HTML Selenium

Bowie State University Bank

Sign Up

BSU Email

Password

Confirm Password

By clicking the Sign Up button, you agree to our [Terms and Condition](#) and [Privacy Policy](#)

Already have an account? [Sign In Here](#)

6:37 PM 5/11/2023

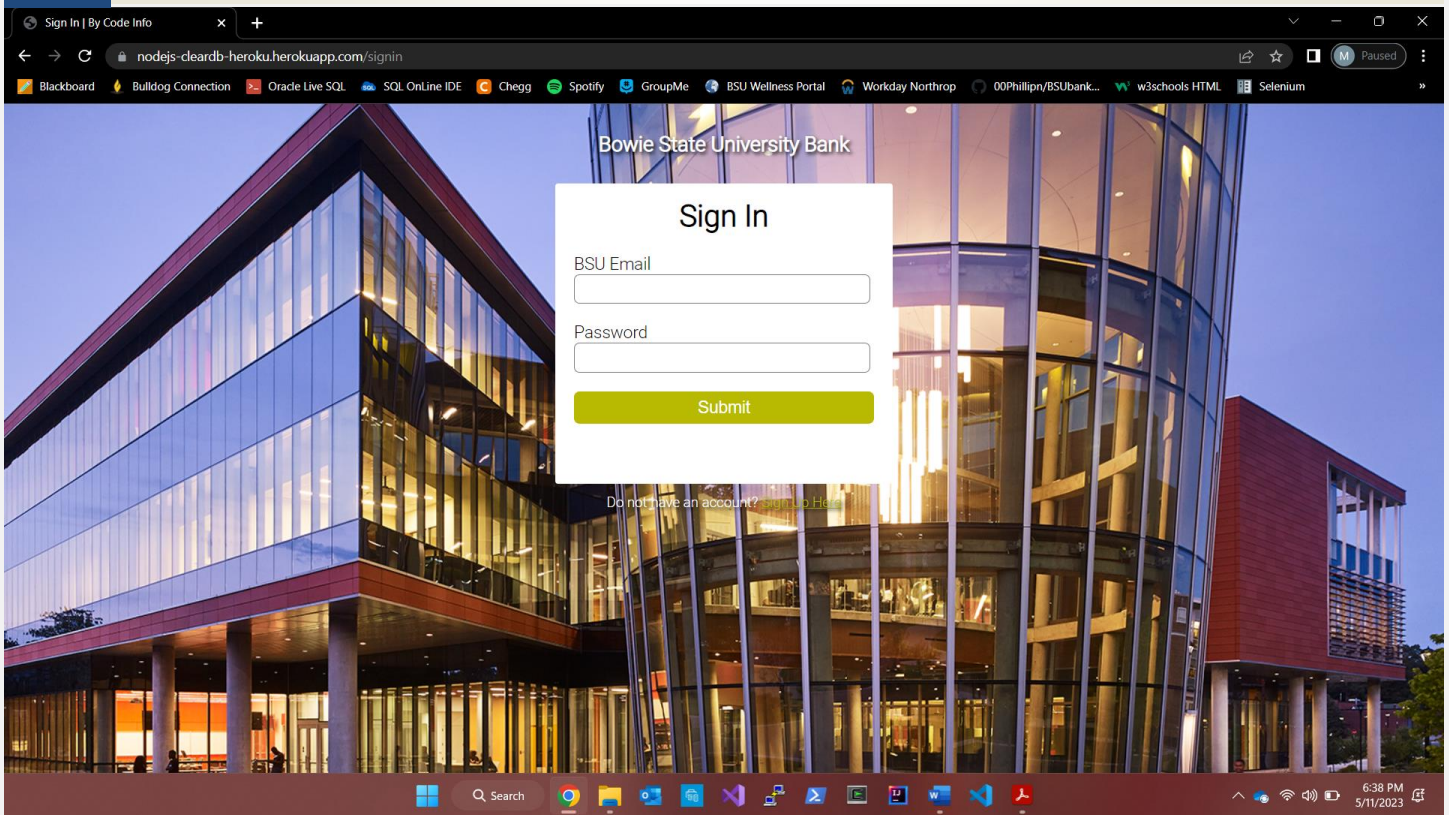
From the sign-up page, the user can create their account by entering a valid email address and a password. The user must enter the password twice and both passwords must match. The email and password also has minimum requirements that must be met before an account can be created. If the user already has an account, they can scroll to the bottom of this page and click the “Sign In” link which will redirect the user to the sign-in page.

Security & Features:

- Password Verification
 - Password Matching
 - Password Strength
- Email Verification
 - BSU Email Domain
- Database Verification
 - Email does not exist in database / Email already exists in database
 - Password matches associated email in database
- Navigation/Ease of Use
 - Already have an account? => switch to sign-in page
 - Press “enter” key to submit

Sign-In Page

If the user has visited our website and created an account already, they can navigate to this page to login. If they have not created an account yet, they can be redirected to the sign-up page by clicking the appropriate link at the bottom of the screen.



From the sign-in page, the user will be able to log into their banking account. The user must have already created an account in order to access a bank account. On this page, the user is required to enter the email and password they used to create their account. The website will verify the email exists in the database. If the email does not exist, the user will be notified and asked to try again. If the user enters the correct email but enters the wrong password, the website will notify the user that the password does not match. The user will be asked to try again. The user will not be able to access their bank account until they enter the correct username and password.

Security & Features:

- Email Verification
 - o Email must be in database
- Password Verification
 - o Password must match the password in the database associated with email
- Navigation/Ease of Use
 - o Don't have an account yet? => switch to sign-up page
 - o Press "enter" key to submit

Homepage Page

Once the user has successfully entered their login information, they will be directed to the homepage of their bank account. From this page, they will be able to view their balance, make a deposit, make a withdrawal and/or sign out.

Home Page of BSU Bank

nodejs-cleardb-heroku.herokuapp.com/signedIn

Blackboard Bulldog Connection Oracle Live SQL SQL OnLine IDE Chegg Spotify GroupMe BSU Wellness Portal Workday Northrop 00Phillipn/BSUbank... w3schools HTML Selenium

BOWIE
STATE UNIVERSITY
Prepare for Life

Welcome test@bowiestate.edu

Bowie State University Bank

SIGN OUT

BANK BALANCE

\$ 10000.00

\$ 0.00

DEPOSIT

\$ 0.00

WITHDRAW

6:39 PM 5/11/2023

From the homepage, the user will be able to view and manipulate their bank balance. If the user wants to make a deposit, they can enter a dollar amount in the appropriate field and click the deposit button. After making a deposit, their bank balance will update and reflect that addition. The balance data stored in the MySQL database will also update. If a user would like to make a withdrawal, they can enter the dollar amount in the appropriate field and click the withdrawal button. If a user tries to make a withdrawal with insufficient funds, the website will notify the user that they do not have enough money in their account. The website will not allow withdrawals with insufficient funds. The user will remain on the homepage, the bank balance will not change, and the user will be allowed to continue making deposits and withdrawals.

Security & Features:

- Bank Balance Verification
 - o Check for insufficient funds when withdrawing money
- Navigation/Ease of Use
 - o Press "enter" key to submit
 - o Sign-out Option

Database - MySQL

We created and connected a MySQL database to our website. This allows us to use and save data live from the user. This ensures that we always have the most recent data and won't lose data.

The screenshots show the MySQL Workbench interface. The left screenshot displays the 'userinfo' table with the following data:

email	password	balance
test@bowiestate.edu	Test!	0

The right screenshot displays the 'userinfo' table with the following data:

email	password	balance
marisa@students.bowiestat...	Test!	9900.00
test@bowiestate.edu	Test!	5.00

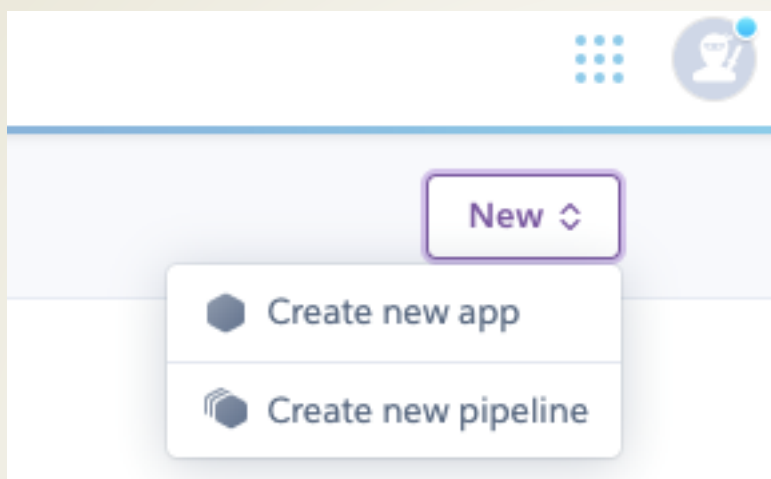
The above screenshots show our database: “bsubank”. The database consists of one table, named “userinfo”. This table has three columns: email, password, and balance. The email and password columns are used for login verification at various locations on our website. The balance column is used for sufficient funds verifications, balance calculations, and balance display. The user is able to manipulate their balance via the homepage after they sign into their account.

Deploying Our Web App using Heroku

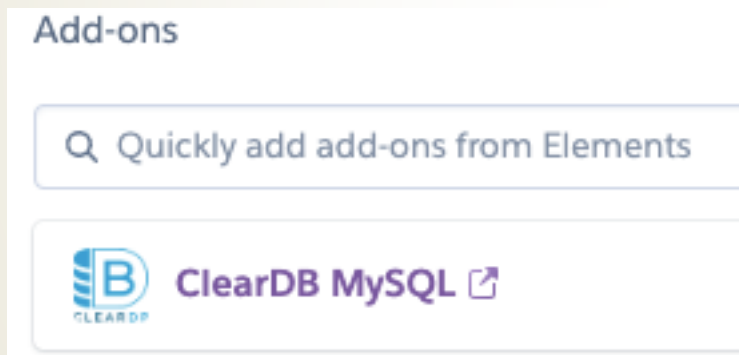
After we had created our front-end and back-end for our web app from using Html, CSS, JavaScript, Nodejs, and MySQL. We had decided to use Heroku (a cloud platform) to deploy our web app to a specific URL on a server.

Steps to Deploy App on Heroku:

1. Transfer all web app files towards a GitHub repository.
2. Click “new” in Heroku and create new app.



3. Go to app and click “resources” and then add “ClearDB MySQL” to the add-ons.



4. Go to “setting” and click “config vars” and copy the text on the far right



Deploying Our Web App using Heroku - Continued

After we had created our front-end and back-end for our web app from using Html, CSS, JavaScript, Nodejs, and MySQL. We had decided to use Heroku (a cloud platform) to deploy our web app to a specific URL on a server.

Steps to Deploy App on Heroku:

5. Parse this piece of text to setup your MySQL database connection settings.

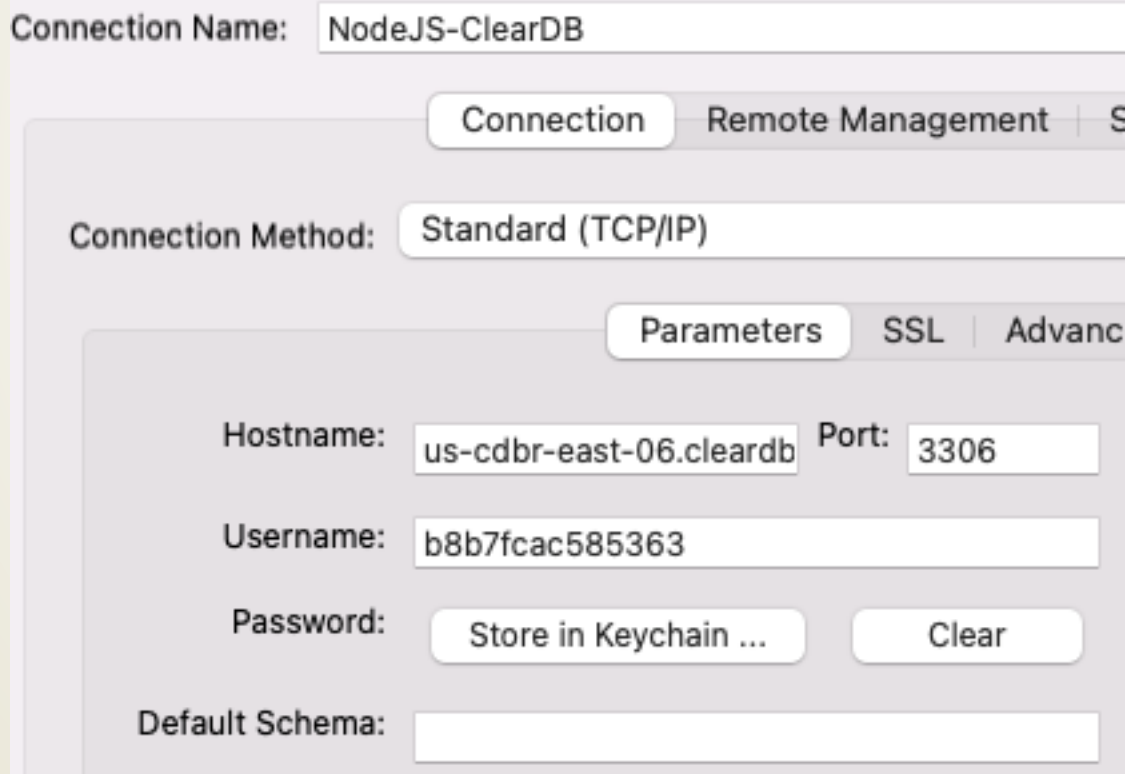
Example: `mysql://b8b7fcac585363:ce79e7fd@us-cdbr-east-06.cleardb.net/heroku_a7325715094d86f?reconnect=true`

Hostname: Copied after @ (Ex: us-cdbr-east-06.cleardb.net)

Username: Copied after // (Ex: b8b7fcac585363)

Password: Copied after : and before @ (Ex: ce79e7fd)

DB Name: Copied after / and before ? (Ex: heroku_a7325715094d86f)



The screenshot shows a database connection configuration window. At the top, the 'Connection Name' is 'NodeJS-ClearDB'. Below this, there are two tabs: 'Connection' (selected) and 'Remote Management'. Under the 'Connection' tab, the 'Connection Method' is 'Standard (TCP/IP)'. Below this, there are four sub-tabs: 'Parameters' (selected), 'SSL', and 'Advanced'. Under the 'Parameters' tab, the 'Hostname' is 'us-cdbr-east-06.cleardb' and the 'Port' is '3306'. The 'Username' is 'b8b7fcac585363'. The 'Password' field has two buttons: 'Store in Keychain ...' and 'Clear'. The 'Default Schema' field is empty.

Connection Name: NodeJS-ClearDB

Connection Method: Standard (TCP/IP)

Parameters SSL Advanced

Hostname: us-cdbr-east-06.cleardb Port: 3306

Username: b8b7fcac585363

Password: Store in Keychain ... Clear

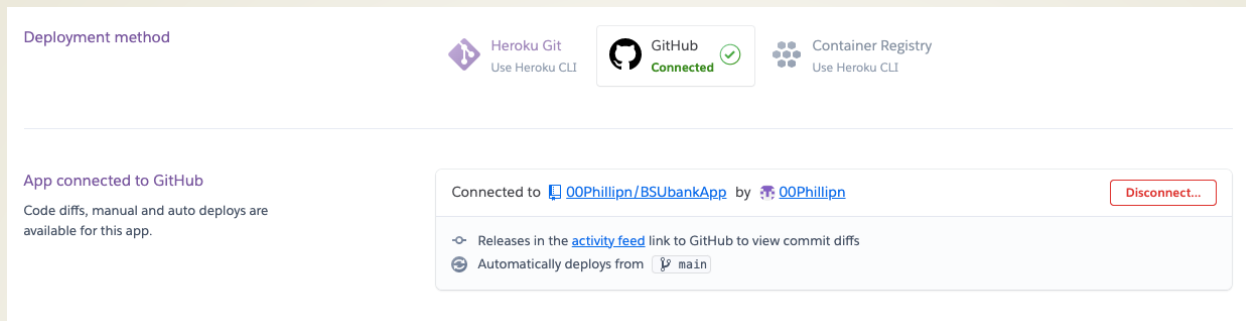
Default Schema:

Deploying Our Web App using Heroku - Continued

After we had created our front-end and back-end for our web app from using Html, CSS, JavaScript, Nodejs, and MySQL. We had decided to use Heroku (a cloud platform) to deploy our web app to a specific URL on a server.

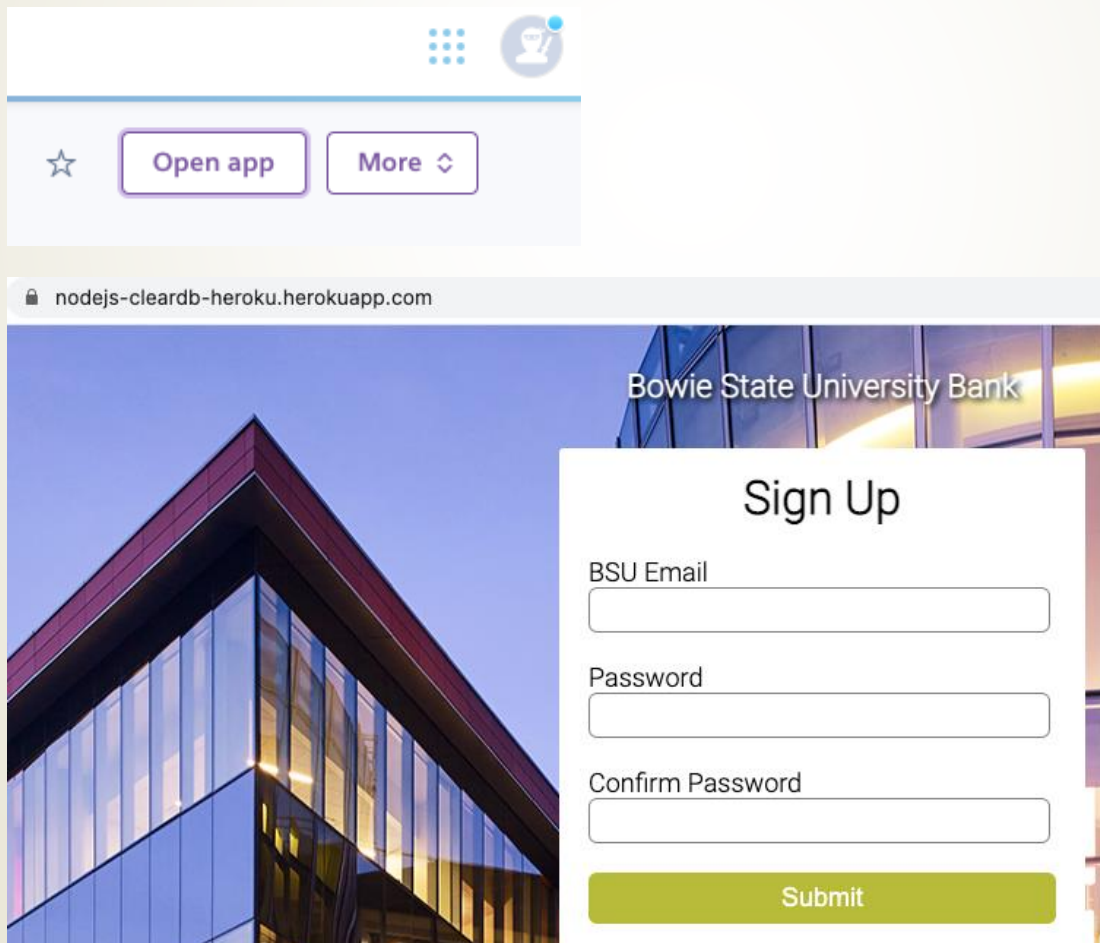
Steps to Deploy App on Heroku:

6. Go back to Heroku app and click “Deploy”, choose GitHub as your Deployment method and choose your repository where you have your web app files at



The screenshot shows the Heroku deployment configuration interface. At the top, under 'Deployment method', three options are listed: 'Heroku Git' (Use Heroku CLI), 'GitHub' (Connected), and 'Container Registry' (Use Heroku CLI). Below this, a section titled 'App connected to GitHub' states: 'Code diffs, manual and auto deploys are available for this app.' To the right, it shows the app is connected to '00Phillipn/BSUbankApp' by '00Phillipn', with a 'Disconnect...' button. Below this, two options are listed: 'Releases in the activity feed link to GitHub to view commit diffs' and 'Automatically deploys from main'.

7. Once successfully connected, you can click “Open App” at the top and this should lead you to your own URL displaying your web app.



The screenshot shows the deployed web application. At the top, there is a navigation bar with a star icon, an 'Open app' button, and a 'More' dropdown menu. Below the navigation bar, the browser address bar shows 'nodejs-clearadb-heroku.herokuapp.com'. The main content area features a background image of a modern building at night. Overlaid on the right side is a 'Sign Up' form for 'Bowie State University Bank'. The form includes three input fields: 'BSU Email', 'Password', and 'Confirm Password', followed by a green 'Submit' button.

Sign-up Page Errors

When a user is creating an account on the sign-up page, they are required to enter a valid BSU email. This email must end in the domain @bowiestate.edu OR @students.bowiestate.edu. If they do not enter a valid email, they will be notified and asked to try again. The sign-up page also verifies that a user enters the correct password. A user is required to enter their password twice. The webpage will verify if the passwords match. If they do not match, the user will be notified and asked to try again. The sign-up page then verifies whether the user has entered a strong enough password. If the password entered is not strong enough, the user will be notified and asked to try again. As the user types the password, the webpage actively gives feedback on password strength. If a user tries to create an account with an email that already exists in the database, an account will not be created, the user will be notified the email already exists, and asked to try again.

Entered a Non-BSU Email:

The screenshot shows a web browser window with the URL `nodejs-cleardb-heroku.herokuapp.com/signup`. The page features a background image of a modern glass building. A white sign-up form is centered on the page. At the top of the form, it says "Sign Up" in bold. Below this, a red error message reads "Please use a BSU email". The form contains three input fields: "BSU Email", "Password", and "Confirm Password". A green "Submit" button is located below the input fields. At the bottom of the form, there is a link to "Terms and Condition" and "Privacy Policy". The browser's taskbar at the bottom shows various application icons and the system clock indicating 6:42 PM on 5/11/2023.

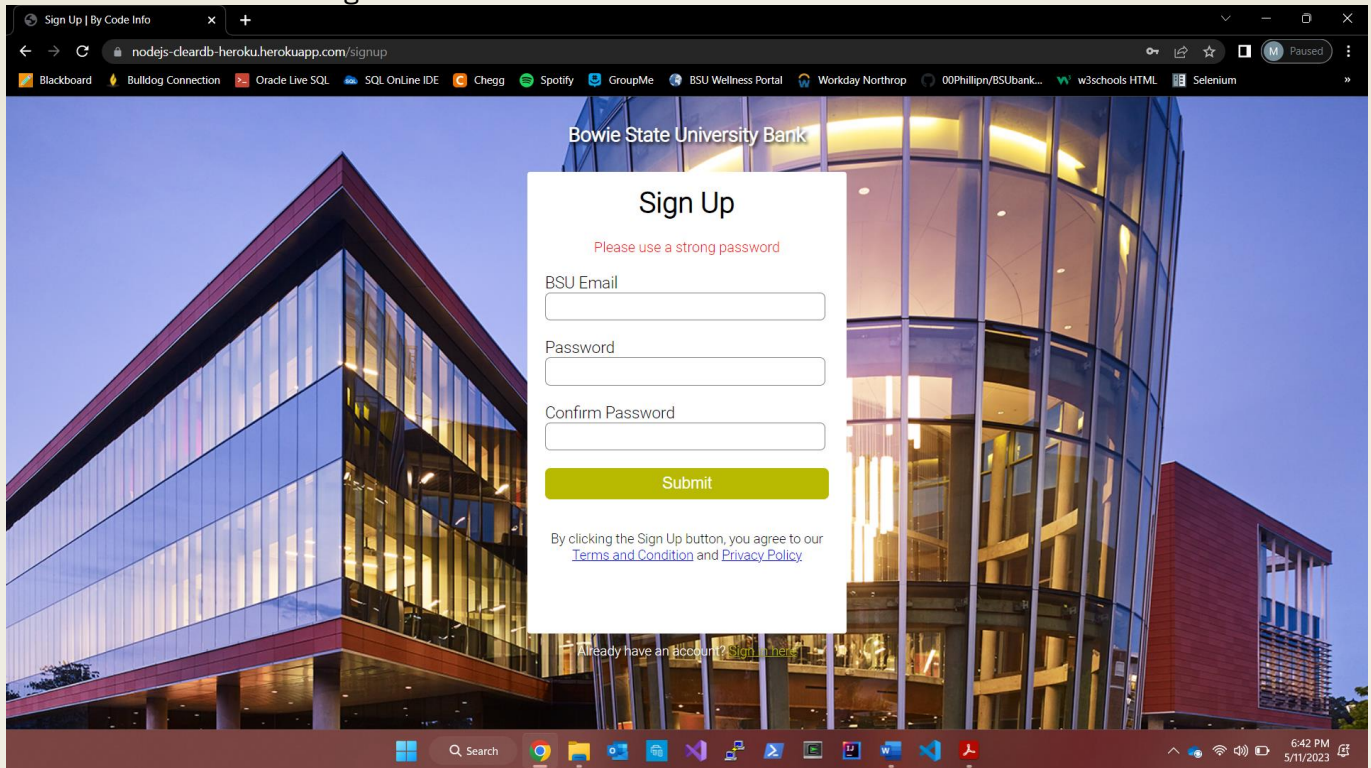
Entered Mismatched Passwords:

This screenshot shows the same sign-up page as the previous one, but with a different error message. The red text now reads "Password and confirm-password do not match". The "BSU Email" field is filled with a placeholder text. The "Password" and "Confirm Password" fields are also filled with placeholder text. The green "Submit" button remains visible. The browser window and taskbar are identical to the previous screenshot.

Sign-up Page Errors – Continued

When a user is creating an account on the sign-up page, they are required to enter a valid BSU email. This email must end in the domain @bowiestate.edu OR @students.bowiestate.edu. If they do not enter a valid email, they will be notified and asked to try again. The sign-up page also verifies that a user enters the correct password. A user is required to enter their password twice. The webpage will verify if the passwords match. If they do not match, the user will be notified and asked to try again. The sign-up page then verifies whether the user has entered a strong enough password. If the password entered is not strong enough, the user will be notified and asked to try again. As the user types the password, the webpage actively gives feedback on password strength. . If a user tries to create an account with an email that already exists in the database, an account will not be created, the user will be notified the email already exists, and asked to try again.

User Did Not Enter a “Strong” Password:

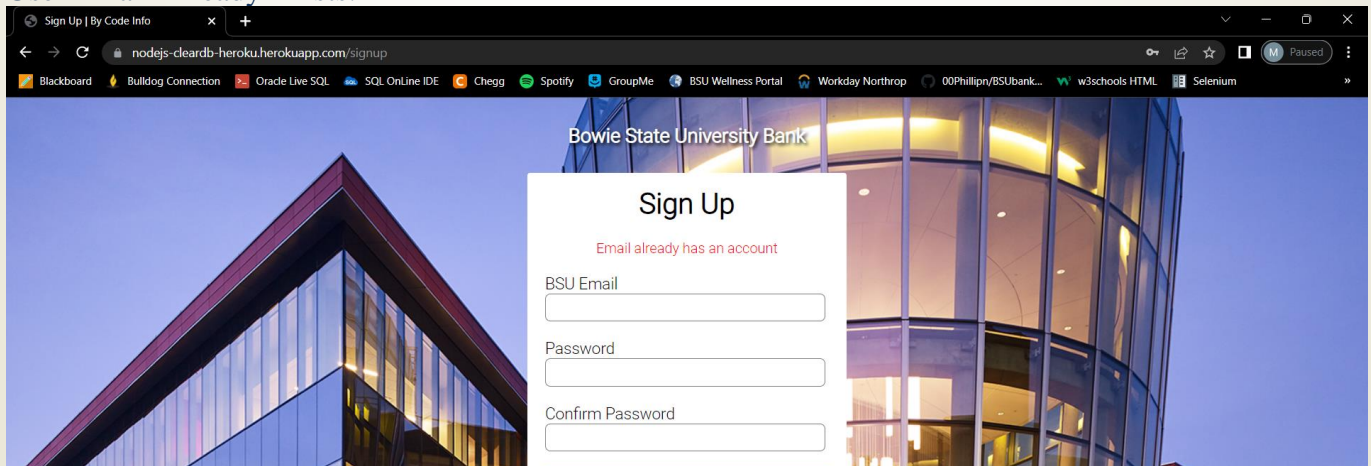


The screenshot shows a web browser window with the URL `nodejs-cleardb-heroku.herokuapp.com/signup`. The page features a background image of a modern glass building at dusk. A white sign-up form is centered on the page. The form has the following elements:

- Header:** "Bowie State University Bank" and "Sign Up".
- Message:** "Please use a strong password" in red text.
- Inputs:** Three text input fields labeled "BSU Email", "Password", and "Confirm Password".
- Button:** A green "Submit" button.
- Footer:** A line of text stating "By clicking the Sign Up button, you agree to our [Terms and Condition](#) and [Privacy Policy](#)".

At the bottom of the browser window, the taskbar shows various application icons and the system clock displays "6:42 PM 5/11/2023".

User Email Already Exists:

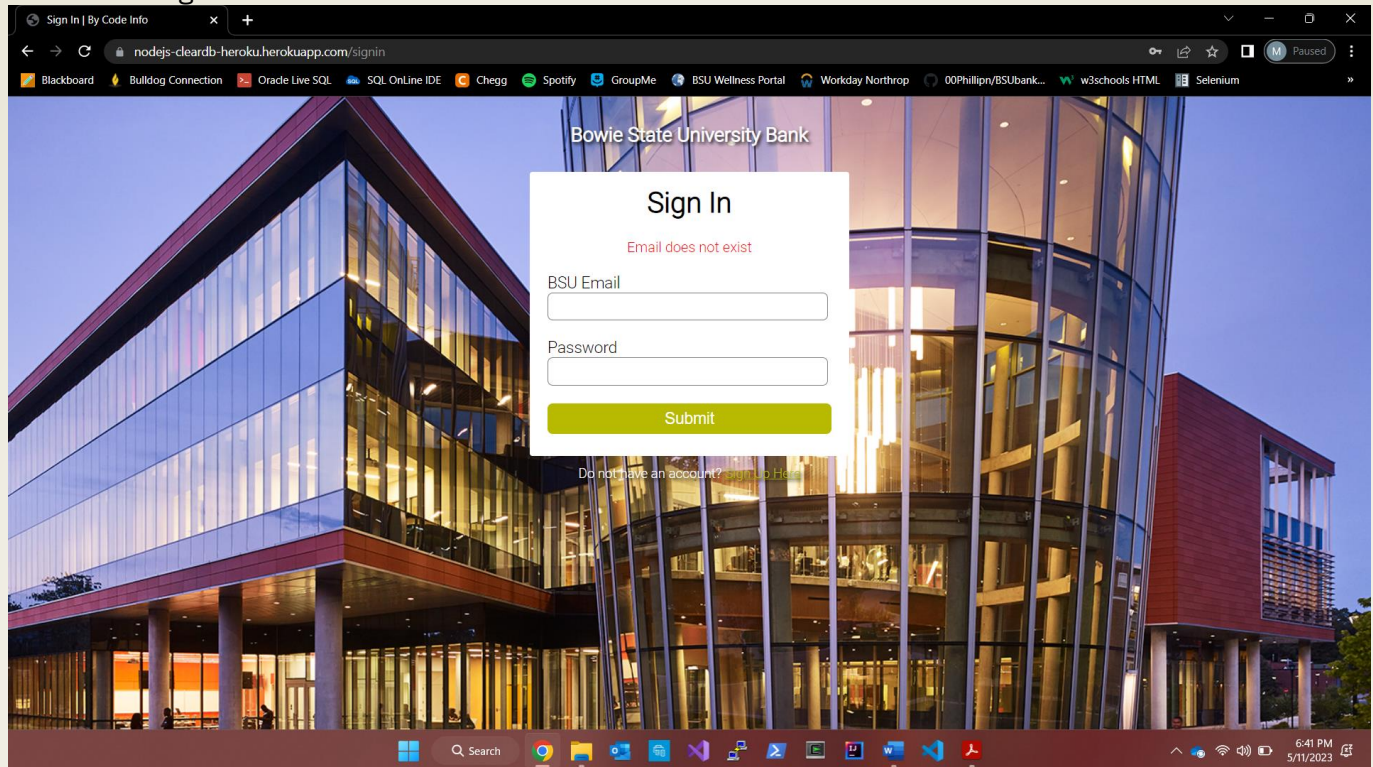


This screenshot is identical to the one above, showing the same sign-up form. However, the error message displayed in red text above the "BSU Email" input field is "Email already has an account".

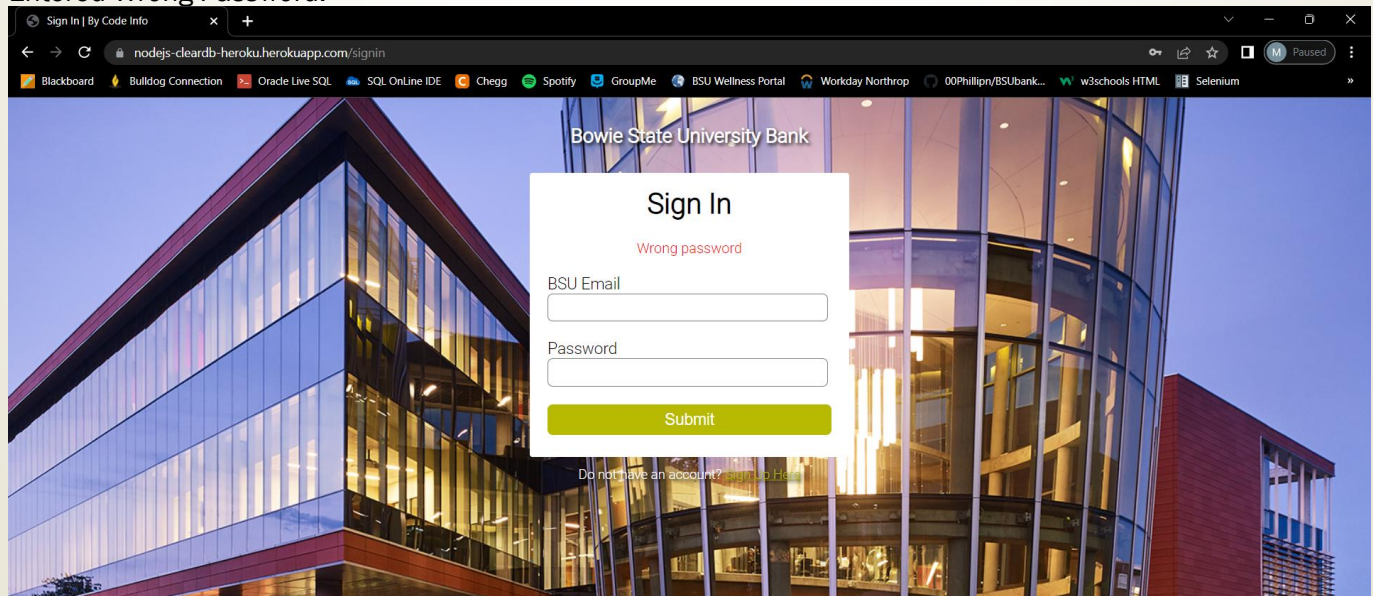
Sign-in Page Errors

After a user has successfully created their account, they will be able to log in via the sign-in page. This page verifies that the username and password exist in the database. If either the username or email do not exist in the database, the user will be notified and asked to try again. If the user enters the incorrect email or password, they will not be granted access to the home page. If the user enters the correct email, a query will be run against the database to determine if the password is correct. Once both the username and the password are verified, only then will the user be granted access to their bank account.

Entered Wrong Email:



Entered Wrong Password:



Bank Account Home Page Errors

After a user has successfully created their account and logged into the system, they will be granted access to their bank account. From this page, they will be able to update their bank account by depositing or withdrawing funds. They can easily view their bank balance once they reach this page. When making withdrawals, the user is only allowed to withdraw money if they have sufficient funds in their account. So, if a user has \$100 in their account and they try to withdraw \$101, they will receive a notification saying their account has insufficient funds. No money will be withdrawn from the account, and the user is free to try again. The user is able to add as many funds to their account as they want. If a user makes any changes to their bank balance, it will be actively updated in MySQL and will also reflect on the bank home page balance. Once the user is done with the banking app, they can sign out by clicking the “sign out” button and they will be returned to the sign in page.

Deposit \$10,000:

The screenshot shows a web browser window with the URL `nodejs-cleardb-heroku.herokuapp.com/signedin`. The page header includes the Bowie State University logo on the left and a yellow banner on the right with the text **Bowie State University Bank** and Welcome test@bowiestate.edu. Below the banner, there are four yellow buttons: **SIGN OUT**, **BANK BALANCE**, **DEPOSIT**, and **WITHDRAW**. Under the **BANK BALANCE** button, there is a text input field showing \$ 10000.00. Under the **DEPOSIT** button, there is a text input field showing \$ 0.00. Under the **WITHDRAW** button, there is a text input field showing \$ 0.00. The Windows taskbar at the bottom shows the time as 6:39 PM on 5/11/2023.

Withdraw \$100:

The screenshot shows the same web browser window as the previous one, but the balance has changed. The **BANK BALANCE** button now shows \$ 9900.00. The **DEPOSIT** button still shows \$ 0.00, and the **WITHDRAW** button still shows \$ 0.00. The rest of the page layout, including the logo and welcome message, remains the same.

Bank Account Home Page Errors

After a user has successfully created their account and logged into the system, they will be granted access to their bank account. From this page, they will be able to update their bank account by depositing or withdrawing funds. They can easily view their bank balance once they reach this page. When making withdrawals, the user is only allowed to withdraw money if they have sufficient funds in their account. So, if a user has \$100 in their account and they try to withdraw \$101, they will receive a notification saying their account has insufficient funds. No money will be withdrawn from the account, and the user is free to try again. The user is able to add as many funds to their account as they want. If a user makes any changes to their bank balance, it will be actively updated in MySQL and will also reflect on the bank home page balance. Once the user is done with the banking app, they can sign out by clicking the “sign out” button and they will be returned to the sign in page.

Insufficient Funds:

The screenshot shows a web browser window with the URL `nodejs-cleardb-heroku.herokuapp.com/signedIn`. The page header includes the Bowie State University logo on the left and a welcome message `Welcome test@bowiestate.edu` on the right. The main content area has a yellow background with the text `Your account does not have enough balance to withdraw that amount`. Below this, there are four yellow buttons: `SIGN OUT`, `BANK BALANCE`, `DEPOSIT`, and `WITHDRAW`. Each button is followed by a text input field. The `BANK BALANCE` field shows `$ 9900.00`. The `DEPOSIT` field shows `$ 0.00`. The `WITHDRAW` field shows `$ 0.00`. The browser's address bar and taskbar are visible at the bottom.

Home Page of BSU Bank

nodejs-cleardb-heroku.herokuapp.com/signedIn

Blackboard Bulldog Connection Oracle Live SQL SQL OnLine IDE Chegg Spotify GroupMe BSU Wellness Portal Workday Northrop 00Phillipn/BSUbank... w3schools HTML Selenium

BOWIE
STATE UNIVERSITY
Prepare for Life

Bowie State University Bank

Welcome test@bowiestate.edu

Your account does not have enough balance to withdraw that amount

SIGN OUT

BANK BALANCE

\$ 9900.00

DEPOSIT

\$ 0.00

WITHDRAW

6:40 PM 5/11/2023