Here's a **step-by-step beginner-friendly guide** to create a **Django REST API** for a table with:

`id, name, city, phone, email`

We'll use:

- Django
- Django REST Framework

□ STEP 1: Install Django + DRF

Create virtual environment in your windows pc

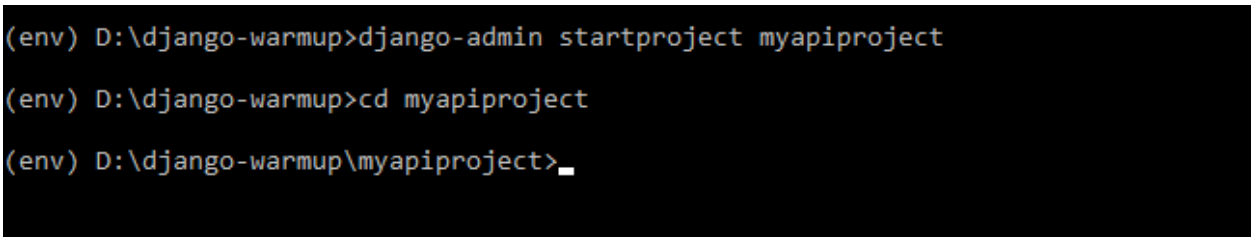
```
python -m venv env

env\Scripts\activate
```

Install packages

```
pip install django djangorestframework
```

□ STEP 2: Create Project

```
django-admin startproject myapiproject
cd myapiproject
```



□ STEP 3: Create App

```
python manage.py startapp api
```

```
(env) D:\django-warmup\myapiproject>python manage.py startapp api
```

□ STEP 4: Add Apps in settings.py

Open `myproject/settings.py`

```
INSTALLED_APPS = [
    'django.contrib.admin',
    'django.contrib.auth',
    'django.contrib.contenttypes',
    'django.contrib.sessions',
    'django.contrib.messages',
    'django.contrib.staticfiles',

    'rest_framework',  # DRF
    'api',             # your app
]
```

□ STEP 5: Create Model (Database Table)

In `api/models.py`

```
from django.db import models

class Student(models.Model):
    name = models.CharField(max_length=100)
    city = models.CharField(max_length=100)
    phone = models.CharField(max_length=15)
    email = models.EmailField()

    def __str__(self):
        return self.name
```

□ STEP 6: Run Migrations

```
python manage.py makemigrations
python manage.py migrate
```

```
(env) D:\django-warmup\myapiproject>python manage.py makemigrations
Migrations for 'api':
  api\migrations\0001_initial.py
    + Create model Student

(env) D:\django-warmup\myapiproject>python manage.py migrate
Operations to perform:
  Apply all migrations: admin, api, auth, contenttypes, sessions
Running migrations:
  Applying contenttypes.0001_initial... OK
  Applying auth.0001_initial... OK
```

□ STEP 7: Create Serializer (VERY IMPORTANT)

Create file:

□ api/serializers.py

```
from rest_framework import serializers
from .models import Student

class StudentSerializer(serializers.ModelSerializer):
    class Meta:
        model = Student
        fields = '__all__'
```

□ This converts database ↔ JSON

STEP 8: ViewSet (CORE CONCEPT)

Instead of writing GET/POST/PUT/DELETE manually, we use:

 `ModelViewSet`

 `api/views.py`

```
from rest_framework import viewsets
from .models import Student
from .serializers import StudentSerializer

class StudentViewSet(viewsets.ModelViewSet):
    queryset = Student.objects.all()
    serializer_class = StudentSerializer
```

WHAT THIS AUTOMATICALLY GIVES YOU

Without writing extra code, you now get:

Action	HTTP Method	URL
List all students	GET	/students/
Create student	POST	/students/
Retrieve student	GET	/students/1/
Update student	PUT	/students/1/
Delete student	DELETE	/students/1/

□ STEP 9: ROUTER (AUTO URL GENERATION)

□ api/urls.py

```
from django.urls import path, include
from rest_framework.routers import DefaultRouter
from .views import StudentViewSet

router = DefaultRouter()
router.register('students', StudentViewSet, basename='student')

urlpatterns = [
    path('', include(router.urls)),
]
```

□ STEP 5: MAIN PROJECT URL

□ myproject/urls.py

```
from django.contrib import admin
from django.urls import path, include

urlpatterns = [
    path('admin/', admin.site.urls),
    path('api/', include('api.urls')),
]
```

□ STEP 6: RUN SERVER

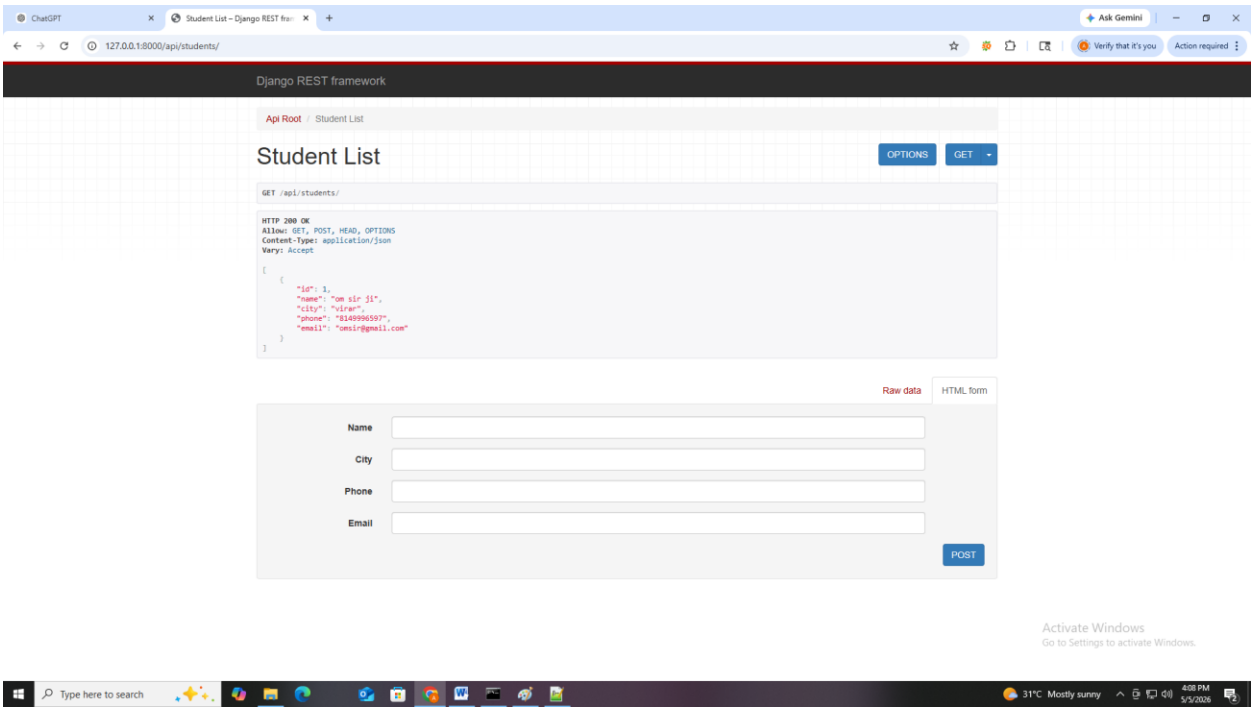
```
python manage.py runserver
```

□ STEP 7: TEST API

Now open browser/Postman:

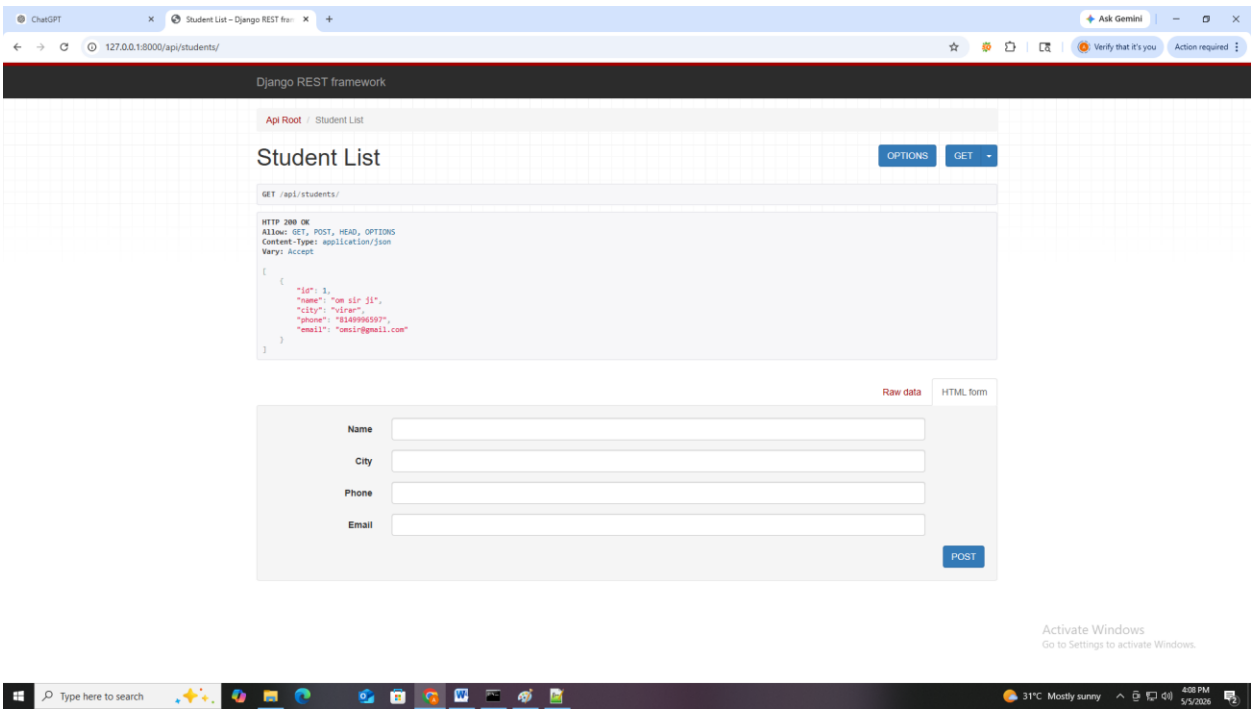
List Students GET :-

http://127.0.0.1:8000/api/students/



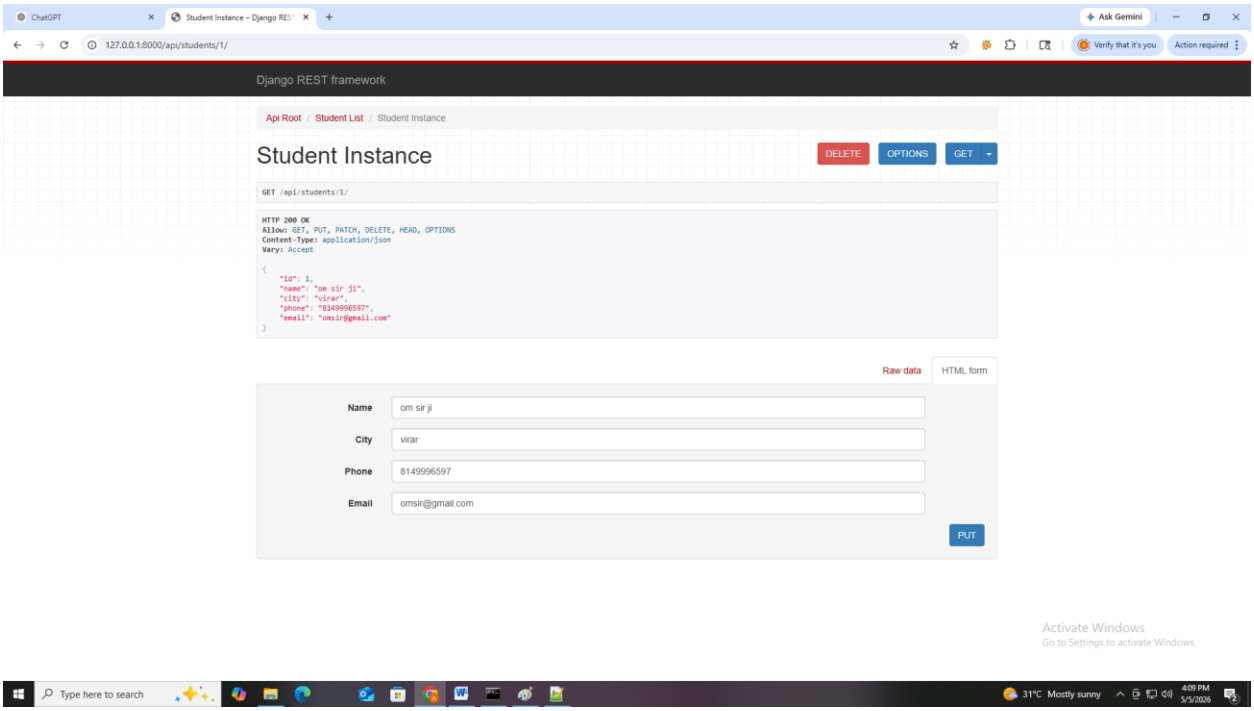
Create Student

```
POST http://127.0.0.1:8000/api/students/
{
  "name": "Rahul",
  "city": "Mumbai",
  "phone": "9876543210",
  "email": "rahul@example.com"
}
```



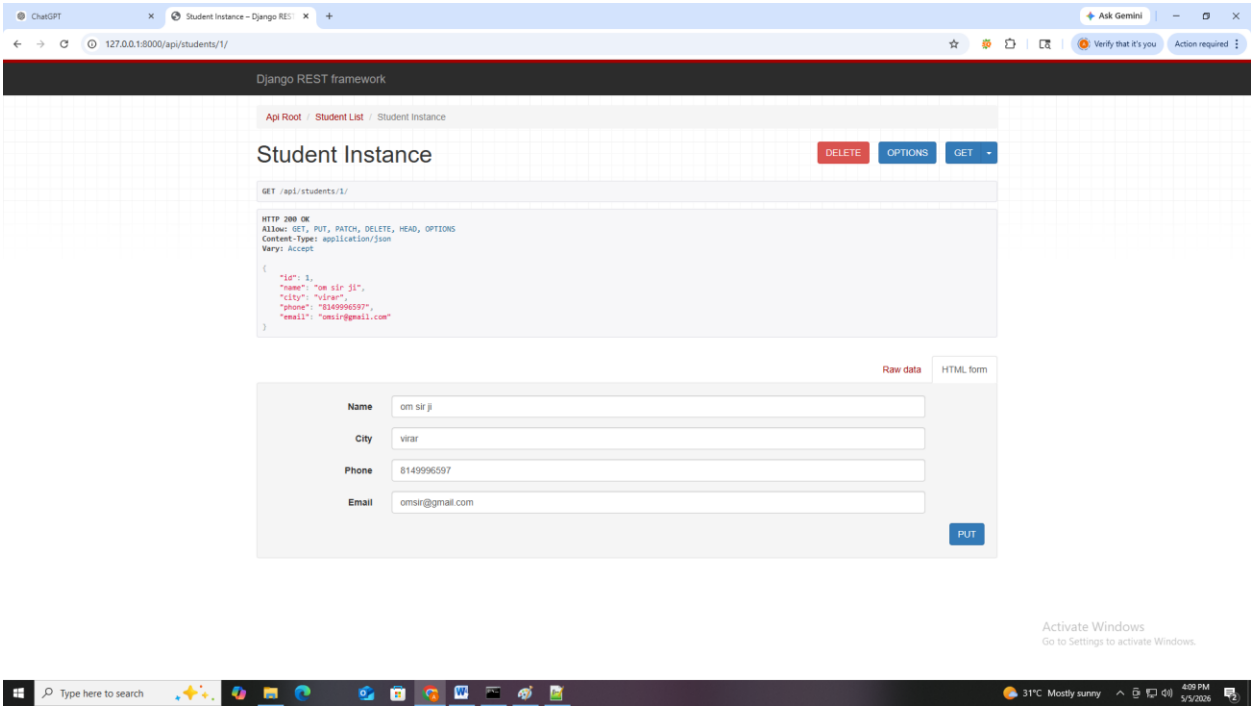
Get Single Student GET :-

http://127.0.0.1:8000/api/students/1/



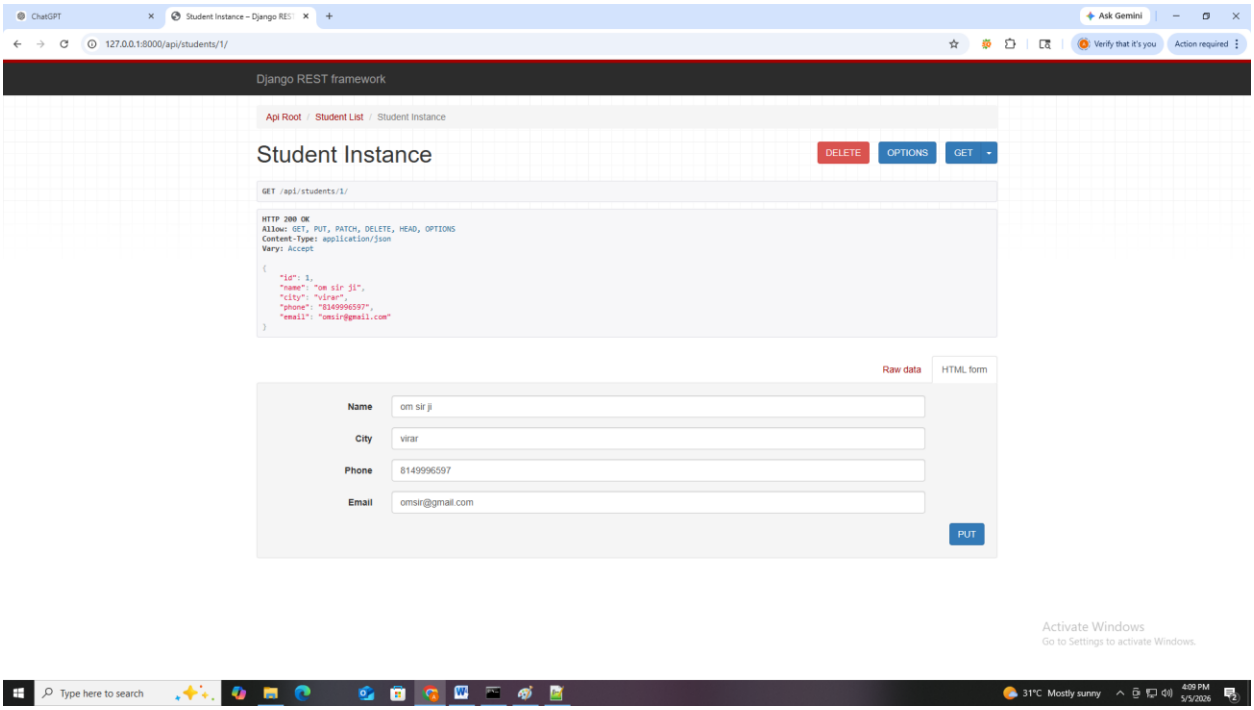
Update Student PUT :-

http://127.0.0.1:8000/api/students/1/



Delete Student

```
DELETE /api/students/1/
```



1. serializers.py (Meaning of each line)

Code:

```
from rest_framework import serializers
from .models import Student

class StudentSerializer(serializers.ModelSerializer):
    class Meta:
        model = Student
        fields = '__all__'
```

Line-by-line meaning

□ Line 1

```
from rest_framework import serializers
```

□ Imports Django REST Framework's serializer module.
✔ Serializers convert:

- Python objects ↔ JSON (API format)

□ Line 2

```
from .models import Student
```

□ Imports your database table (model) named `Student` from the same app.

□ Line 3

```
class StudentSerializer(serializers.ModelSerializer):
```

□ Creates a serializer class.

✔ `ModelSerializer` means:

- Django automatically generates fields from model
- No need to manually define each field

□ Line 4–7

```
class Meta:
    model = Student
    fields = '__all__'
```

□ Meaning:

✔class Meta

□ Special inner class that gives configuration to serializer

✔model = Student

□ Tells serializer:

“Use Student model (database table)”

✔fields = '__all__'

□ Include ALL fields:

- id
- name
- city
- phone
- email

✔ Alternative:

```
fields = ['name', 'email']
```

□ 2. views.py (ModelViewSet)

Code:

```
from rest_framework import viewsets
from .models import Student
from .serializers import StudentSerializer

class StudentViewSet(viewsets.ModelViewSet):
    queryset = Student.objects.all()
    serializer_class = StudentSerializer
```

Line-by-line meaning

□ Line 1

```
from rest_framework import viewsets
```

□ Imports ViewSet system from DRF

✔ ViewSet = combines all CRUD operations:

- GET
- POST
- PUT
- DELETE

□ Line 2

```
from .models import Student
```

□ Imports database table (Student model)

□ Line 3

```
from .serializers import StudentSerializer
```

□ Imports serializer to convert:

- Model ↔ JSON

□ Line 4

```
class StudentViewSet(viewsets.ModelViewSet):
```

□ Creates a ViewSet class

✔ `ModelViewSet` means:

Django automatically gives full CRUD API without writing methods

---

□ Line 5

```
queryset = Student.objects.all()
```

□ Meaning:

- Fetch ALL students from database
- Equivalent to SQL:

```
SELECT * FROM student;
```

□ Line 6

```
serializer_class = StudentSerializer
```

□ Tells ViewSet:

"Use this serializer to convert data to/from JSON"

What this ViewSet automatically gives you:

Action	Method	URL
List	GET	/students/
Create	POST	/students/
Retrieve	GET	/students/1/

Action	Method	URL
Update	PUT	/students/1/
Delete	DELETE	/students/1/

□ 3. urls.py (Router system)

Code:

```
from django.urls import path, include
from rest_framework.routers import DefaultRouter
from .views import StudentViewSet

router = DefaultRouter()
router.register('students', StudentViewSet, basename='student')

urlpatterns = [
    path('', include(router.urls)),
]
```

Line-by-line meaning

□ Line 1

```
from django.urls import path, include
```

□ Imports URL tools:

- `path()` → define routes
- `include()` → connect other URL files

□ Line 2

```
from rest_framework.routers import DefaultRouter
```

 Imports Router system from DRF

✔ Router automatically generates URLs for ViewSets

Line 3

```
from .views import StudentViewSet
```

 Imports your ViewSet (API logic)

Line 4

```
router = DefaultRouter()
```

 Creates a router object

✔ Think of it as:

“Auto URL generator”

Line 5

```
router.register('students', StudentViewSet, basename='student')
```

Meaning:

- `'students'` → URL name
- `StudentViewSet` → logic to handle requests
- `basename='student'` → name used internally for URL naming

✔ This creates URLs like:

- `/students/`
- `/students/1/`

Line 6–8

```
urlpatterns = [
    path('', include(router.urls)),
]
```

Meaning:

- `router.urls` contains all auto-generated URLs
- `include()` attaches them to project routing

FINAL SIMPLE SUMMARY

serializer.py

Converts data:

Database ↔ JSON

IMPORTANT (CORS ERROR FIX)

If API doesn't work, install Django CORS:

```
pip install django-cors-headers
```

Add in Django `settings.py`

```
INSTALLED_APPS = [
    ...
    'corsheaders',
]

MIDDLEWARE = [
    'corsheaders.middleware.CorsMiddleware',
    ...
]


CORS_ALLOWED_ORIGINS = [

    "http://localhost:5173",  # Vite default

]
```

React + Vite + Django REST API.

We'll extend your current setup using React and Vite.

✏ STEP 1: Update API function

 `src/api/studentApi.js`

Great—now you'll connect your Django REST API to a modern React frontend using Vite and React.

We'll build a simple **Student CRUD frontend** for your API:

STEP 1: Create React + Vite Project

```
npm create vite@latest student-frontend
```

Select:

- Framework: **React**
- Variant: **JavaScript**

Go inside project

```
cd student-frontend
npm install
```

Install Axios (for API calls)

```
npm install axios
```

□ STEP 2: Clean Project Structure

Inside `src/` create:

```
src/
 ├── api/
 │    └── studentApi.js
 ├── components/
 │    └── StudentForm.jsx
 │    └── StudentList.jsx
 ├── App.jsx
 └── main.jsx
```

□ STEP 3: Create API Service

□ src/api/studentApi.js

```
import axios from "axios";

const BASE_URL = "http://127.0.0.1:8000/api/students/";

export const getStudents = () => axios.get(BASE_URL);

export const createStudent = (data) => axios.post(BASE_URL, data);

export const updateStudent = (id, data) =>
  axios.put(`${BASE_URL}${id}/`, data);

export const deleteStudent = (id) =>
  axios.delete(`${BASE_URL}${id}/`);
```

STEP 2: Add Edit State in App.jsx

We need to track:

- which student is being edited
- form pre-filled with old data

□ src/App.jsx

Update code:

```
import { useEffect, useState } from "react";
import { getStudents } from "./api/studentApi";
import StudentForm from "./components/StudentForm";
import StudentList from "./components/StudentList";

function App() {
  const [students, setStudents] = useState([]);
  const [editStudent, setEditStudent] = useState(null);

  const fetchStudents = async () => {
    const res = await getStudents();
    setStudents(res.data);
  };

  useEffect(() => {
    fetchStudents();
  }, []);

  return (
    <div>
      <h1>Student Management System</h1>

      <StudentForm
        refresh={fetchStudents}
        editStudent={editStudent}
        setEditStudent={setEditStudent}
      />

      <StudentList
        students={students}
        refresh={fetchStudents}
        setEditStudent={setEditStudent}
      />
    </div>
  );
}

export default App;
```

STEP 3: Update StudentForm (Create + Update)

 src/components/StudentForm.jsx

```
import { useEffect, useState } from "react";
import { createStudent, updateStudent } from "../api/studentApi";

export default function StudentForm({ refresh, editStudent, setEditStudent })
{
  const [form, setForm] = useState({
    name: "",
    city: "",
    phone: "",
    email: ""
  });

  // Fill form when editing
  useEffect(() => {
    if (editStudent) {
      setForm(editStudent);
    }
  }, [editStudent]);

  const handleChange = (e) => {
    setForm({ ...form, [e.target.name]: e.target.value });
  };

  const handleSubmit = async (e) => {
    e.preventDefault();

    if (editStudent) {
      // UPDATE
      await updateStudent(editStudent.id, form);
      setEditStudent(null);
    } else {
      // CREATE
      await createStudent(form);
    }

    setForm({ name: "", city: "", phone: "", email: "" });
    refresh();
  };

  return (
    <form onSubmit={handleSubmit}>
      <h2>{editStudent ? "Update Student" : "Add Student"}</h2>

      <input name="name" placeholder="Name" value={form.name}
onChange={handleChange} />
      <input name="city" placeholder="City" value={form.city}
onChange={handleChange} />
      <input name="phone" placeholder="Phone" value={form.phone}
onChange={handleChange} />
      <input name="email" placeholder="Email" value={form.email}
onChange={handleChange} />

      <button type="submit">
        {editStudent ? "Update" : "Add"}
      </button>

      {editStudent && (
```

```
        <button type="button" onClick={() => setEditStudent(null)}>
          Cancel
        </button>
      )}
    </form>
  );
}
```

□ STEP 4: Add Edit Button in List

□ src/components/StudentList.jsx

```
import { deleteStudent } from "../api/studentApi";

export default function StudentList({ students, refresh, setEditStudent }) {

  const handleDelete = async (id) => {
    await deleteStudent(id);
    refresh();
  };

  return (
    <div>
      <h2>Student List</h2>

      {students.map((s) => (
        <div key={s.id} style={{ border: "1px solid gray", margin: 10,
padding: 10 }}>
          <p>Name: {s.name}</p>
          <p>City: {s.city}</p>
          <p>Phone: {s.phone}</p>
          <p>Email: {s.email}</p>

          {/* EDIT BUTTON */}
          <button onClick={() => setEditStudent(s)}>
            Edit
          </button>

          {/* DELETE BUTTON */}
          <button onClick={() => handleDelete(s.id)}>
            Delete
          </button>
        </div>
      ))}
    </div>
  );
}
```

□ FINAL FEATURES YOU NOW HAVE

□ FULL CRUD SYSTEM

Create

- Add new student

Read

- Show all students

Update □ (NEW)

- Click Edit → form fills → update data

Delete

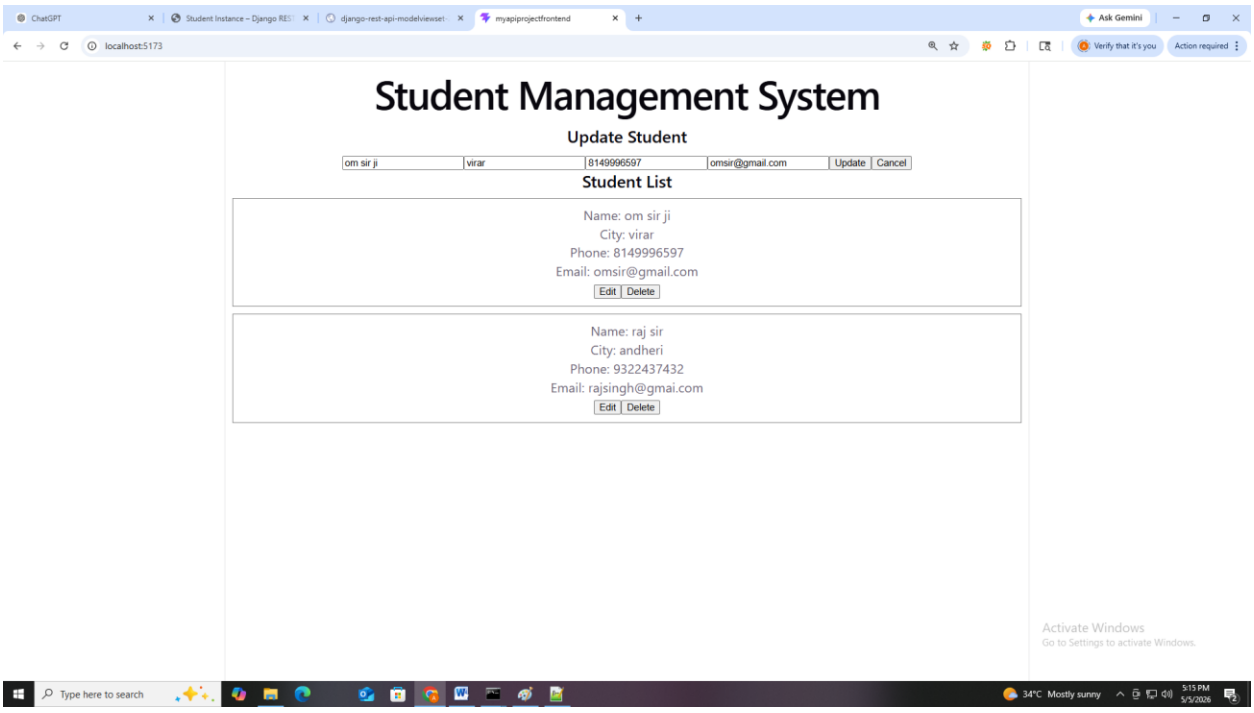
- Remove student

Run django api first:-

python manage.py runserver

and then run frontend:-

npm run dev


ChatGPT
Student Instance – Django RES
django-rest-api-modelviewset
myapiprojectfrontend
Ask Gemini
localhost:5173
Verify that it's you
Action required
Student Management System
Update Student
om sir ji
virar
8149996597
omsir@gmail.com
Update
Cancel
Student List
Name: om sir ji
City: virar
Phone: 8149996597
Email: omsir@gmail.com
Edit
Delete
Name: raj sir
City: andheri
Phone: 9322437432
Email: rajsingh@gmai.com
Edit
Delete
Activate Windows
Go to Settings to activate Windows.
Type here to search
34°C Mostly sunny
5:15 PM
5/5/2026

a **single-file React frontend** (easy to read, easy to teach) that connects to your Django API.

This is perfect for beginners using React with Vite.

□ □ ONE-FILE FRONTEND (FULL CRUD)

□ Replace your `src/App.jsx` with this:

```
import { useEffect, useState } from "react";
import axios from "axios";

const BASE_URL = "http://127.0.0.1:8000/api/students/";

function App() {
  const [students, setStudents] = useState([]);
  const [form, setForm] = useState({
    name: "",
    city: "",
    phone: "",
    email: ""
  });
  const [editId, setEditId] = useState(null);

  // □ Fetch all students
  const fetchStudents = async () => {
    const res = await axios.get(BASE_URL);
    setStudents(res.data);
  };

  useEffect(() => {
    fetchStudents();
  }, []);

  // □ Handle input change
  const handleChange = (e) => {
    setForm({ ...form, [e.target.name]: e.target.value });
  };

  // □ Create or Update
  const handleSubmit = async (e) => {
    e.preventDefault();

    if (editId) {
      // UPDATE
      await axios.put(`${BASE_URL}${editId}/`, form);
      setEditId(null);
    } else {
      // CREATE
      await axios.post(BASE_URL, form);
    }
```

```
    setForm({ name: "", city: "", phone: "", email: "" });
    fetchStudents();
  };

  // □ Delete
  const handleDelete = async (id) => {
    await axios.delete(`${BASE_URL}${id}/`);
    fetchStudents();
  };

  // □ Edit (fill form)
  const handleEdit = (student) => {
    setForm(student);
    setEditId(student.id);
  };

  return (
    <div style={{ padding: 20 }}>
      <h1>Student Management System</h1>

      {/* FORM */}
      <form onSubmit={handleSubmit}>
        <input name="name" placeholder="Name" value={form.name}
onChange={handleChange} />
        <input name="city" placeholder="City" value={form.city}
onChange={handleChange} />
        <input name="phone" placeholder="Phone" value={form.phone}
onChange={handleChange} />
        <input name="email" placeholder="Email" value={form.email}
onChange={handleChange} />

        <button type="submit">
          {editId ? "Update Student" : "Add Student"}
        </button>

        {editId && (
          <button type="button" onClick={() => {
            setEditId(null);
            setForm({ name: "", city: "", phone: "", email: "" });
          }}>
            Cancel
          </button>
        )}
      </form>

      <hr />

      {/* LIST */}
      <h2>Student List</h2>

      {students.map((s) => (
        <div key={s.id} style={{ border: "1px solid gray", margin: 10,
padding: 10 }}>
          <p><b>Name:</b> {s.name}</p>
          <p><b>City:</b> {s.city}</p>
          <p><b>Phone:</b> {s.phone}</p>
          <p><b>Email:</b> {s.email}</p>
```

```
          <button onClick={() => handleEdit(s)}>Edit</button>
          <button onClick={() => handleDelete(s.id)}>Delete</button>
        </div>
      ))}
    </div>
  );
}

export default App;
```

□ HOW TO RUN

1. Install axios

```
npm install axios
```

2. Run React

```
npm run dev
```

3. Make sure Django is running

```
python manage.py runserver
```

□ WHAT THIS SINGLE FILE DOES

□ Create

- Add new student

□ Read

- Fetch and display all students

□ Update

- Click **Edit → Update**

□ Delete

- Remove student

Now here's your **final clean version of all 3 files** with `handleEdit` implemented.

□ 1. `App.jsx` (Parent – manages state)

```
import { useEffect, useState } from "react";
import { getStudents } from "./api/studentApi";
import StudentForm from "./components/StudentForm";
import StudentList from "./components/StudentList";

function App() {
  const [students, setStudents] = useState([]);
  const [editStudent, setEditStudent] = useState(null);

  const fetchStudents = async () => {
    const res = await getStudents();
    setStudents(res.data);
  };

  useEffect(() => {
    fetchStudents();
  }, []);

  return (
    <div>
      <h1>Student Management System</h1>

      <StudentForm
        refresh={fetchStudents}
        editStudent={editStudent}
        setEditStudent={setEditStudent}
      />

      <StudentList
        students={students}
        refresh={fetchStudents}
        setEditStudent={setEditStudent}
      />
    </div>
  );
}

export default App;
```

□ 2. `StudentForm.jsx` (Create + Update)

```
import { useEffect, useState } from "react";
import { createStudent, updateStudent } from "../api/studentApi";

export default function StudentForm({ refresh, editStudent, setEditStudent })
```

```
{
  const [form, setForm] = useState({
    name: "",
    city: "",
    phone: "",
    email: ""
  });

  // Fill form when editing
  useEffect(() => {
    if (editStudent) {
      setForm(editStudent);
    }
  }, [editStudent]);

  const handleChange = (e) => {
    setForm({ ...form, [e.target.name]: e.target.value });
  };

  const handleSubmit = async (e) => {
    e.preventDefault();

    if (editStudent) {
      await updateStudent(editStudent.id, form);
      setEditStudent(null);
    } else {
      await createStudent(form);
    }

    setForm({ name: "", city: "", phone: "", email: "" });
    refresh();
  };

  return (
    <form onSubmit={handleSubmit}>
      <h2>{editStudent ? "Update Student" : "Add Student"}</h2>

      <input name="name" value={form.name} onChange={handleChange}
placeholder="Name" />
      <input name="city" value={form.city} onChange={handleChange}
placeholder="City" />
      <input name="phone" value={form.phone} onChange={handleChange}
placeholder="Phone" />
      <input name="email" value={form.email} onChange={handleChange}
placeholder="Email" />

      <button type="submit">
        {editStudent ? "Update" : "Add"}
      </button>

      {editStudent && (
        <button
          type="button"
          onClick={() => {
            setEditStudent(null);
            setForm({ name: "", city: "", phone: "", email: "" });
          }}
```

```
        >
          Cancel
        </button>
      )}
    </form>
  );
}
```

□ 3. `StudentList.jsx` (Read + Delete + Edit)

```
import { deleteStudent } from "../api/studentApi";

export default function StudentList({ students, refresh, setEditStudent }) {

  // DELETE
  const handleDelete = async (id) => {
    await deleteStudent(id);
    refresh();
  };

  // EDIT (clean approach)
  const handleEdit = (student) => {
    setEditStudent(student);
  };

  return (
    <div>
      <h2>Student List</h2>

      {students.map((s) => (
        <div
          key={s.id}
          style={{ border: "1px solid gray", margin: 10, padding: 10 }}
        >
          <p>Name: {s.name}</p>
          <p>City: {s.city}</p>
          <p>Phone: {s.phone}</p>
          <p>Email: {s.email}</p>

          {/* EDIT */}
          <button onClick={() => handleEdit(s)}>
            Edit
          </button>

          {/* DELETE */}
          <button onClick={() => handleDelete(s.id)}>
            Delete
          </button>
        </div>
      ))}
    </div>
  );
}
```

□ WHY `handleEdit` IS BETTER

Instead of:

```
onClick={() => setEditStudent(s)}
```

We now use:

```
onClick={() => handleEdit(s)}
```

□ Benefits:

- Cleaner code
- Easier to explain to students
- Can add logic later:

```
const handleEdit = (student) => {
  console.log("Editing:", student);
  setEditStudent(student);
};
```

□ FINAL FLOW (IMPORTANT)

1. Click **Edit**
2. `handleEdit(s)` runs
3. `setEditStudent(s)` updates parent
4. Form receives data
5. Form auto-fills
6. Click **Update** → API call
7. List refreshes