

How to deploy fastAPI + React + MongoDB app using Render

My fastAPI + React + MongoDB app is a CRUD application that stores and display books. It has the structure as follow - some files are not included, full folder structure can be view in <https://github.com/KuKustudy/my-bookshelf> :

```
-- my-bookshelf-backend

--- app
---- main.py
---- models.py

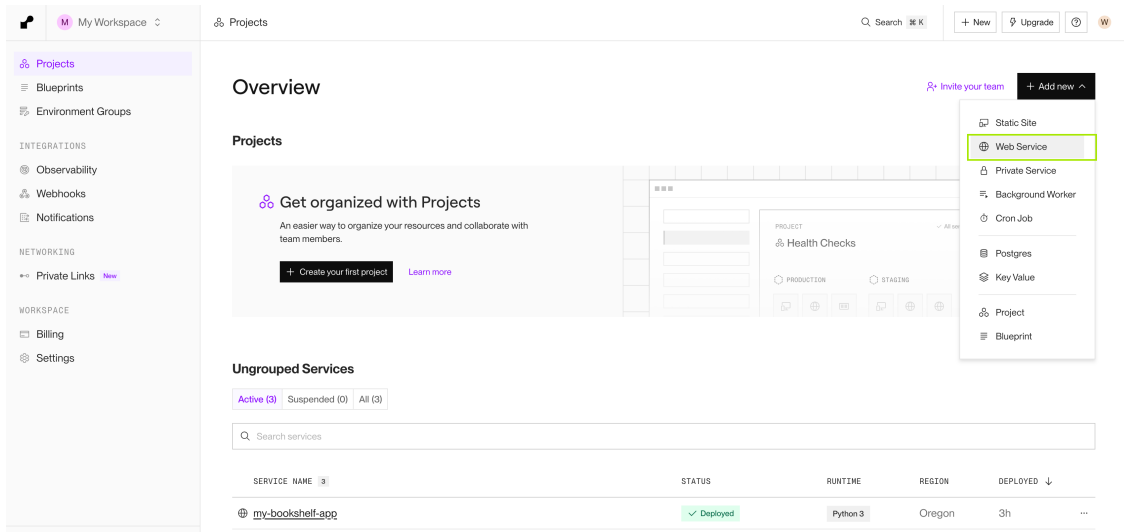
-- my-bookshelf-frontend

--- src
---- App.js
---- index.js
---- tailwind.css
---- tailwindoutput.css
---- components
----- CreateBookForm.js
```

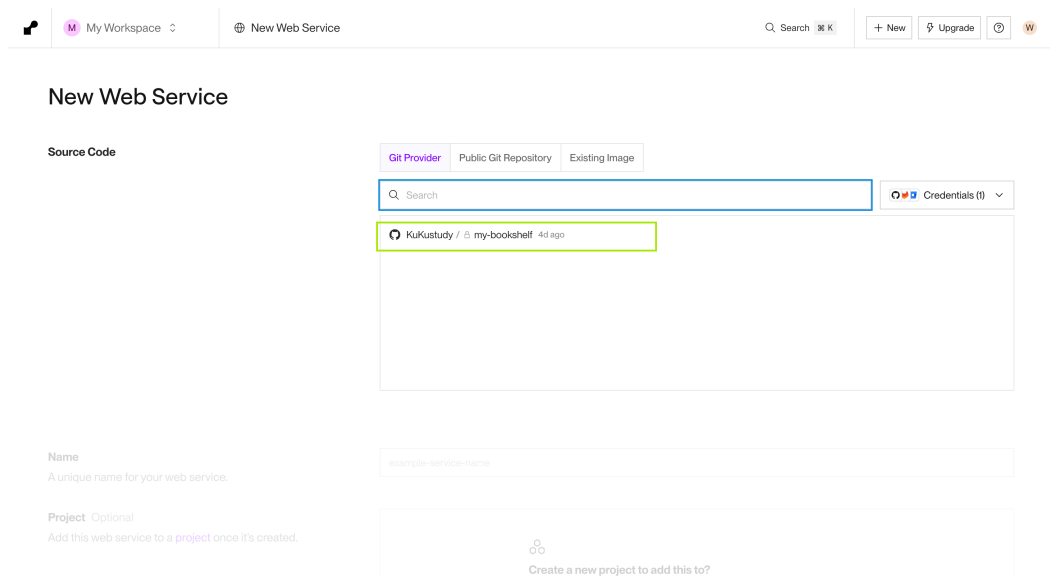
I deploy this application using Render: <https://render.com/>

Deploy backend

1. Go to home page in render, create a new 'Web Service'



2. Connect and choose repository where you stored the app



3. Configure deployment setting as below

My Workspace

New Web Service

Search

+ New

Upgrade

New Web Service

Source Code

KuKustudy / my-bookshelf • 4d ago

Edit

Name
A unique name for your web service.

my-bookshelf-2

Project Optional
Add this web service to a **project** once it's created.

Create a new project to add this to?
You don't have any projects in this workspace. **Projects** allow you to group resources into environments so you can better manage related resources.

+ Create a project

Language

Python 3

Branch
The Git branch to build and deploy.

main

Branch
The Git branch to build and deploy.

main

Region
Your services in the same **region** can communicate over a **private network**. You currently have services running in Oregon.

Oregon (US West)

2 existing services

Deploy in a new region +

Root Directory Optional
If set, Render runs commands from this directory instead of the repository root. Additionally, code changes outside of this directory do not trigger an auto-deploy. Most commonly used with a **monorepo**.

my-bookshelf-backend/app

Build Command
Render runs this command to build your app before each deploy.

my-bookshelf-backend/app/ \$ pip install "fastapi[standard]" "uvicorn[standard]" pydantic python-dotenv pymon...

Start Command
Render runs this command to start your app with each deploy.

my-bookshelf-backend/app/ \$ fastapi run main.py

Instance Type

For hobby projects

Free

512 MB (RAM)

set the root directory as the one where you will run your app locally in my case, main.py is under the 'app' directory, to ensure start command work, I need to set the root directory as 'app'

In this textbox, enter the command that will install all required libraries, basically these are what you have imported at the top of your coding files

the command that will run your app, this may differ from command when you developing the app. for example: in development, I used uvicorn main:app --reload to auto reload things, but in deployment, I use fastapi run main.py

Choose free plan

My Workspace

New Web Service

Search
K
+ New
Upgrade
W

Start Command
my-bookshelf-backend/app/ \$ fastapi run main.py

Render runs this command to start your app with each deploy.

Instance Type

For hobby projects

Free
\$0 / month

512 MB (RAM)
0.1 CPU

Upgrade to enable more features

Free instances spin down after periods of inactivity. They do not support SSH access, scaling, one-off jobs, or persistent disks. Select any paid instance type to enable these features.

For professional use

For more power and to get the most out of Render, we recommend using one of our paid instance types. All paid instances support:

- Zero Downtime
- SSH Access
- Scaling
- One-off jobs
- Support for persistent disks

<p>Starter \$7 / month</p> <p>512 MB (RAM) 0.5 CPU</p>	<p>Standard \$25 / month</p> <p>2 GB (RAM) 1 CPU</p>
<p>Pro \$85 / month</p> <p>4 GB (RAM) 2 CPU</p>	<p>Pro Plus \$175 / month</p> <p>8 GB (RAM) 4 CPU</p>
<p>Pro Max \$225 / month</p> <p>16 GB (RAM) 4 CPU</p>	<p>Pro Ultra \$450 / month</p> <p>32 GB (RAM) 8 CPU</p>

Need a [custom instance type](#)? We support up to 512 GB RAM and 64 CPUs.

Environment Variables

Enter environment variables, these variables are unique to each app instance, and should be remain secret, in my case I used only three.

- PORT is where I expect backend server run on, actually this is only relevant to local testing where I run it on local port
- CLIENT_PORT is frontend's URL, this should contain deployed frontend's URL e.g. <https://my-bookshelf-app.onrender.com/>
- DATABASE_URL is the link that connect to the database

My Workspace

New Web Service

Search

+ New

Upgrade

W

One-off jobs

Support for persistent disks

Pro Max

\$225 / month

16 GB (RAM)

4 CPU

Pro Ultra

\$450 / month

32 GB (RAM)

8 CPU

Need a [custom instance type](#)? We support up to 512 GB RAM and 64 CPUs.

Environment Variables

Set environment-specific config and secrets (such as API keys), then read those values from your code. [Learn more.](#)

PORT

.....

CLIENT_PORT

.....

DATABASE_URL

.....

+ Add Environment Variable

Add from .env

> Advanced

Deploy Web Service

4. Click deploy

My Workspace

New Web Service

Search

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Upgrade

W

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4 CPU

\$450 / month

8 CPU

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.....

CLIENT_PORT

.....

DATABASE_URL

.....

+ Add Environment Variable

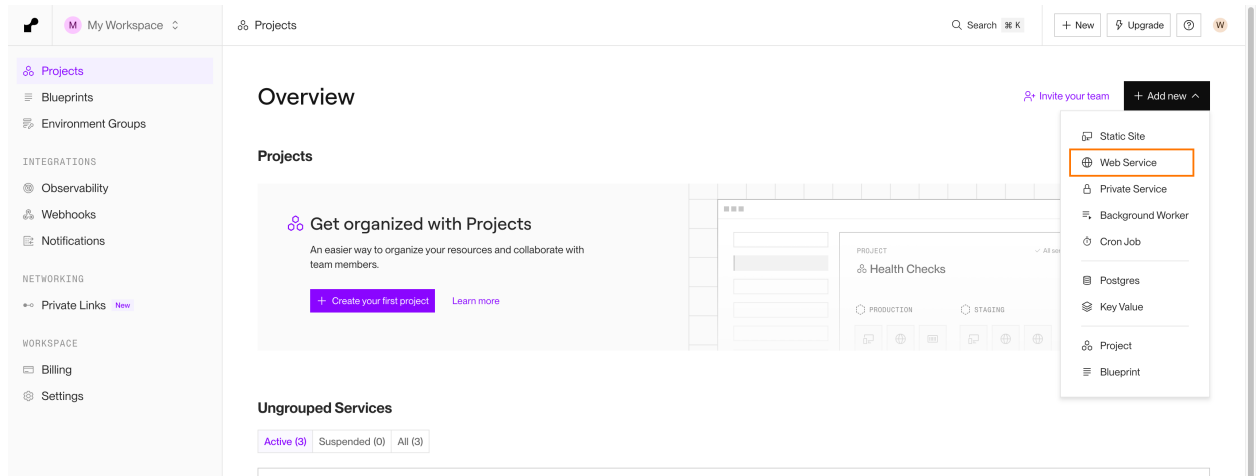
Add from .env

> Advanced

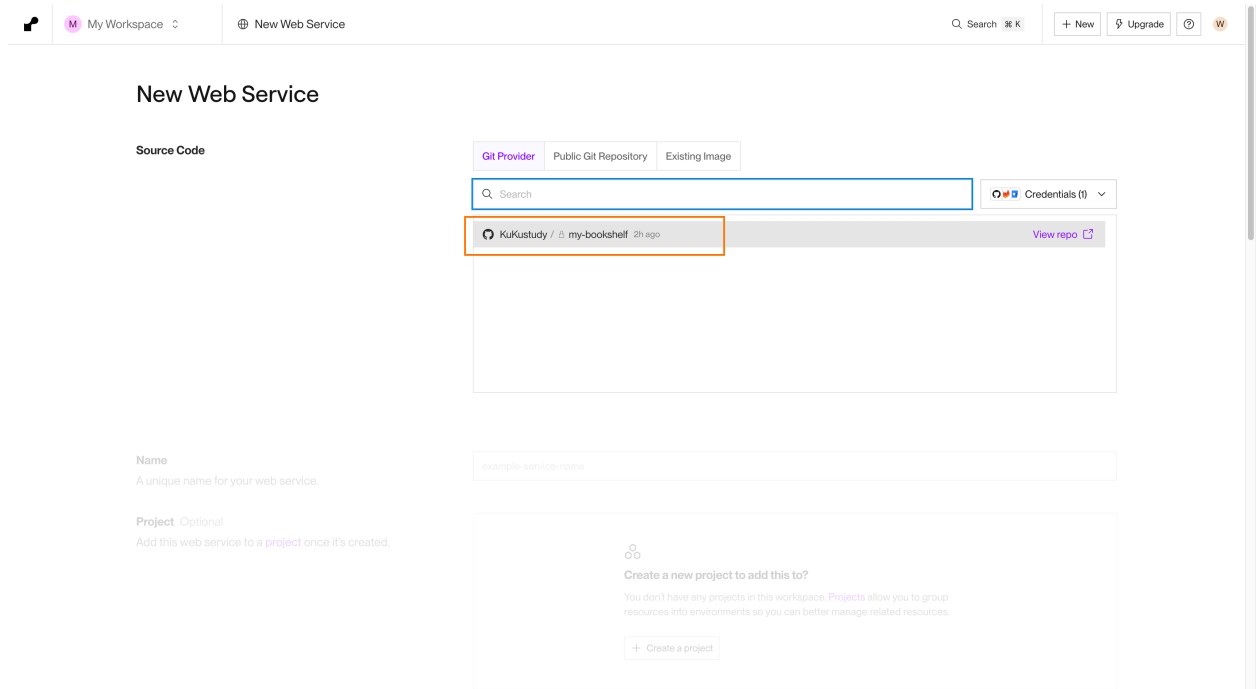
Deploy Web Service

Deploy frontend

1. Create new web service



2. Choose the repository



3. Give it a name you like, it will become part of the domain name

My Workspace

New Web Service

Search

+ New

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W

New Web Service

Source Code

KuKustudy / my-bookshelf • 2h ago

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my-bookshelf-app

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Language

Python 3

Branch

main

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Oregon (US West)

3 existing services

Deploy in a new region +

Configure the build and start command:

My Workspace

New Web Service

Search

+ New

Upgrade

W

Region

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Oregon (US West)

3 existing services

Deploy in a new region +

Root Directory Optional

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set root directory as the frontend directory

my-bookshelf-frontend

Build Command

Render runs this command to build your app before each deploy.

build react app using npm install, files that need to be install are specified in package.json when building the app, hence we don't need to list all files that need to be install as in fastAPI backend

my-bookshelf-frontend/ \$ npm install

Start Command

Render runs this command to start your app with each deploy.

command to start the react app

my-bookshelf-frontend/ \$ npm start

Instance Type

choose the free plan

For hobby projects

Free

\$0 / month

512 MB (RAM)

0.1 CPU

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- Zero Downtime
- SSH Access

Starter

\$7 / month

512 MB (RAM)

0.5 CPU

Standard

\$28 / month

2 GB (RAM)

1 CPU

Pro

\$56 / month

4 GB (RAM)

2 CPU

Pro Plus

\$112 / month

8 GB (RAM)

4 CPU

Set the environment variable

REACT_APP_SERVER_URL should be the real backend URL instead of local host. PORT is 3000, it was local port where I want it to host on, it shouldn't be matter when you deploy frontend

My Workspace

New Web Service

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+ New

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Pro	4 GB (RAM) 2 CPU	Pro Plus	8 GB (RAM) 4 CPU
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Environment Variables

Set environment-specific config and secrets (such as API keys), then read those values from your code. [Learn more.](#)

PORT	*****	
REACT_APP_SERVER_URL	http://127.0.0.1:8080	

+ Add Environment Variable

Add from env

> Advanced

Deploy Web Service

4. Click deploy