

API DEVELOPMENT ASSIGNMENT

1. Setup

- Create a Django project named task_manager

```
PS C:\Users\shakshi.likhia> python -m django startproject task_manager
PS C:\Users\shakshi.likhia>
```

- Create a Django app named tasks

```
PS C:\Users\shakshi.likhia\Documents\api_development\task_manager> python manage.py startapp tasks
PS C:\Users\shakshi.likhia\Documents\api_development\task_manager>
```

- Install Django REST Framework (pip install djangorestframework)

```
PS C:\Users\shakshi.likhia\Documents\api_development> pip install djangorestframework
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: djangorestframework in c:\users\shakshi.likhia\appdata\roaming\python\python313\site-packages (3.15.2)
Requirement already satisfied: django>=4.2 in c:\users\shakshi.likhia\appdata\roaming\python\python313\site-packages (from djangorestframework) (5.1.6)
Requirement already satisfied: asgiref<4,>=3.8.1 in c:\users\shakshi.likhia\appdata\roaming\python\python313\site-packages (from django>=4.2->djangorestframework) (3.8.1)
Requirement already satisfied: sqlparse>=0.3.1 in c:\users\shakshi.likhia\appdata\roaming\python\python313\site-packages (from django>=4.2->djangorestframework) (0.5.3)
Requirement already satisfied: tzdata in c:\users\shakshi.likhia\appdata\roaming\python\python313\site-packages (from django>=4.2->djangorestframework) (2025.1)

[notice] A new release of pip is available: 24.3.1 -> 25.0.1
[notice] To update, run: python.exe -m pip install --upgrade pip
```

- Add rest_framework and tasks to INSTALLED_APPS

```
# Application definition

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

2. Models

Create a Task model with the following fields:

- title (CharField, max_length=255)
- description (TextField, optional)
- status (CharField with choices: Pending, In Progress, Completed)
- due_date (DateField)
- created_at (DateTimeField, auto_now_add=True)
- updated_at (DateTimeField, auto_now=True)

```
from django.db import models

class Task(models.Model):
    PENDING = 'Pending'
    IN_PROGRESS = 'In Progress'
    COMPLETED = 'Completed'

    STATUS_CHOICES = [
        (PENDING, 'Pending'),
        (IN_PROGRESS, 'In Progress'),
        (COMPLETED, 'Completed'),
    ]

    title = models.CharField(max_length=255)
    description = models.TextField(blank=True, null=True)
    status = models.CharField(max_length=20, choices=STATUS_CHOICES, default=PENDING)
    due_date = models.DateField()
    created_at = models.DateTimeField(auto_now_add=True)
    updated_at = models.DateTimeField(auto_now=True)

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

```
PS C:\Users\shakshi.likhia\Documents\api_development\task_manager> python manage.py makemigrations tasks
Migrations for 'tasks':
  tasks\migrations\0001_initial.py
    + Create model Task
PS C:\Users\shakshi.likhia\Documents\api_development\task_manager> python manage.py migrate
Operations to perform:
  Apply all migrations: admin, auth, contenttypes, sessions, tasks
Running migrations:
  Applying contenttypes.0001_initial... OK
  Applying auth.0001_initial... OK
  Applying admin.0001_initial... OK
  Applying admin.0002_logentry_remove_auto_add... OK
  Applying admin.0003_logentry_add_action_flag_choices... OK
  Applying contenttypes.0002_remove_content_type_name... OK
  Applying auth.0002_alter_permission_name_max_length... OK
  Applying auth.0003_alter_user_email_max_length... OK
  Applying auth.0004_alter_user_username_opts... OK
  Applying auth.0005_alter_user_last_login_null... OK
  Applying auth.0006_require_contenttypes_0002... OK
  Applying auth.0007_alter_validators_add_error_messages... OK
  Applying auth.0008_alter_user_username_max_length... OK
  Applying auth.0009_alter_user_last_name_max_length... OK
  Applying auth.0010_alter_group_name_max_length... OK
  Applying auth.0011_update_proxy_permissions... OK
  Applying auth.0012_alter_user_first_name_max_length... OK
  Applying sessions.0001_initial... OK
  Applying tasks.0001_initial... OK
PS C:\Users\shakshi.likhia\Documents\api_development\task_manager> 
```

3. API Endpoints

Implement the following endpoints using Django REST Framework:

- Create a new task

The screenshot shows a REST client interface with a POST request to `http://127.0.0.1:8000/tasks/`. The request body is a JSON object:

```
1 {
2   "title": "Last Task",
3   "description": "Will delete this later.",
4   "status": "Pending",
5   "due_date": "2025-04-20"
6 }
7
```

The response is a 200 OK status with a JSON array of two task objects:

```
1 [
2   {
3     "id": 1,
4     "title": "New Task",
5     "description": "This is a new task.",
6     "status": "Pending",
7     "due_date": "2025-02-28",
8     "created_at": "2025-02-18T10:43:48.921789Z",
9     "updated_at": "2025-02-18T10:43:48.921812Z"
10  },
11  {
12    "id": 2,
13    "title": "Second Task",
14    "description": "One of the listed tasks.",
15    "status": "Pending",
16    "due date": "2025-03-02",
17  }
18 ]
```

- List all tasks

HTTP <http://127.0.0.1:8000/tasks/>

GET <http://127.0.0.1:8000/tasks/>

Params Authorization Headers (10) **Body** Scripts Settings

☐ none ☐ form-data ☐ x-www-form-urlencoded ☒ raw ☐ binary ☐ GraphQL **JSON** ▾

```
1 {
2   "title": "Last Task",
3   "description": "Will delete this later.",
4   "status": "Pending",
5   "due_date": "2025-04-20"
6 }
7
```

Body Cookies (1) Headers (10) Test Results ↻

{ } JSON ▾ ▶ Preview 🔄 Visualize ▾

```
7   "due_date": "2025-02-28",
8   "created_at": "2025-02-18T10:43:48.921789Z",
9   "updated_at": "2025-02-18T10:43:48.921812Z"
10 },
11 {
12   "id": 2,
13   "title": "Second Task",
14   "description": "One of the listed tasks.",
15   "status": "Pending",
16   "due_date": "2025-03-02",
17   "created_at": "2025-02-18T10:47:10.608823Z",
18   "updated_at": "2025-02-18T10:47:10.608858Z"
19 },
20 {
21   "id": 3,
22   "title": "Third Task",
23   "description": "New added into the list.",
24   "status": "Pending",
25   "due_date": "2025-03-16",
26   "created_at": "2025-02-18T10:48:01.428337Z",
27   "updated_at": "2025-02-18T10:48:01.428425Z"
28 },
29 {
30   "id": 4,
31   "title": "Last Task",
32   "description": "Will delete this later.",
33   "status": "Pending",
34   "due_date": "2025-04-20",
35   "created_at": "2025-02-18T11:11:56.231307Z",
```

- Retrieve a task by ID


The screenshot shows a REST client interface with the following details:


- URL:** `http://127.0.0.1:8000/tasks/2/`
- Method:** `GET`
- Body:** A JSON object representing a task:

```
1 {  
2   "title": "Last Task",  
3   "description": "Will delete this later.",  
4   "status": "Pending",  
5   "due_date": "2025-04-20"  
6 }  
7
```
- Response:** A JSON object representing the task details:

```
1 {  
2   "id": 2,  
3   "title": "Second Task",  
4   "description": "One of the listed tasks.",  
5   "status": "Pending",  
6   "due_date": "2025-03-02",  
7   "created_at": "2025-02-18T10:47:10.608823Z",  
8   "updated_at": "2025-02-18T10:47:10.608858Z"  
9 }
```

- Update a task


 <http://127.0.0.1:8000/tasks/2/>






PUT  <http://127.0.0.1:8000/tasks/2/>

Params Authorization Headers (10) **Body** ● Scripts Settings

☐ none ☐ form-data ☐ x-www-form-urlencoded ☒ raw ☐ binary ☐ G

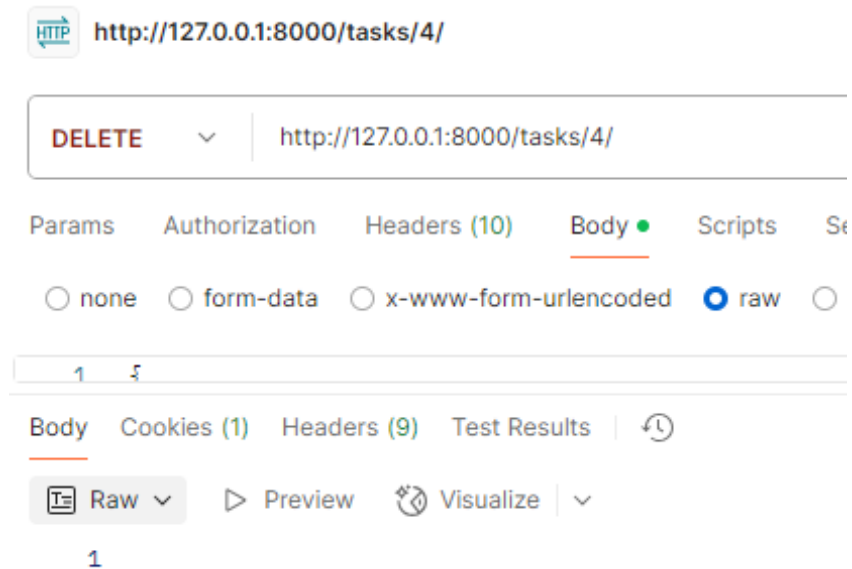
```
1 {
2   "title": "Updated Task 2 Title",
3   "description": "Updated description.",
4   "status": "Completed",
5   "due_date": "2025-03-19"
6 }
7
```

Body Cookies (1) Headers (10) Test Results 

 JSON   Preview  Visualize 

```
1 {
2   "id": 2,
3   "title": "Updated Task 2 Title",
4   "description": "Updated description.",
5   "status": "Completed",
6   "due_date": "2025-03-19",
7   "created_at": "2025-02-18T10:47:10.608823Z",
8   "updated_at": "2025-02-18T11:29:39.628292Z"
9 }
```

- Delete a task



```
C:\Users\shakshi.likhia\Documents\api_development\task_manager\tasks\urls.py changed, reloading.
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).
February 18, 2025 - 16:52:21
Django version 5.1.6, using settings 'task_manager.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.

[18/Feb/2025 16:52:27] "GET /tasks/ HTTP/1.1" 200 793
[18/Feb/2025 16:52:34] "GET /tasks/2/ HTTP/1.1" 200 200
[18/Feb/2025 16:52:52] "GET /tasks/2/ HTTP/1.1" 200 200
[18/Feb/2025 16:53:33] "GET /tasks/ HTTP/1.1" 200 793
[18/Feb/2025 16:54:56] "GET /tasks/ HTTP/1.1" 200 793
[18/Feb/2025 16:56:19] "GET /tasks/2/ HTTP/1.1" 200 200
[18/Feb/2025 16:57:47] "GET /tasks/2/ HTTP/1.1" 200 200
[18/Feb/2025 16:58:22] "GET /tasks/2/ HTTP/1.1" 200 200
Method Not Allowed: /tasks/2/
[18/Feb/2025 16:58:29] "POST /tasks/2/ HTTP/1.1" 405 41
Method Not Allowed: /tasks/2/
[18/Feb/2025 16:58:51] "POST /tasks/2/ HTTP/1.1" 405 41
[18/Feb/2025 16:59:39] "PUT /tasks/2/ HTTP/1.1" 200 207
[18/Feb/2025 17:01:33] "DELETE /tasks/4/ HTTP/1.1" 204 0
PS C:\Users\shakshi.likhia\Documents\api_development\task_manager>
```


4. Authentication & Permissions

- Use Token Authentication (rest_framework.authtoken)

POST http://127.0.0.1:8000/tasks/register/

Params Authorization Headers (11) **Body** Scripts Settings

☐ none ☐ form-data ☒ x-www-form-urlencoded ☐ raw ☐ binary ☐ GraphQL

	Key	Value	Description
<input checked="" type="checkbox"/>	username	simform	
<input checked="" type="checkbox"/>	password	shakshi1234	
	Key	Value	Description

Body Cookies (1) Headers (8) Test Results 200 OK • 630 ms • 318 B

{ } JSON Preview Visualize

```
1 {
2   "message": "User registered successfully!"
3 }
```

POST http://127.0.0.1:8000/tasks/auth-token/

Params Authorization Headers (11) **Body** Scripts Settings

☐ none ☐ form-data ☐ x-www-form-urlencoded ☒ raw ☐ binary ☐ GraphQL JSON

```
1 {
2   "username": "simform",
3   "password": "shakshi1234"
4 }
```

Body Cookies (1) Headers (9) Test Results 200 OK • 671 ms • 348

{ } JSON Preview Visualize

```
1 {
2   "token": "fd7cb855a8ce32c0595fa37ee2b8ed8b2160b4e1"
3 }
```

- Only authenticated users should be able to create, update, and delete tasks

The screenshot displays a REST client interface with a POST request to `http://127.0.0.1:8000/tasks/`. The request body is a JSON object with the following fields: `title` ("Authorizati Task"), `description` ("This is a test task"), `status` ("Pending"), and `due_date` ("2025-02-20"). The response status is 201 Created. The response body is a JSON object with the following fields: `id` (5), `title` ("Authorizati Task"), `description` ("This is a test task"), `status` ("Pending"), `due_date` ("2025-02-20"), `created_at` ("2025-02-19T06:42:12.092288Z"), and `updated_at` ("2025-02-19T06:42:12.092302Z").

```
POST http://127.0.0.1:8000/tasks/

{
  "title": "Authorizati Task",
  "description": "This is a test task",
  "status": "Pending",
  "due_date": "2025-02-20"
}
```

201 Created

```
{
  "id": 5,
  "title": "Authorizati Task",
  "description": "This is a test task",
  "status": "Pending",
  "due_date": "2025-02-20",
  "created_at": "2025-02-19T06:42:12.092288Z",
  "updated_at": "2025-02-19T06:42:12.092302Z"
}
```

5. Filtering & Ordering

- Implement filtering by status (?status=Pending)

The screenshot shows a REST client interface with a GET request to `http://127.0.0.1:8000/tasks/?status=Pending`. The response is displayed in JSON format, showing a list of three tasks with status 'Pending'.

```
1  [
2    {
3      "id": 1,
4      "title": "New Task",
5      "description": "This is a new task.",
6      "status": "Pending",
7      "due_date": "2025-02-28",
8      "created_at": "2025-02-18T10:43:48.921789Z",
9      "updated_at": "2025-02-18T10:43:48.921812Z"
10   },
11   {
12     "id": 3,
13     "title": "Third Task",
14     "description": "New added into the list.",
15     "status": "Pending",
16     "due_date": "2025-03-16",
17     "created_at": "2025-02-18T10:48:01.428337Z",
18     "updated_at": "2025-02-18T10:48:01.428425Z"
19   },
20   {
21     "id": 5,
22     "title": "Authorizati Task",
23     "description": "This is a test task",
24     "status": "Pending",
25     "due_date": "2025-02-20",
26     "created_at": "2025-02-19T06:42:12.092288Z",
27     "updated_at": "2025-02-19T06:42:12.092302Z"
28   }
29 ]
```

- Implement ordering by due_date (?ordering=due_date)

```
GET http://127.0.0.1:8000/tasks/?ordering=due_date

Parameters Authorization Headers (8) Body Scripts Settings
none form-data x-www-form-urlencoded raw binary GraphQL JSC

1
Body Cookies (1) Headers (10) Test Results Visualize

[{"id": 5, "title": "Authorizati Task", "description": "This is a test task", "status": "Pending", "due_date": "2025-02-20", "created_at": "2025-02-19T06:42:12.092288Z", "updated_at": "2025-02-19T06:42:12.092302Z"}, {"id": 1, "title": "New Task", "description": "This is a new task.", "status": "Pending", "due_date": "2025-02-28", "created_at": "2025-02-18T10:43:48.921789Z", "updated_at": "2025-02-18T10:43:48.921812Z"}, {"id": 3, "title": "Third Task", "description": "New added into the list.", "status": "Pending", "due_date": "2025-03-16", "created_at": "2025-02-18T10:48:01.428337Z", "updated_at": "2025-02-18T10:48:01.428425Z"}, {"id": 2, "title": "Updated Task 2 Title", "description": "Updated description.", "status": "Completed", "due_date": "2025-03-19", "created_at": "2025-02-18T10:47:10.608823Z", "updated_at": "2025-02-18T11:29:39.628292Z"}]
```