1. Users Table

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Constraints** | **Explanation** |
| user\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each user. Automatically increments with each new record. |
| name | VARCHAR(255) | NOT NULL | Full name of the user. Must be provided and cannot be empty. |
| email | VARCHAR(255) | NOT NULL, UNIQUE | Email address of the user. Must be unique, contain the @ symbol, and follow a valid email format (e.g., user@example.com). |
| password | VARCHAR(255) | NOT NULL | Hashed password for secure user authentication. Must meet the following requirements: - Minimum 8 characters. - At least one uppercase letter. - At least one lowercase letter. - At least one number. - At least one special character (e.g., !@#$%^&\*). |
| created\_at | TIMESTAMP | DEFAULT CURRENT\_TIMESTAMP | Automatically records the timestamp when the user account is created. |

2. Appointments Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | **Column Name** | | --- | | | **Data Type** | | --- | | **Constraints** | **Explanation** |
| appointment | INT | PRIMARY KEY, AUTO\_INCREMENT | |  | | --- | | Unique identifier for each appointment. Automatically increments with each new record. | |  | |
| user\_id | INT | NOT NULL, FOREIGN KEY | |  | | --- | | Links the appointment to a specific user. Ensures every appointment is associated with a valid user. | |  | |
| service\_type | ENUM(‘solar’, ‘ev’, ‘smart’) | NOT NULL | |  | | --- | | Specifies the type of service requested. Must be one of: solar, ev, or smart. | |  | |
| appointment\_date | DATETIME | NOT NULL | |  | | --- | | Date and time of the scheduled appointment. Must be in the future and follow the format YYYY-MM-DD | |  | |
| address | VARCHAR(255) | NOT NULL | |  | | --- | | Address where the service will be performed. Must be provided and cannot be empty. | |  | |
| city | VARCHAR(100) | NOT NULL | |  | | --- | | City where the service will be performed. Must be provided and cannot be empty. | |  | |
| zip | VARCHAR(20) | NOT NULL | |  | | --- | | ZIP code of the service location. Must be provided and follow a valid format (e.g., 12345 or A1B 2C3). | |  | |
| notes | TEXT |  | |  | | --- | | Additional notes or special requests from the customer. Optional field. | |  | |
| status | ENUM(‘scheduled’, ‘completed’, ‘cancelled’) | NOT NULL  DEFAULT  ‘scheduled’ | |  | | --- | | Current status of the appointment. Must be one of: scheduled, completed, or cancelled. | |  | |
| created\_at | TIMESTAMP | DEFAULT CURRENT\_TIMESTAMP | Automatically records the timestamp when the appointment was created. |

3. Carbon\_Footprints Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | **Field Name** | | --- | | | **Data Type** | | --- | | **Constraints** | **Explanation** |
| carbon\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | |  | | --- | | Unique identifier for each carbon footprint record. Automatically increments with each new record. | |  | |
| user\_id | INT | NOT NULL,  FOREIGN KEY | |  | | --- | | Links the carbon footprint record to a specific user. Ensures every record is associated with a valid user. | |  | |
| total\_footprint | DECIMAL(10,2) | NOT NULL | |  | | --- | | Total carbon footprint in tons of CO2. Must be a positive number. | |  | |
| electricity | DECIMAL(10,2) | NOT NULL | |  | | --- | | Carbon footprint from electricity usage (in tons of CO2). Must be a positive number. | |  | |
| gas | DECIMAL(10,2) | NOT NULL | |  | | --- | | Carbon footprint from gas usage (in tons of CO2). Must be a positive number. | |  | |
| vehicle | DECIMAL(10,2) | NOT NULL | |  | | --- | | Carbon footprint from vehicle usage (in tons of CO2). Must be a positive number. | |  | |
| flights | DECIMAL(10,2) | NOT NULL | |  | | --- | | Carbon footprint from flights (in tons of CO2). Must be a positive number. | |  | |
| diet | DECIMAL(10,2) | NOT NULL | |  | | --- | | Carbon footprint from diet (in tons of CO2). Must be a positive number. | |  | |
| created\_at | TIMESTAMP | DEFAULT CURRENT\_TIMESTAMP | Automatically records the timestamp when the carbon footprint record was created. |

4. Products Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | **FIELD Name** | | --- | | | **Data Type** | | --- | | **Constraints** | **Explanation** |
| Product\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | |  | | --- | | Unique identifier for each product. Automatically increments with each new record. | |  | |
| name | VARCHAR(255) | NOT NULL | |  | | --- | | Name of the product. Must be provided and cannot be empty. | |  | |
| category | ENUM(‘solar,’ev’,’smart’) | NOT NULL | |  | | --- | | Category of the product. Must be one of: solar, ev, or smart. | |  | |
| description | TEXT | NOT NULL | |  | | --- | | Detailed description of the product. Must be provided and cannot be empty. | |  | |
| features | TEXT | NOT NULL | |  | | --- | | Key features of the product. Must be provided and cannot be empty. | |  | |
| Image\_path | VARCHAR(255) |  | |  | | --- | | Path to the product image. Optional field. | |  | |
| price | VARCHAR(100) | NOT NULL | |  | | --- | | Price of the product. Must be provided and follow a valid format (e.g., $100.00 | |  | |
| Created\_at | TIMESTAMP | DEFAULT CURRENT\_TIMESTAMP | Automatically records the timestamp when the product was added to the database. |