

ELECTRA

Ardent Computech Computer science & Technology

❖ Created by :-

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INTRODUCTION

Electra is a state-of-the-art election management system designed for the Election Commission, utilizing the MERN stack—MongoDB, Express.js, React, and Node.js—to deliver a robust, scalable, and user-friendly platform. This application empowers voters with seamless registration, online voting, and e-Voter Card (E-EPIC) downloads, while providing administrators with robust tools to manage candidates, voter lists, and election results. By leveraging these modern web technologies, Electra streamlines voter registration, polling, real-time analytics, and secure authentication processes, ensuring transparency, efficiency, and security in all electoral operations.

OBJECTIVES

- ✓ **Secure Voter Registration System**
- ✓ **Candidate Management System**
- ✓ **Election Management System**
- ✓ **Secure Online Voting System**
- ✓ **Results and Analytics Module**
- ✓ **Provide real-time results and analytics**
- ✓ **Ensure scalability and reliability**



ADVANCED FEATURES



1. **Online Voting:** A secure digital interface allowing voters to cast votes remotely with real-time validation.
2. **E-Voter Card (E-EPIC) Download:** Generation and download of personalized PDF voter IDs, complete with photos and dynamic data, enhancing accessibility.
3. **JWT Authentication:** Robust JSON Web Token-based security to ensure protected access for voters and administrators.
4. **Responsive Design:** A fully adaptive user interface compatible across desktops, iOS, and Android apps for seamless access.
5. **Real-Time Election Results:** Instant updates on vote counts and outcomes, providing transparency and immediacy.
6. **Admin Dashboard:** A comprehensive control panel for administrators to manage voters, candidates, and election settings efficiently.

UNIQUE FEATURES

Real-Time Election Results: Instantaneous updates on vote counts and outcomes, ensuring transparency and immediate public awareness.

Voter Education Module: An interactive guide providing step-by-step assistance on registration, voting, and E-EPIC downloads to empower users.

Customizable E-EPIC: Personalized e-Voter Cards with voter photos and dynamic data, offering a tailored digital identity solution.

Multi-Level Access Control: Differentiated roles for voters and administrators, ensuring secure and role-specific functionalities.

Integration with X: Real-time sentiment analysis from the X platform to monitor public opinion and enhance election campaign strategies.

Automated Voter Verification: Advanced validation using voter IDs and biometrics (if integrated) to prevent fraud and ensure eligibility



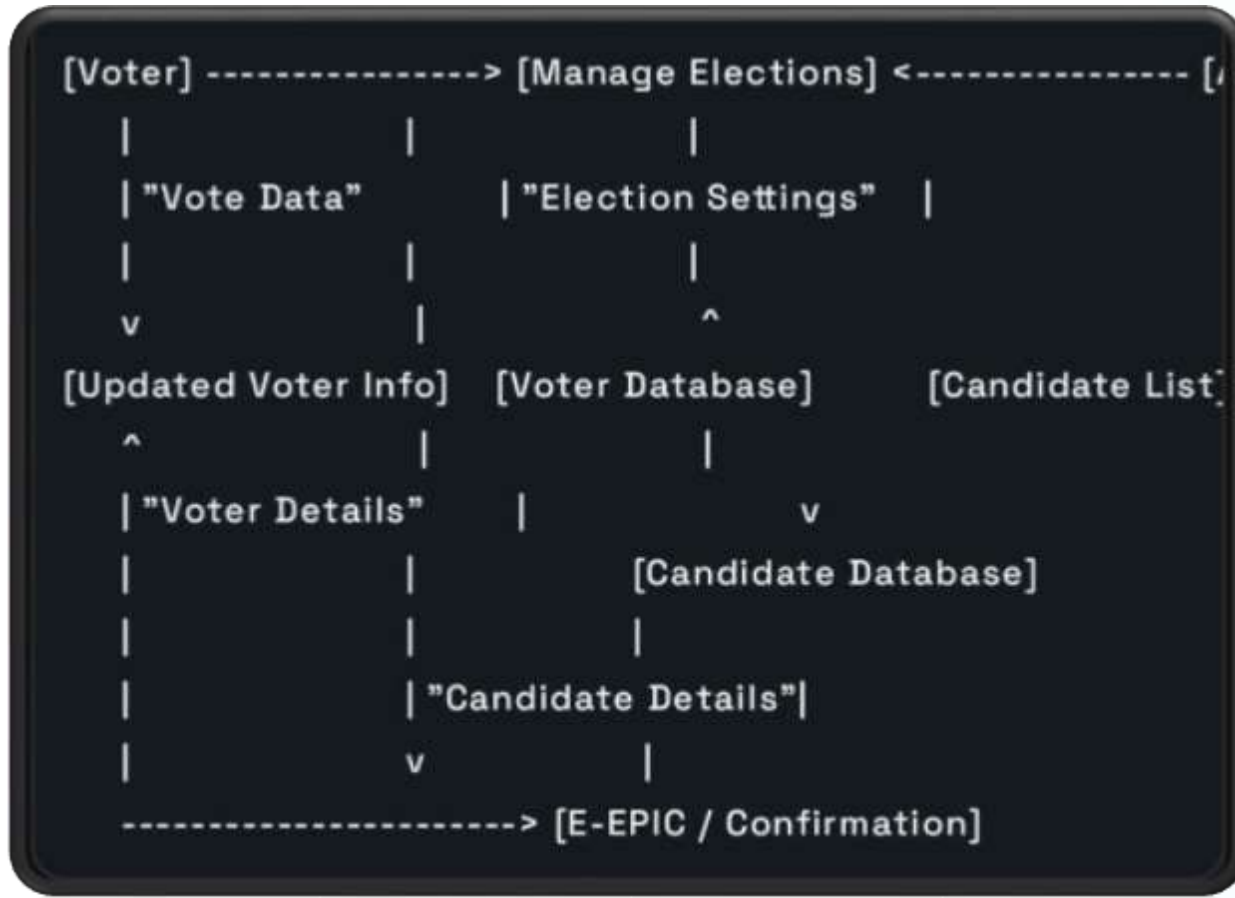
SCHEMA DIAGRAM

```
[Voter]
| voterId (PK)
| name
| age
| city
| gender
| Image (optional)
| password
|
| 1:N
v
[Vote]
| voteId (PK)
| voterId (FK)
| candidateId (FK)
| electionId (FK)
| votedAt
|
| 1:N
[Candidate] <----- 1:N ---- [Election]
| candidateId (PK) | electionId (PK)
| fullName | name
| party | date
| constituency
| electionId (FK)
```

```
| electionId (FK)
| constituency
| date | name
```



LEVEL 0 DFD STRUCTURE



SEQUENCE DIAGRAM

```
sequenceDiagram
    participant Voter
    participant System
    participant Database

    Voter->>System: ---Login Request--->
    activate System
    System->>Database: ----Verify Credentials---->
    activate Database
    Database-->>System: <---Response (Success/Failure)-->
    deactivate Database
    System-->>Voter: <---Login Status--->
    deactivate System
    Voter->>System: ---Cast Vote--->
    activate System
    System->>Database: ----Store Vote---->
    activate Database
    Database-->>System: <---Confirmation-->
    deactivate Database
    System-->>Voter: <---Vote Confirmation--->
    deactivate System
```



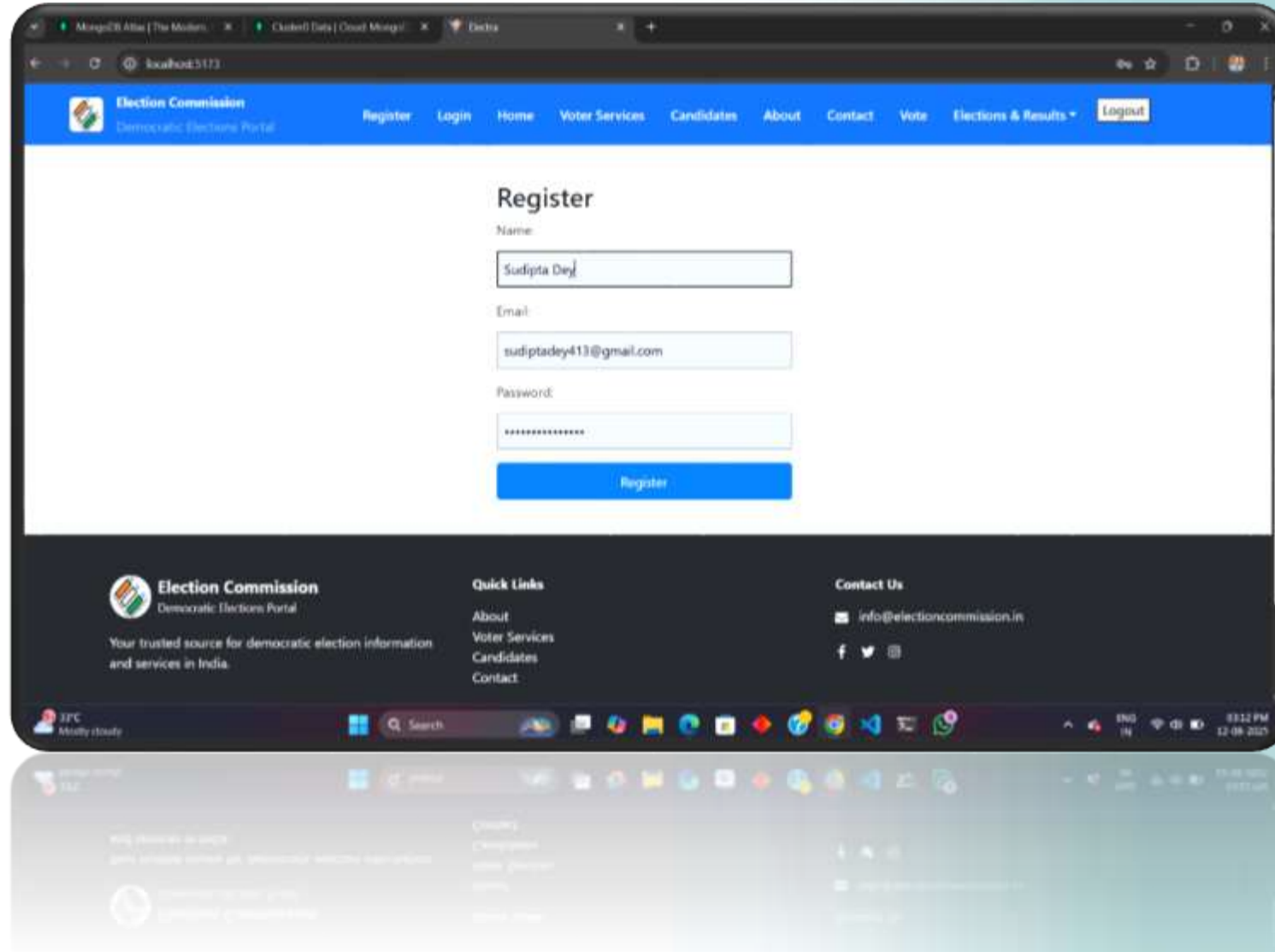
USE CASE DIAGRAM

[Voter]	[Admin]
---Register Voter	
	---Manage Candidates
---Cast Vote	
	---View Results
---Download E-EPIC	
[System]	

[System]



REGISTRATION PAGE



The image shows a web browser window displaying the registration page of the Election Commission of India. The browser's address bar shows the URL "localhost:5173". The page has a blue header with the Election Commission logo and navigation links: Register, Login, Home, Voter Services, Candidates, About, Contact, Vote, Elections & Results, and a Logout button. The main content area is titled "Register" and contains three input fields: "Name" (filled with "Sudipta Dey"), "Email" (filled with "sudiptadey413@gmail.com"), and "Password" (filled with "*****"). A blue "Register" button is positioned below the password field. The footer is dark blue and includes the Election Commission logo, a tagline "Your trusted source for democratic election information and services in India.", "Quick Links" (About, Voter Services, Candidates, Contact), and "Contact Us" (info@electioncommission.in, social media icons). The Windows taskbar at the bottom shows the date and time as 12:12 PM on 12-08-2025.

Election Commission
Democratic Elections Portal

[Register](#) [Login](#) [Home](#) [Voter Services](#) [Candidates](#) [About](#) [Contact](#) [Vote](#) [Elections & Results](#) [Logout](#)

Register

Name:

Email:

Password:

[Register](#)

Election Commission
Democratic Elections Portal

Your trusted source for democratic election information and services in India.

Quick Links

- [About](#)
- [Voter Services](#)
- [Candidates](#)
- [Contact](#)

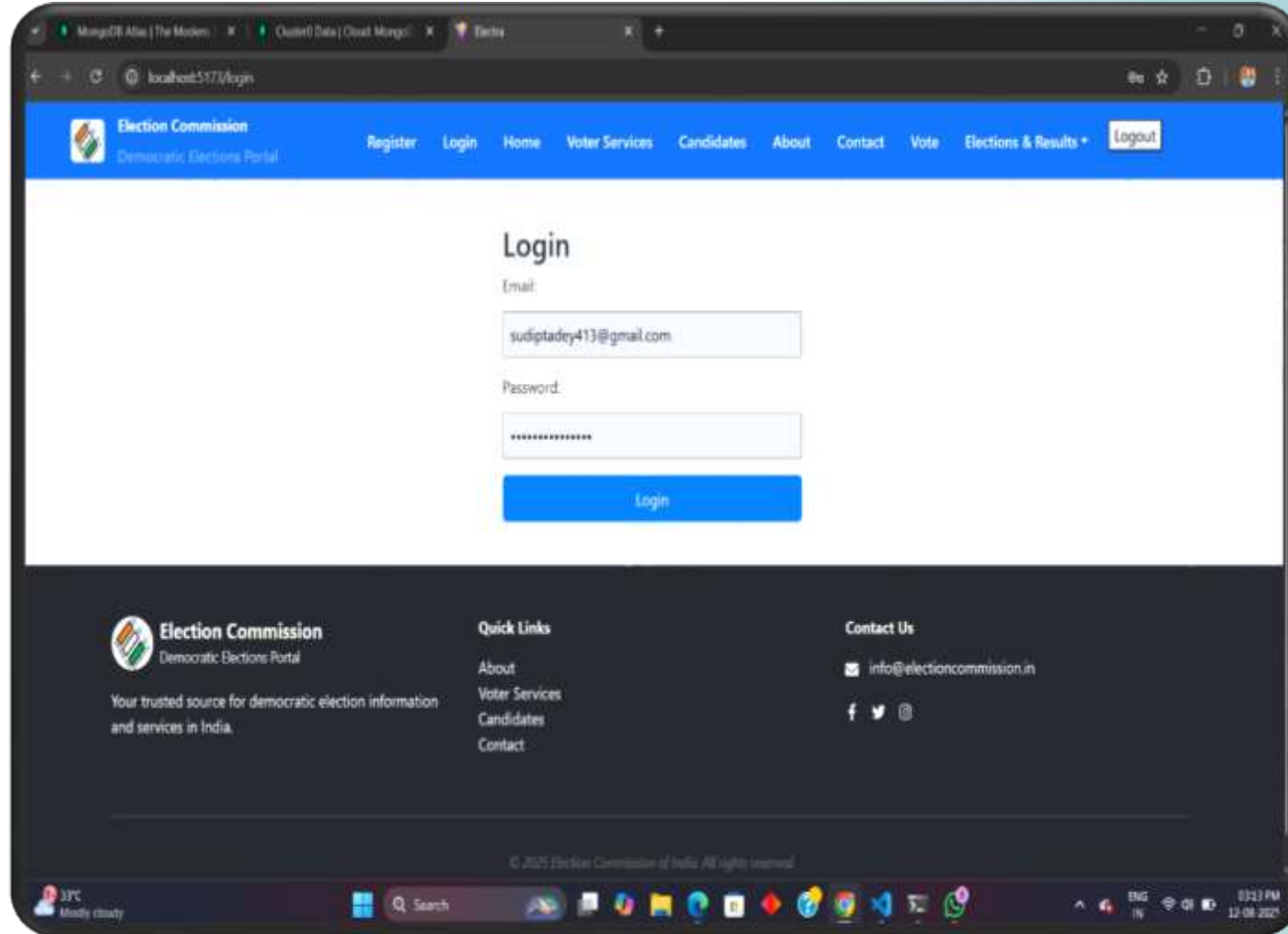
Contact Us

info@electioncommission.in

[f](#) [t](#) [i](#)

32°C Mostly cloudy 12:12 PM 12-08-2025

LOGIN PAGE



The image shows a web browser window displaying the login page of the Election Commission of India. The browser has three tabs: 'MongoDB Atlas | The Modern...', 'Cluster0 Data | Cloud Mongo...', and 'Electra'. The address bar shows 'localhost:5173/login'. The page has a blue header with the 'Election Commission' logo and the text 'Democratic Elections Portal'. The header also contains navigation links: 'Register', 'Login', 'Home', 'Voter Services', 'Candidates', 'About', 'Contact', 'Vote', 'Elections & Results', and a 'Logout' button. The main content area is white and features a 'Login' heading. Below the heading are two input fields: 'Email' with the value 'sudiptadey413@gmail.com' and 'Password' with masked characters. A blue 'Login' button is positioned below the password field. The footer is dark blue and contains the 'Election Commission' logo, the text 'Democratic Elections Portal', and the tagline 'Your trusted source for democratic election information and services in India.' It also includes 'Quick Links' (About, Voter Services, Candidates, Contact) and 'Contact Us' (info@electioncommission.in, social media icons). The bottom of the browser window shows a Windows taskbar with a search bar, various application icons, and system information: '33°C Mostly cloudy', 'ENG IN', and '03:23 PM 12-08-2024'.

Election Commission
Democratic Elections Portal

Register Login Home Voter Services Candidates About Contact Vote Elections & Results Logout

Login

Email:

sudiptadey413@gmail.com

Password:

Login

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Your trusted source for democratic election information and services in India.

Quick Links

- About
- Voter Services
- Candidates
- Contact

Contact Us

info@electioncommission.in

f t i

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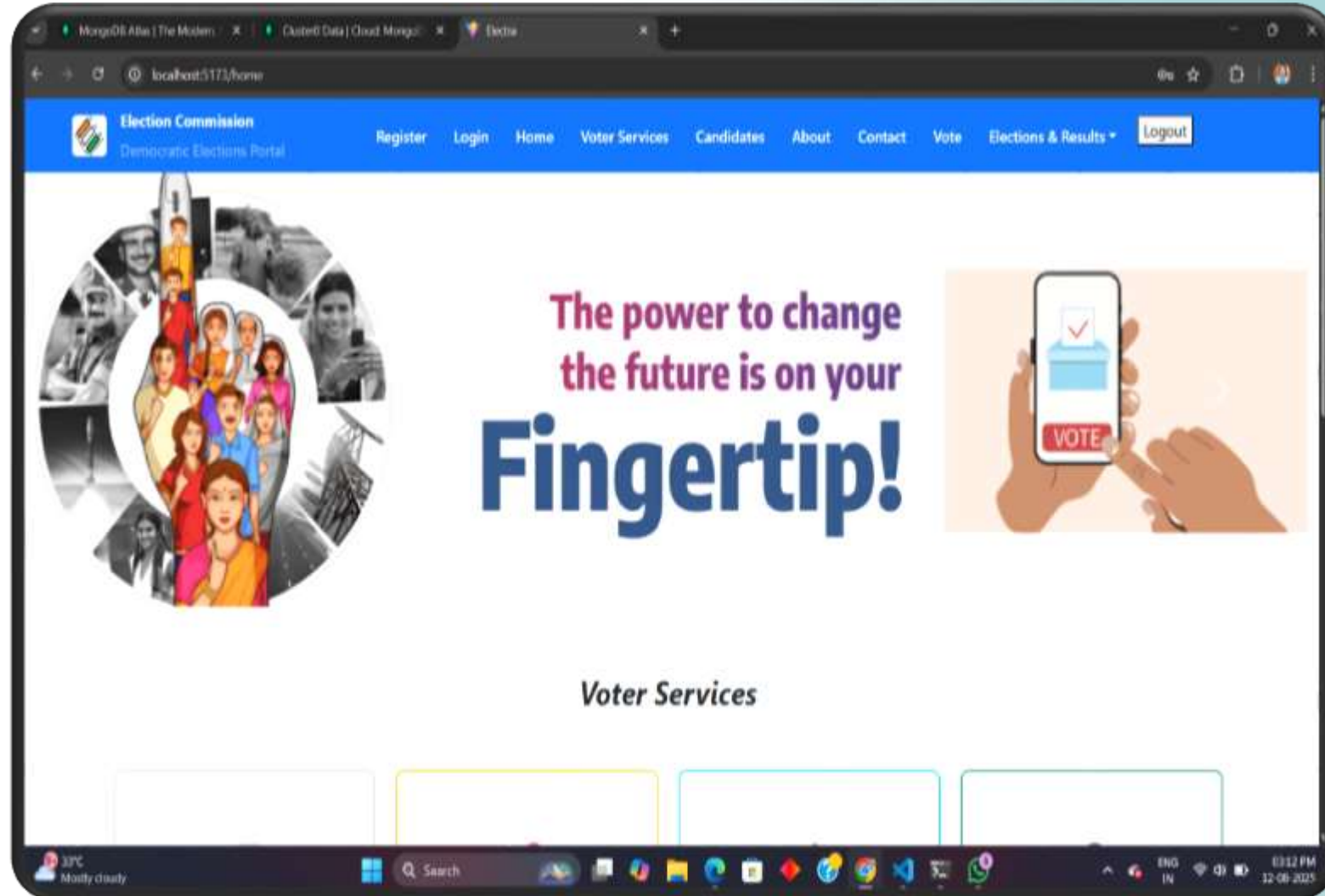
33°C Mostly cloudy

Search

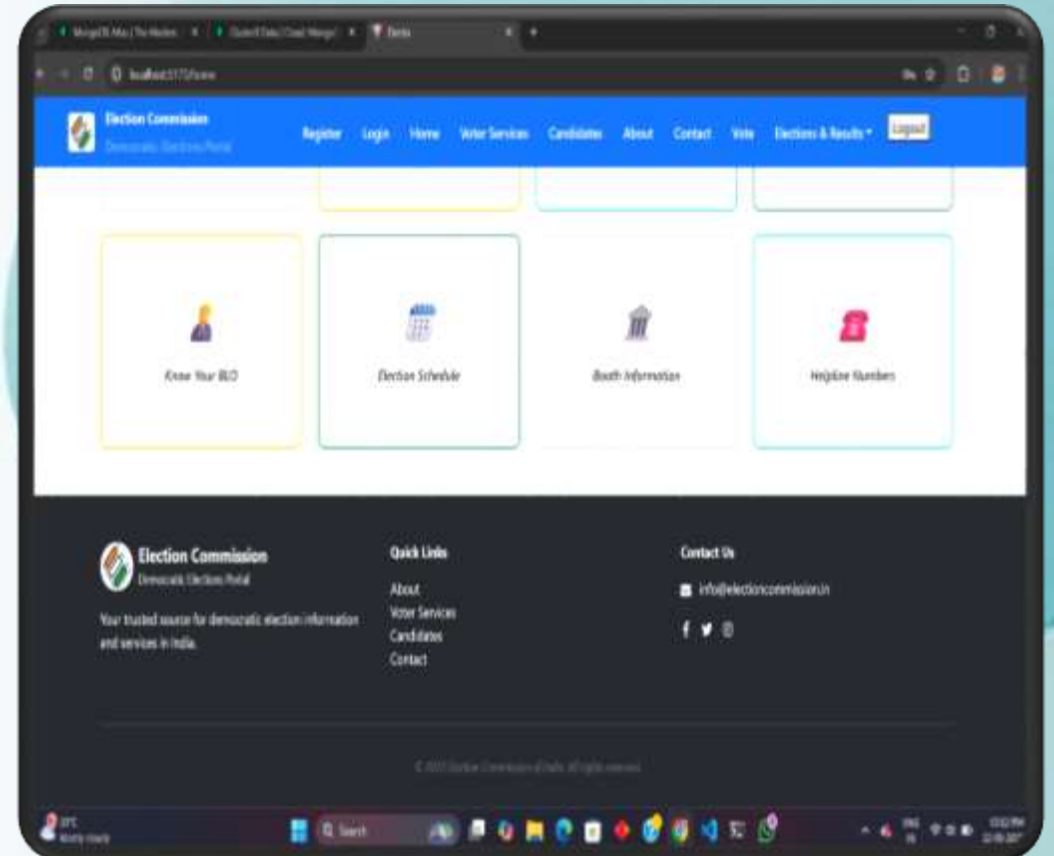
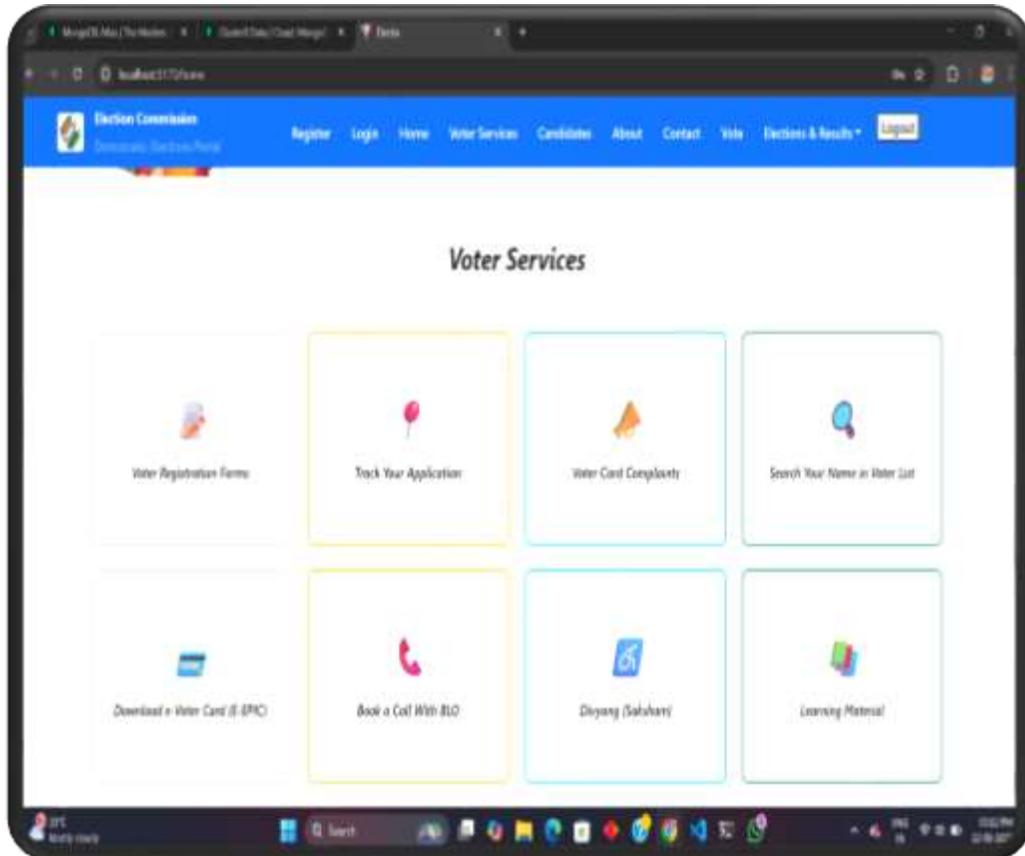
ENG IN

03:23 PM 12-08-2024

HOME PAGE



VOTER SERVICE



VOTER REGISTRATION FORM

Election Commission
Democratic Elections Portal

Register Login Home Voter Services Candidates About Contact Vote Elections & Results Logout

Voter Registration Form

Full Name	Date of Birth
Sudipta Dey	02-04-2005
Gender	Mobile Number
Female	8170842477
Email	Voter ID
sudiptadey413@gmail.com	VOTE20089
Aadhar Number	
2025 8009 3570	
Address	
Baidyapur, Purba Bardhaman	
State	District
West Bengal	Purba Bardhaman
Upload Photo	

SEARCH NAME IN VOTER LIST

The screenshot displays the 'Election Commission' website's 'Voter Search' interface. The header includes navigation links: Register, Login, Home, Voter Services, Candidates, About, Contact, Vote, Elections & Results, and a Logout button. The main section features a 'Voter Search' heading with a magnifying glass icon. Below this, there are three input fields: 'Full Name' (Sudipta Dey), 'Voter ID' (VOTE20089), and 'Mobile Number' (8170842477). A blue 'Search' button is positioned below these fields. The 'Search Results' section contains a table with the following data:

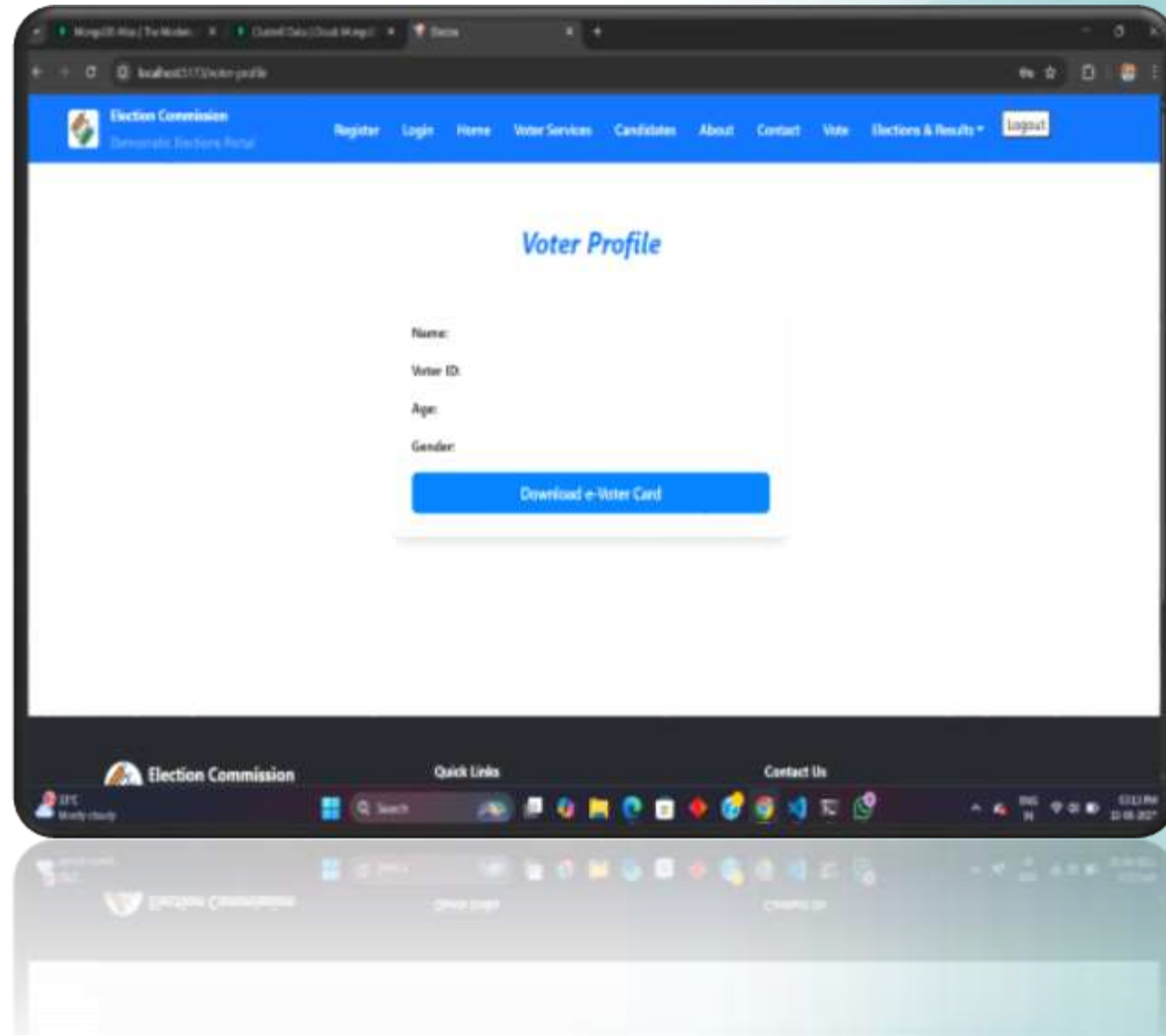
FULL NAME	VOTER ID	AADHAR NO	MOBILE	DATE OF BIRTH
Sudipta Dey	VOTE20089	2025 8009 3570	8170842477	4/2/2005

The footer of the page includes the 'Election Commission' logo, 'Quick Links', and 'Contact Us' sections. The Windows taskbar at the bottom shows the system time as 3:30 PM on 12-08-2023.

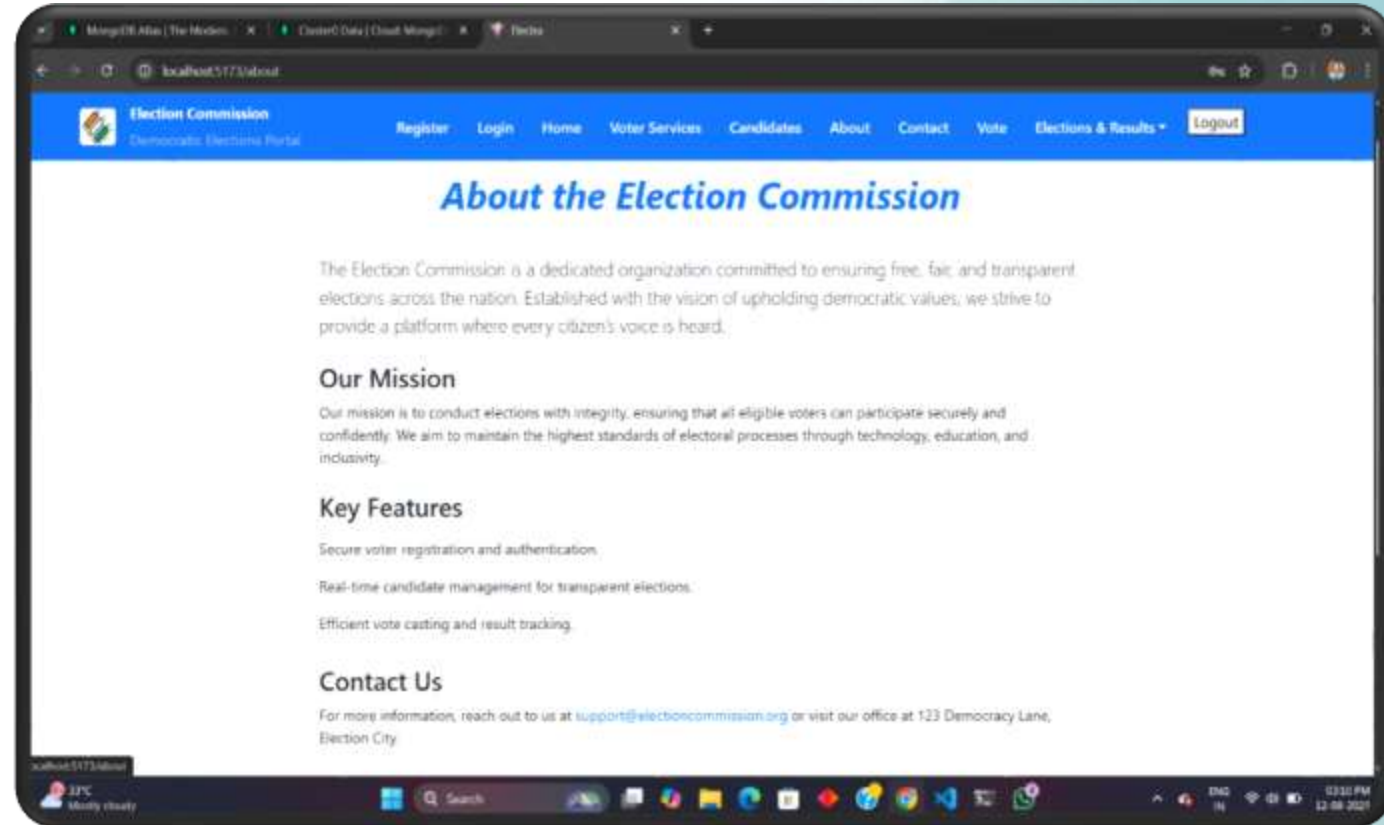
TRACK APPLICATION

The screenshot displays a web browser window with the URL `localhost:5173/track-application`. The browser's tab bar shows three open tabs: 'MongoDB Atlas | The Modern...', 'Cluster0 Data | Cloud Mongo...', and 'Devika'. The website's header is blue and features the Election Commission logo, the text 'Election Commission Democratic Elections Portal', and a navigation menu with links: Register, Login, Home, Voter Services, Candidates, About, Contact, Vote, Elections & Results, and a Logout button. The main content area is white and titled 'Track Application Status'. It contains three input fields: 'Application ID' with the placeholder 'Enter Application ID', 'Voter ID' with the placeholder 'Enter Voter ID', and 'Mobile Number' with the placeholder 'Enter Mobile Number'. Below these fields is a blue 'Search' button. A message 'No applications found.' is displayed below the search button. The footer is dark blue and includes the Election Commission logo, the text 'Election Commission Democratic Elections Portal', the tagline 'Your trusted source for democratic election information and services in India.', a 'Quick Links' section with links to About, Voter Services, Candidates, and Contact, and a 'Contact Us' section with the email 'info@electioncommission.in' and social media icons for Facebook, Twitter, and Instagram. The Windows taskbar at the bottom shows the system clock as 03:12 PM on 12-09-2023, along with weather information (33°C, Mostly cloudy) and various application icons.

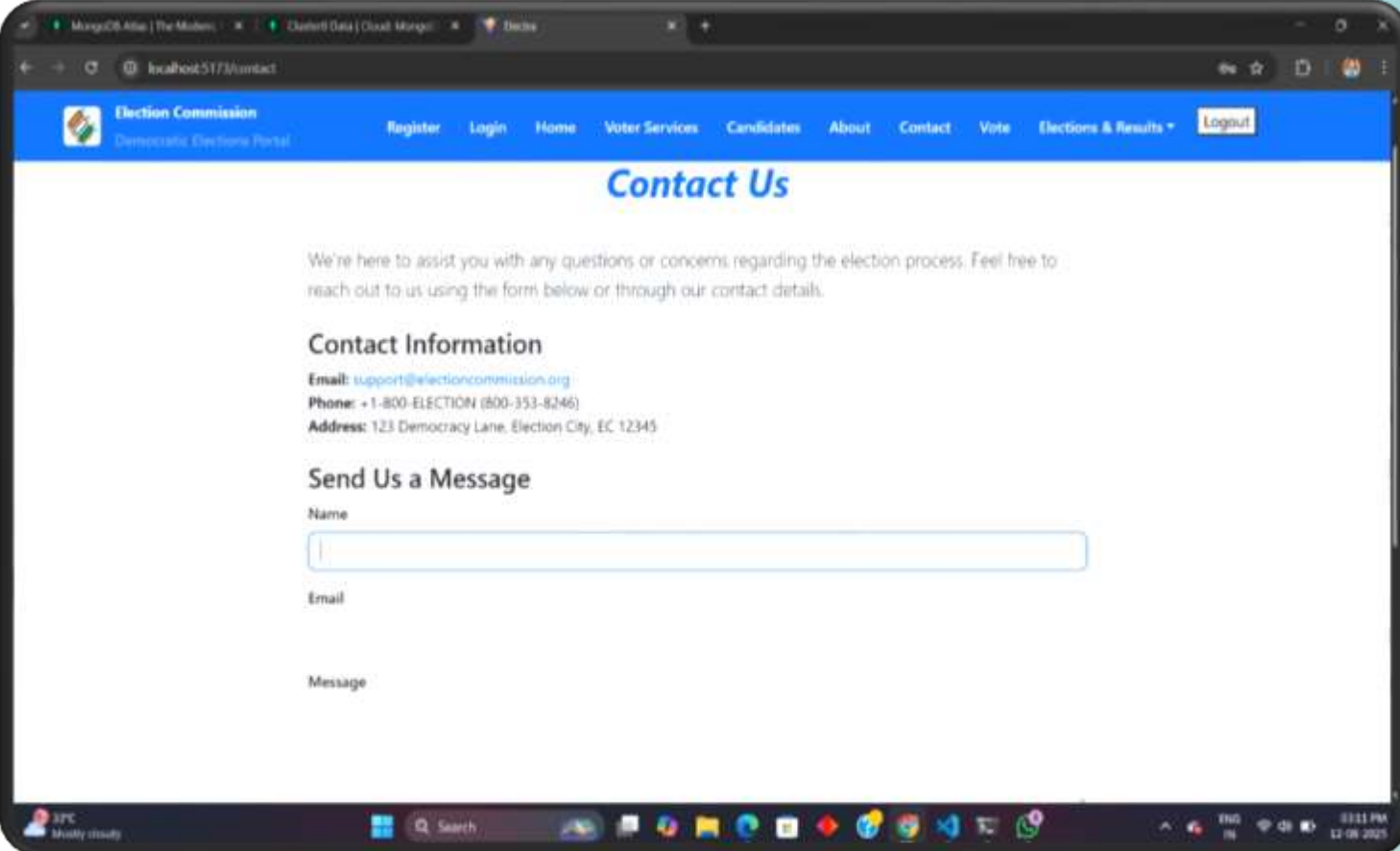
DOWNLOAD E-VOTER CARD (E-EPIC)



ABOUT



CONTACT



The screenshot displays a web browser window with the URL `localhost:5173/contact`. The page is titled "Election Commission" and "Democratic Elections Portal". The navigation bar includes links for Register, Login, Home, Voter Services, Candidates, About, Contact, Vote, Elections & Results, and a Logout button. The main content area is titled "Contact Us" and contains the following text:

We're here to assist you with any questions or concerns regarding the election process. Feel free to reach out to us using the form below or through our contact details.

Contact Information

Email: support@electioncommission.org
Phone: +1-800-ELECTION (800-353-8246)
Address: 123 Democracy Lane, Election City, EC 12345

Send Us a Message

Name

Email

Message

The browser's taskbar at the bottom shows the system clock as 11:11 PM on 12/06/2023, along with various application icons and system status indicators.

CANDIDATES

The screenshot shows a web browser window with the URL `localhost:5173/candidates`. The page has a blue header with the "Election Commission" logo and navigation links: Register, Login, Home, Voter Services, Candidates, About, Contact, Vote, Elections & Results, and a Logout button. The main content area is titled "MANAGE CANDIDATES" and contains a form titled "ADD NEW CANDIDATE". The form has four input fields: "Name" (filled with "Rachana Banerjee"), "Party" (filled with "Trinamool Congress"), "Constituency" (filled with "Hooghly"), and "Candidate ID" (filled with "CAN1001"). A blue "Add Candidate" button is at the bottom of the form. Below the form, the text "CANDIDATE LIST" is visible. The Windows taskbar at the bottom shows the date and time as 12:08:2025.

Election Commission
Democratic Elections Portal

Register Login Home Voter Services Candidates About Contact Vote Elections & Results Logout

MANAGE CANDIDATES

ADD NEW CANDIDATE

Name
Rachana Banerjee

Party
Trinamool Congress

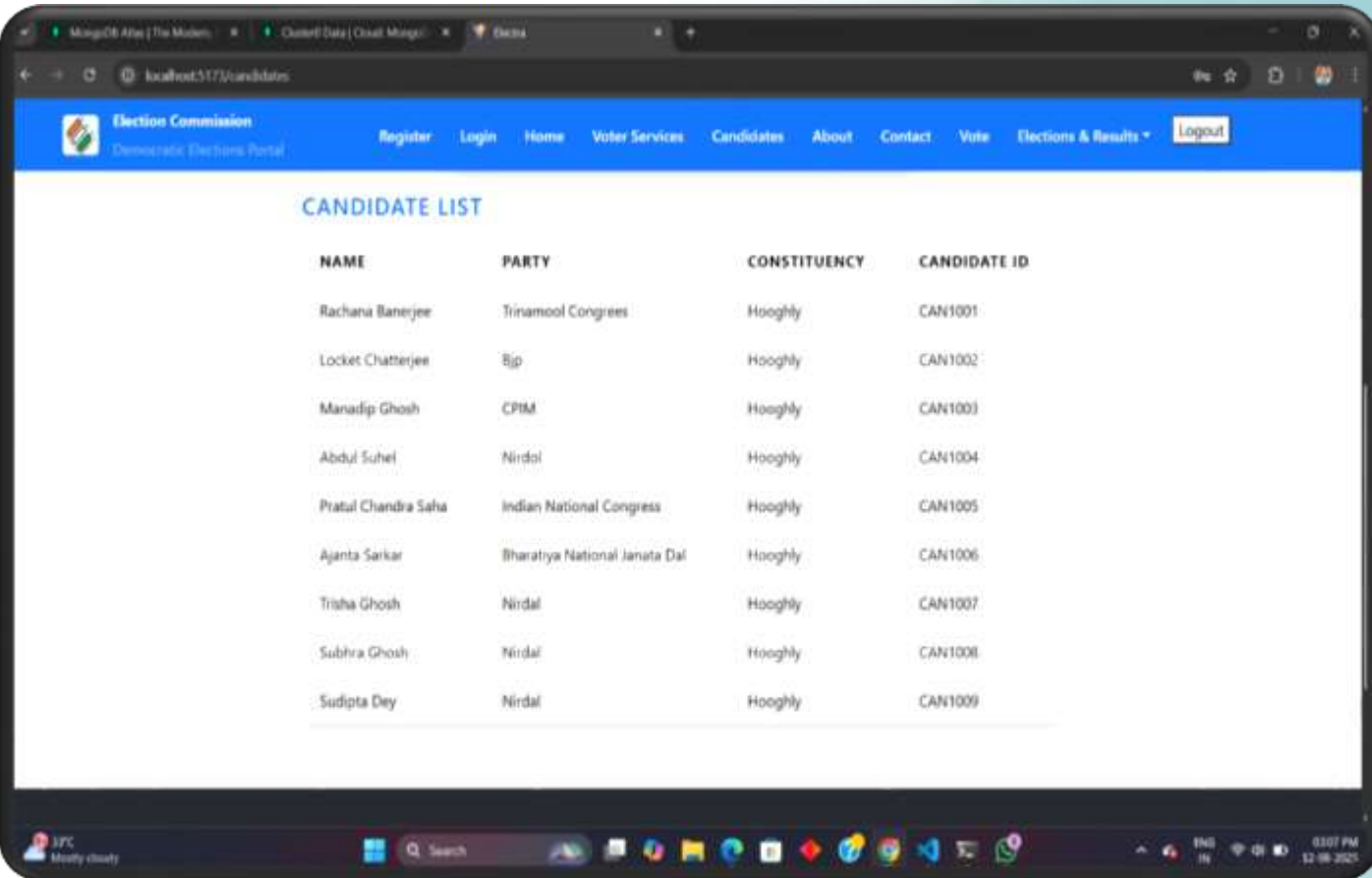
Constituency
Hooghly

Candidate ID
CAN1001

Add Candidate

CANDIDATE LIST

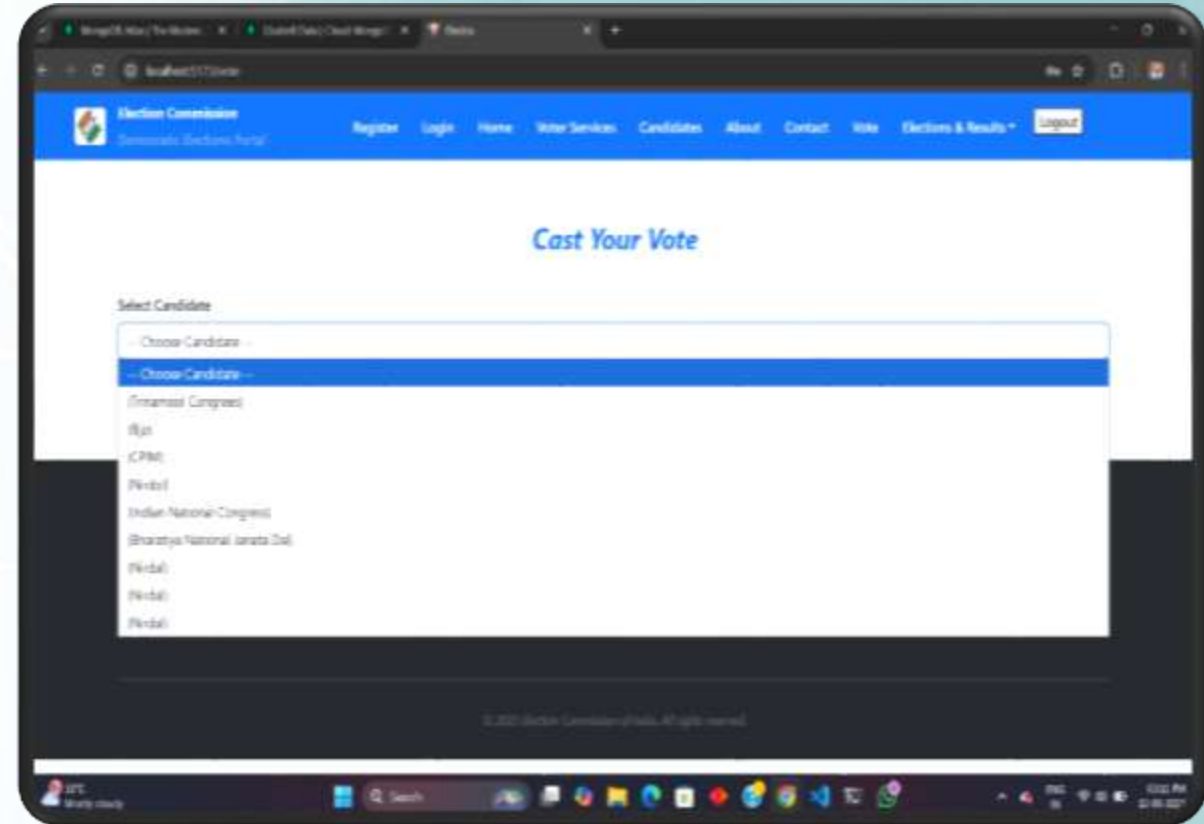
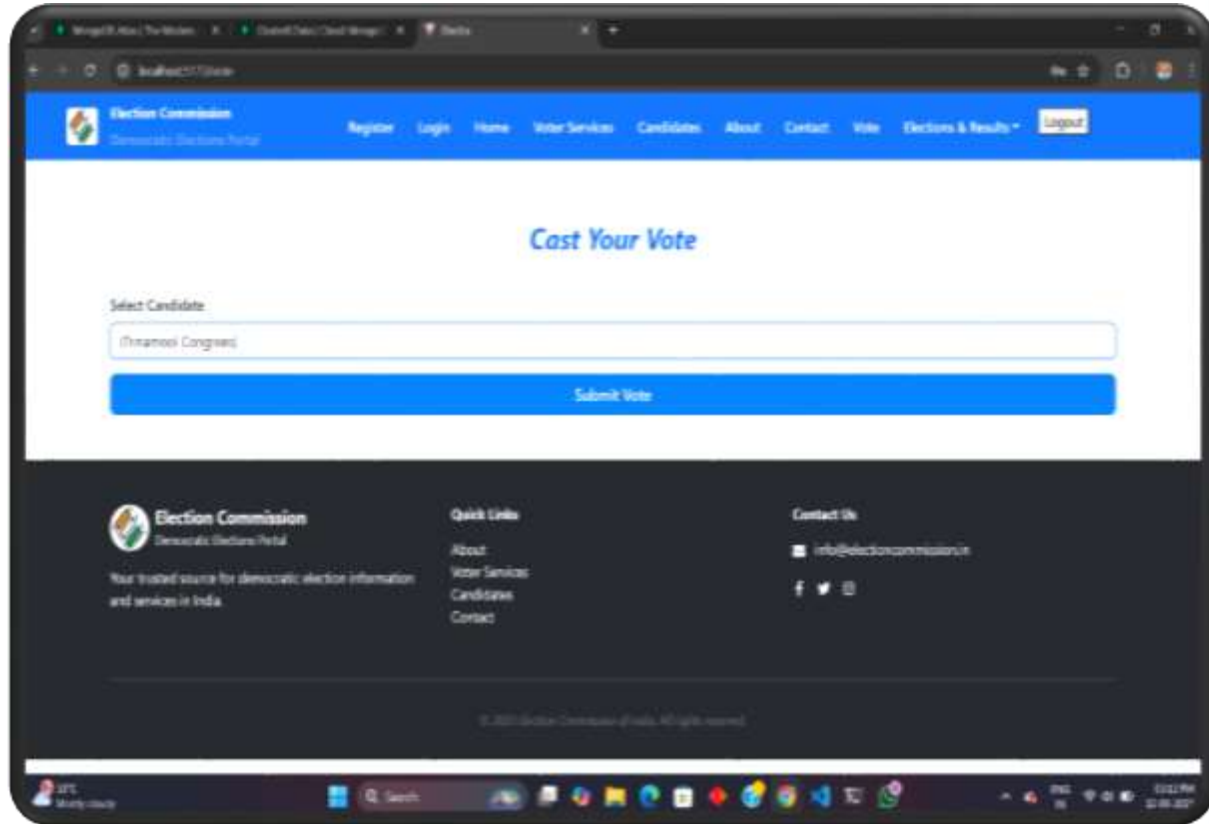
CANDIDATES LIST



The screenshot shows a web browser window with the URL `localhost:5173/candidates`. The page header is blue and contains the 'Election Commission' logo and navigation links: Register, Login, Home, Voter Services, Candidates, About, Contact, Vote, Elections & Results, and a Logout button. The main content area is titled 'CANDIDATE LIST' and displays a table with four columns: NAME, PARTY, CONSTITUENCY, and CANDIDATE ID. The table lists nine candidates, all from the Hooghly constituency. The browser's taskbar at the bottom shows the system clock as 03:07 PM on 12-08-2025, along with weather information (17°C, Mostly cloudy) and various application icons.

NAME	PARTY	CONSTITUENCY	CANDIDATE ID
Rachana Banerjee	Tirumool Congress	Hooghly	CAN1001
Locket Chatterjee	Bjp	Hooghly	CAN1002
Manadip Ghosh	CPIM	Hooghly	CAN1003
Abdul Suhel	Nirdoi	Hooghly	CAN1004
Pratul Chandra Saha	Indian National Congress	Hooghly	CAN1005
Ajanta Sarkar	Bharatiya National Janata Dal	Hooghly	CAN1006
Trisha Ghosh	Nirdal	Hooghly	CAN1007
Subhra Ghosh	Nirdal	Hooghly	CAN1008
Sudipta Dey	Nirdal	Hooghly	CAN1009

VOTE



FOOTER



Election Commission

Democratic Elections Portal

Your trusted source for democratic election information
and services in India.

Quick Links

About
Voter Services
Candidates
Contact

Contact Us

✉ info@electioncommission.in



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Website developed by [www.electioncommission.in](#)

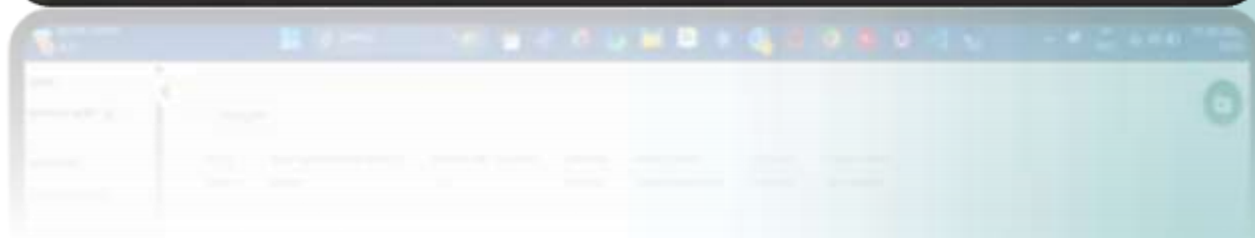
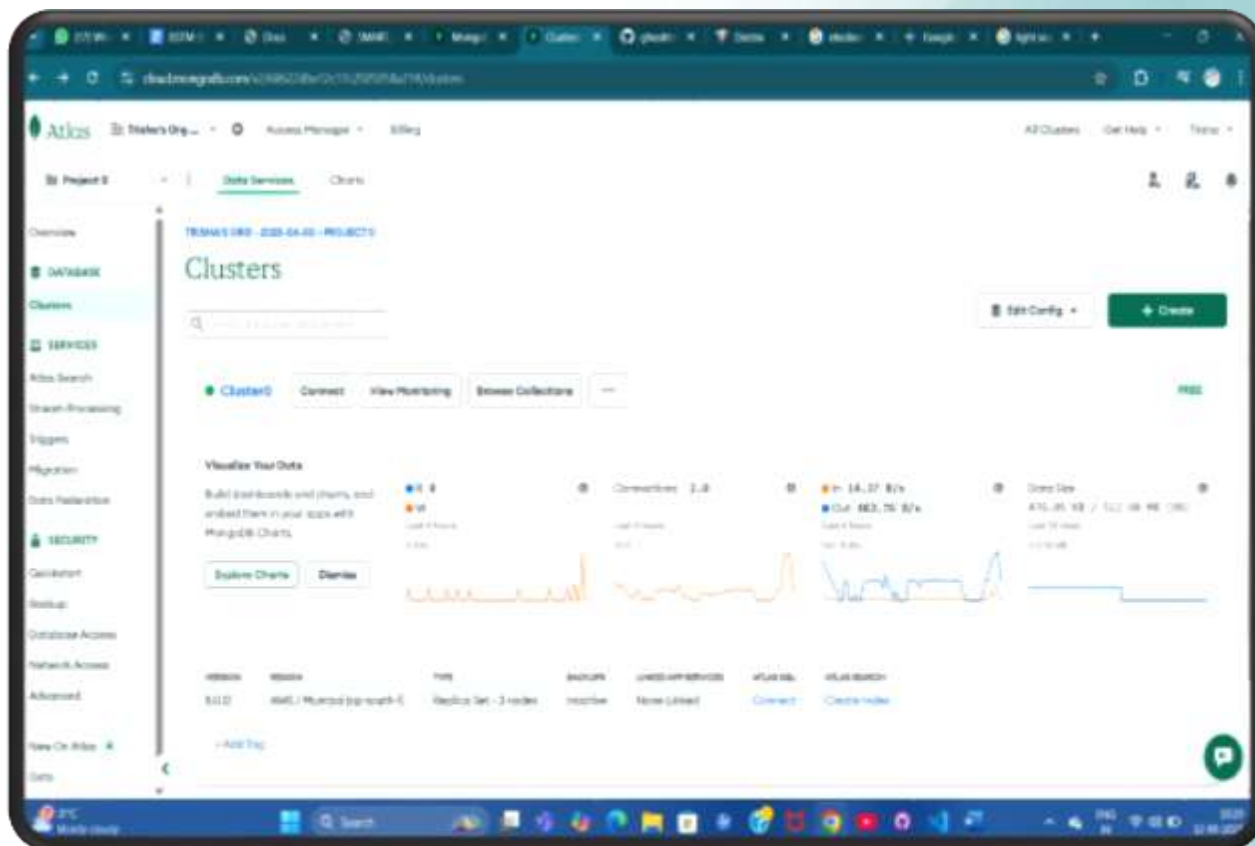
DATABASE

The screenshot displays the Atlas Cluster0 interface, specifically the Collections tab. The interface includes a sidebar with navigation options like Overview, DATABASE, Clusters, SERVICES, and more. The main content area shows a table of collections for the 'test' database. The table has columns for Collection Name, Documents, Logical Data Size, Avg Document Size, Storage Size, Indexes, Index Size, and Avg Index Size. A 'CREATE COLLECTION' button is visible in the top right corner of the table area.

Collection Name	Documents	Logical Data Size	Avg Document Size	Storage Size	Indexes	Index Size	Avg Index Size
test	1	780	780	340	1	243	243
test	1	1,000	1,000	340	1	243	243
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40
test	1	10	10	40	1	40	40

This is a blurred version of the screenshot above, showing the same Atlas Cluster0 interface with the Collections tab selected. The table of collections and the 'CREATE COLLECTION' button are visible but out of focus.

DATABASE



CONCLUSION

The Electra project demonstrates how technology can revolutionize the way elections are conducted, making the process more transparent, efficient, and secure. By integrating advanced digital systems with a focus on accessibility and data integrity, Electra aims to strengthen democratic participation and ensure that every vote is counted accurately. This initiative not only streamlines administrative tasks for election commissions but also builds public trust by reducing the scope for human error or malpractice. Ultimately, Electra stands as a step toward a more modern, reliable, and inclusive electoral process that empowers citizens and upholds the core values of democracy.





THANK YOU...

