**📄 Table: Voters**

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| VoterId | INT | Primary Key, Auto Inc. |
| FullName | VARCHAR(100) | NOT NULL |
| Email | VARCHAR(100) | NOT NULL, Unique |
| PasswordHash | TEXT | NOT NULL |
| HasVoted | BOOLEAN | Default FALSE |

**📄 Table: Admins**

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| AdminId | INT | Primary Key, Auto Inc. |
| Email | VARCHAR(100) | NOT NULL, Unique |
| PasswordHash | TEXT | NOT NULL |
| Role | VARCHAR(50) | Default 'Admin' |

**📄 Table: Elections**

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| ElectionId | INT | Primary Key, Auto Inc. |
| Title | VARCHAR(200) | NOT NULL |
| StartDate | DATETIME | NOT NULL |
| EndDate | DATETIME | NOT NULL |
| IsActive | BOOLEAN | Default FALSE |

**📄 Table: Candidates**

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| CandidateId | INT | Primary Key, Auto Inc. |
| Name | VARCHAR(100) | NOT NULL |
| Party | VARCHAR(100) | NOT NULL |
| ElectionId | INT | Foreign Key → Elections.ElectionId |

**📄 Table: Votes**

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| VoteId | INT | Primary Key, Auto Inc. |
| VoterId | INT | Foreign Key → Voters.VoterId |
| CandidateId | INT | Foreign Key → Candidates.CandidateId |
| ElectionId | INT | Foreign Key → Elections.ElectionId |
| VotedAt | DATETIME | Default UTC\_TIMESTAMP() |

**🔗 Entity Relationships**

lua

CopyEdit

Voters 1 ----- \* Votes

Candidates 1 ----- \* Votes

Elections 1 ----- \* Votes

Elections 1 ----- \* Candidates

* **Voters** can cast **multiple votes** (for different elections, assuming that's allowed).
* **Each vote** links a **Voter**, **Candidate**, and **Election**.
* **Each candidate** belongs to **one election**.
* **Each election** has **many candidates** and **many votes**.

Here’s a complete list of **REST API endpoints** your e-voting system will likely need, divided by **feature area**. This will cover functionality for **voters**, **admins**, **elections**, **candidates**, and **votes**.

**✅ 1. Auth APIs**

**🔐 Voter Authentication**

| **Action** | **Method** | **Endpoint** |
| --- | --- | --- |
| Register Voter | POST | /api/auth/voter/register |
| Login Voter | POST | /api/auth/voter/login |

**🔐 Admin Authentication**

| **Action** | **Method** | **Endpoint** |
| --- | --- | --- |
| Register Admin *(optional seed)* | POST | /api/auth/admin/register |
| Login Admin | POST | /api/auth/admin/login |

Returns: **JWT Token** for use in secured APIs.

**🧑‍🦱 2. Voter APIs**

| **Action** | **Method** | **Endpoint** |
| --- | --- | --- |
| Get Voter Profile | GET | /api/voters/{id} |
| Update Profile | PUT | /api/voters/{id} |

**🧑‍💼 3. Admin APIs**

(Requires [Authorize(Roles = "Admin")])

| **Action** | **Method** | **Endpoint** |
| --- | --- | --- |
| Get All Admins | GET | /api/admins |
| Get Admin By Id | GET | /api/admins/{id} |
| Delete Admin | DELETE | /api/admins/{id} |

**🗳️ 4. Election APIs**

| **Action** | **Method** | **Endpoint** | **Access** |
| --- | --- | --- | --- |
| Get All Elections | GET | /api/elections | Public |
| Get Election By Id | GET | /api/elections/{id} | Public |
| Create Election | POST | /api/admin/elections | Admin only |
| Update Election | PUT | /api/admin/elections/{id} | Admin only |
| Delete Election | DELETE | /api/admin/elections/{id} | Admin only |

**🧑‍💼 5. Candidate APIs**

| **Action** | **Method** | **Endpoint** | **Access** |
| --- | --- | --- | --- |
| Get Candidates by ElectionId | GET | /api/elections/{id}/candidates | Public |
| Add Candidate to Election | POST | /api/admin/elections/{id}/candidates | Admin only |
| Update Candidate | PUT | /api/admin/candidates/{id} | Admin only |
| Delete Candidate | DELETE | /api/admin/candidates/{id} | Admin only |

**🗳️ 6. Vote APIs**

| **Action** | **Method** | **Endpoint** | **Access** |
| --- | --- | --- | --- |
| Cast Vote | POST | /api/votes | Voter only |
| Get Voter's Vote | GET | /api/votes/voter/{voterId} | Voter/Admin |
| Get All Votes | GET | /api/admin/votes | Admin only |

**Note:** When casting a vote, the system should ensure:

* Voter is authenticated.
* Voter hasn’t voted already in that election.

**📊 7. Result APIs**

| **Action** | **Method** | **Endpoint** | **Access** |
| --- | --- | --- | --- |
| View Results for Election | GET | /api/elections/{id}/results | Admin/Voter |
| Live Tally (optional) | GET | /api/elections/{id}/live-tally | Public |