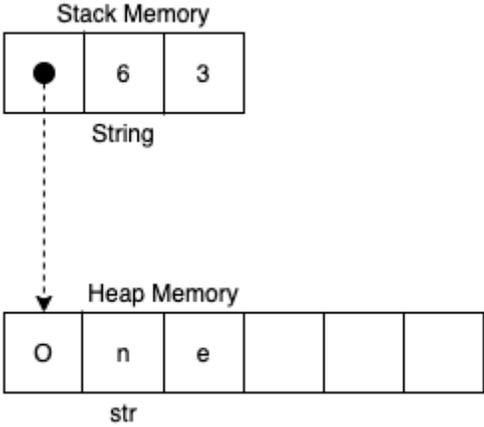
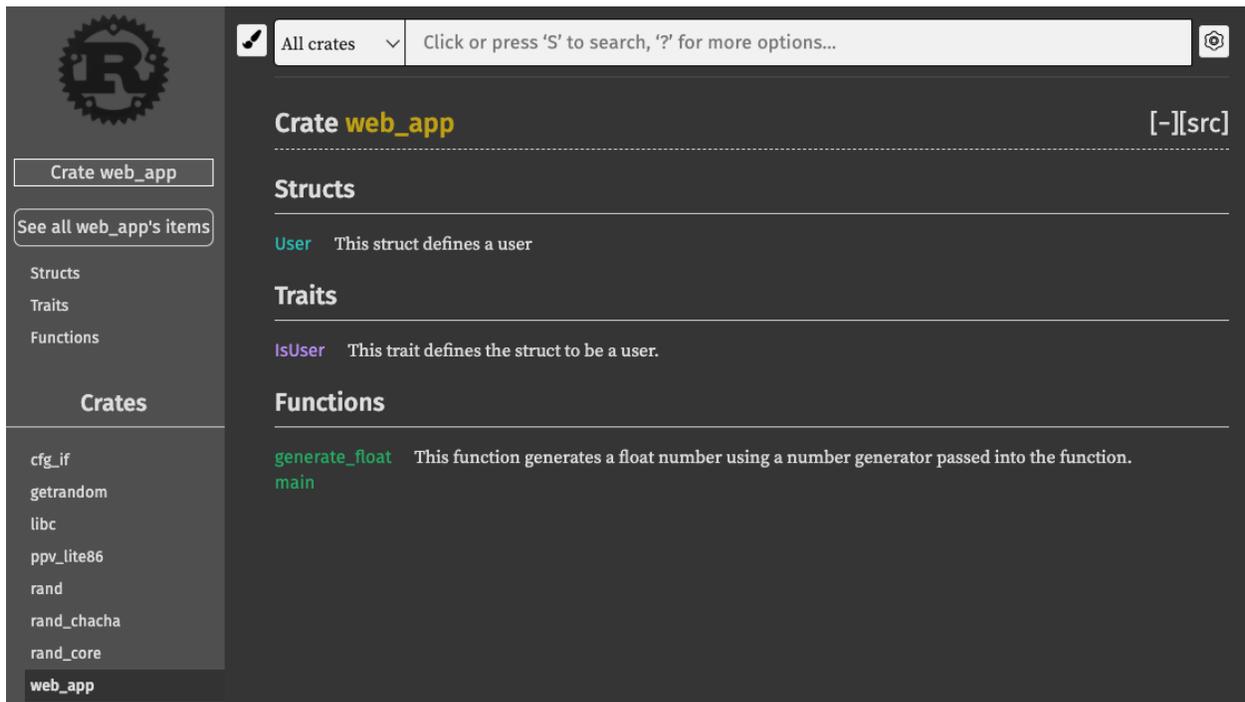


Chapter 1: Quick Introduction to Rust



Chapter 2: Designing Your Web Application in Rust



The screenshot displays the crates.io website interface for the 'web_app' crate. At the top left is the Rust logo. A search bar at the top contains the text 'All crates' and a prompt 'Click or press 'S' to search, '?' for more options...'. The main content area is titled 'Crate web_app' with a '[-][src]' link on the right. Below the title are three sections: 'Structs', 'Traits', and 'Functions'. The 'Structs' section lists 'User' with the description 'This struct defines a user'. The 'Traits' section lists 'IsUser' with the description 'This trait defines the struct to be a user.'. The 'Functions' section lists 'generate_float' (description: 'This function generates a float number using a number generator passed into the function.') and 'main'. On the left sidebar, there is a 'Crate web_app' button, a 'See all web_app's items' button, and a 'Crates' section listing various crates including 'cfg_if', 'getrandom', 'libc', 'ppv_lite86', 'rand', 'rand_chacha', 'rand_core', and 'web_app'.

Struct web_app::User

[\[-\]](#)[\[src\]](#)

```
\[-\] struct User {  
    name: String,  
    age: i8,  
}
```

[\[-\]](#) This struct defines a user

Attributes

- name (String): the name of the user
- age (i8): the age of the user

Fields

name: String
age: i8

Trait Implementations

```
] impl IsUser for User \[src\]
```

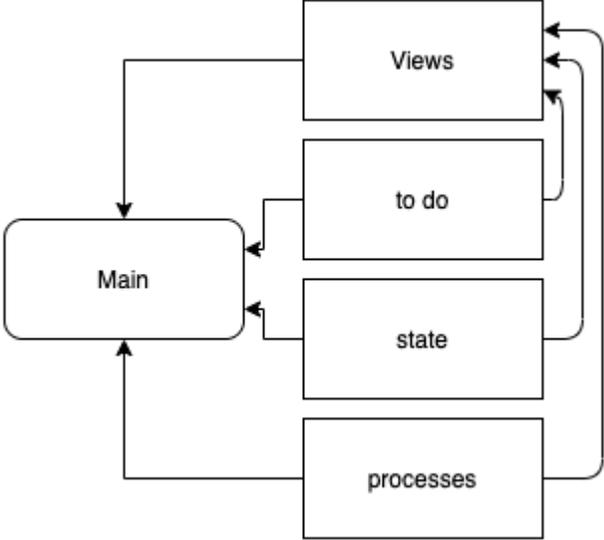
Auto Trait Implementations

```
impl RefUnwindSafe for User  
impl Send for User  
impl Sync for User  
impl Unpin for User  
impl UnwindSafe for User
```

Chapter 3: Handling HTTP Requests

No images

Chapter 4: Processing HTTP Requests



POST http://127.0.0.1:8000/item/create/washing Send

Params Authorization Headers (9) Body ● Pre-request Script Tests Settings

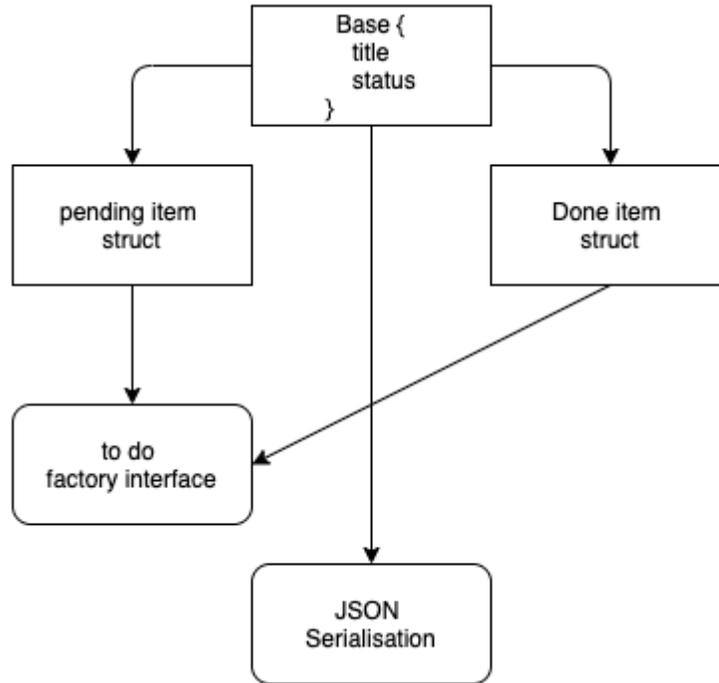
Query Params

KEY	VALUE	DESCRIPTION
Key	Value	Description

Body Cookies Headers (3) Test Results Status: 200 OK Time: 25 ms Size: 132 B

Pretty Raw Preview Visualize Text

```
1 washing created
```



PUT http://127.0.0.1:8000/item/edit Send

Params Authorization Headers (9) **Body** Pre-request Script Tests Settings

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

```

1 - {
2   "title": "washing",
3   "status": "done"
4 }
  
```

Body Cookies Headers (3) Test Results Status: 200 OK Time: 25 ms Size: 266 B

Pretty Raw Preview Visualize
 JSON
↺

```

1 {
2   "pending_items": [
3     {
4       "title": "code in rust",
5       "status": "pending"
6     }
7   ],
8   "done_items": [
9     {
10      "title": "washing",
11      "status": "done"
12    }
13  ],
14  "pending_item_count": 1,
15  "done_item_count": 1
16 }
  
```

Chapter 5: Displaying Content in the Browser



Items



To Do Items

To Do Items

Done Items

washing

To Do Items

code in rust

Done Items

eat ramen for breakfast

To Do Items

code in rust
eat cereal for breakfast

Done Items

code in rust

delete

To Do Items

eat cereal for breakfast

edit

eat ramen for breakfast

edit

Create

complete tasks: 2 pending tasks: 1

Done Items

code in rust

delete

eat cereal for breakfast

delete

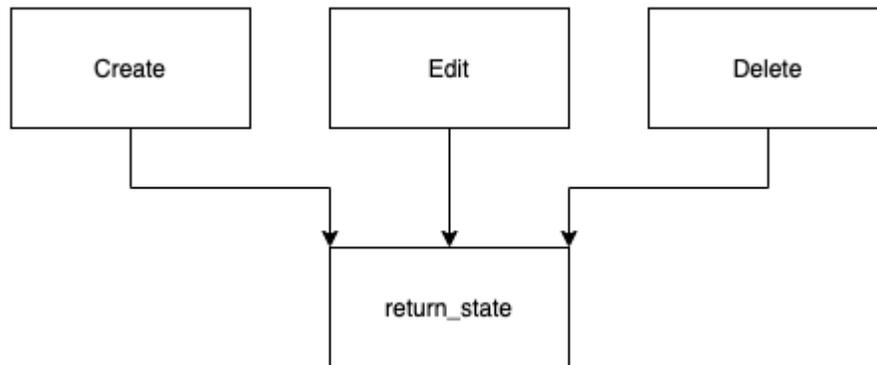
To Do Items

eat ramen for breakfast

edit

Create

Chapter 6: Data Persistence with PostgreSQL



complete tasks: 1 pending tasks: 1

Done Items

buy canoe

delete

To Do Items

go dragon boat racing

edit

Create

Chapter 7: Managing User Sessions

POST http://localhost:8000/user/create Send

Params Authorization Headers (8) **Body** Pre-request Script Tests Settings

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

```
1 {
2   "name": "maxwell",
3   "email": "test@gmail.com",
4   "password": "test"
5 }
```

GET http://localhost:8000/auth/login Send

Params Authorization Headers (8) **Body** Pre-request Script Tests Settings

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

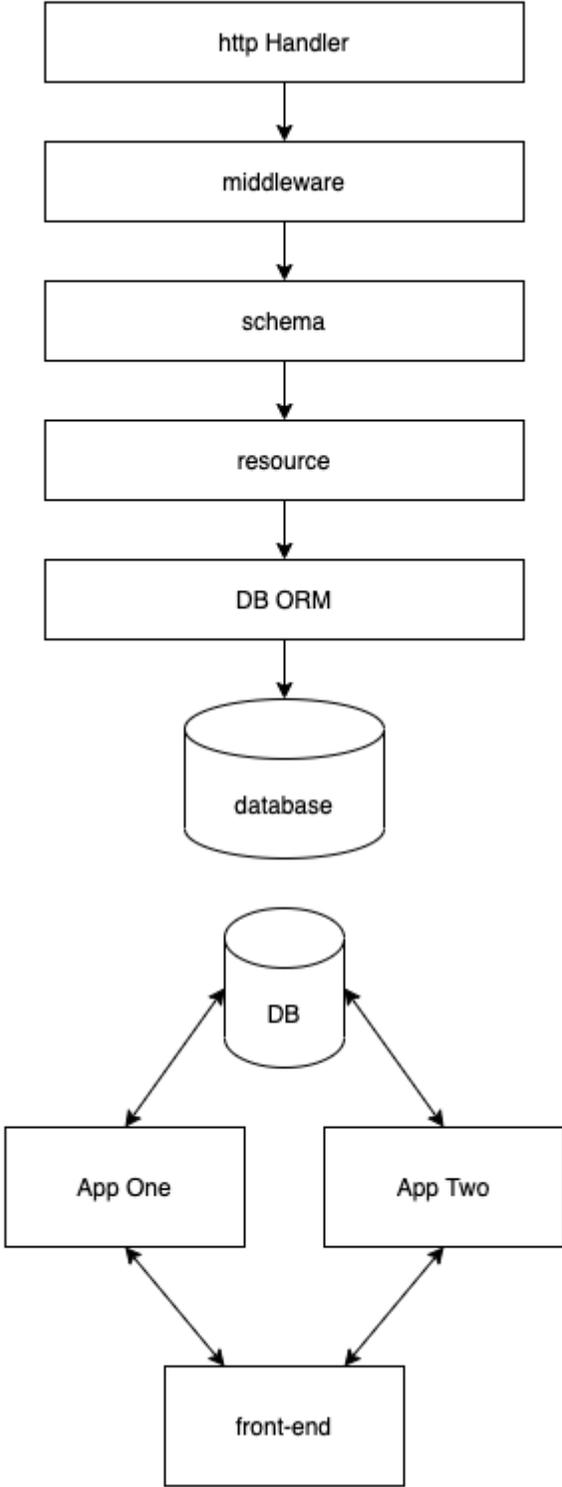
```
1 {
2   "username": "maxwell",
3   "password": "test"
4 }
5
```

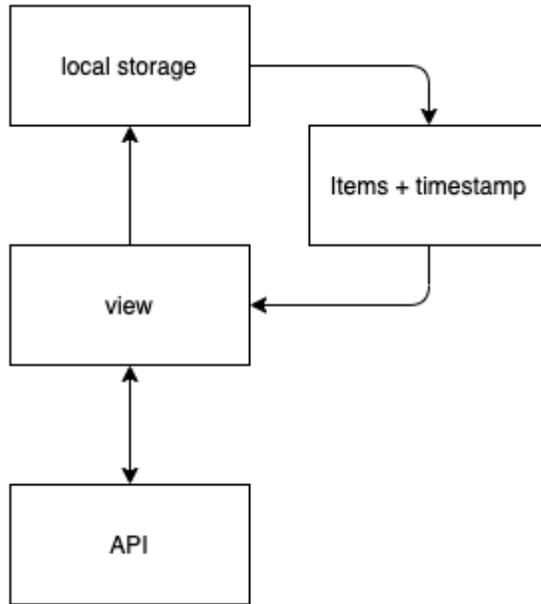
```
1 {
2   "username": "maxwell",
3   "password": "test"
4 }
5
```

Body Cookies **Headers (3)** Test Results Status: 200 OK Time: 2.94 s Size: 167 B Save Response

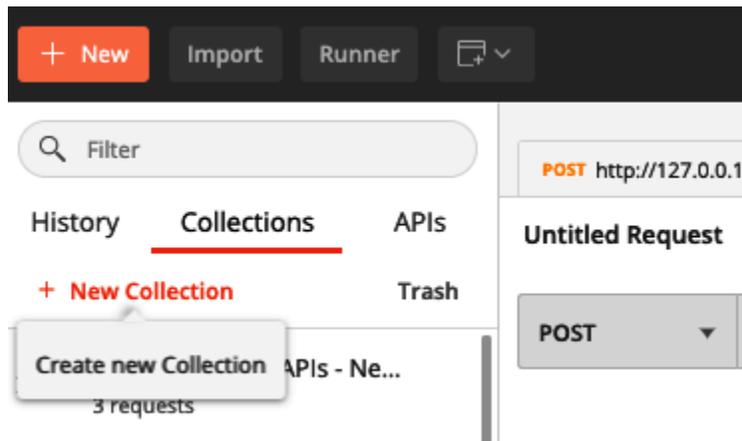
KEY	VALUE
content-length	0
token	eyJhbGciOiJIUzI1NiIsInR5cCI6Ikpzcm9udCI6dXNpbWVzeMaKZA18HdOq3jcgID

Chapter 8: Building RESTful Services





Chapter 9: Testing Our Application Endpoints and Component



CREATE A NEW COLLECTION

Name

Description **Authorization** Pre-request Scripts Tests Variables

This authorization method will be used for every request in this collection. You can override this by specifying one in the request.

TYPE

API Key

The authorization header will be automatically generated when you send the request. [Learn more about authorization](#)

! Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. [Learn more about variables](#)

Key: user-token

Value: eyJhbGciOiJIUzI1NiJ9.eyJ1c2VyX2lkIjo2fQ.t...

Add to: Header

Cancel Create

> [Share Collection

[Manage Roles

> [A| Rename ⌘E

[Edit

> [Create a fork

[Create Pull Request

> [Merge changes

[Add Request

> [Add Folder

[Duplicate ⌘D

> [Export

[Monitor Collection

> [Mock Collection

[Publish Docs

> [Remove from workspace

[Delete ⌘

0 requests ...

● none ● form-data ● x-www-form-

```
1 {
2   "username": "test",
3   "password": "test"
4 }
5
```

Body Cookies Headers (3) Test Results

KEY
content-length ⓘ
token ⓘ
date ⓘ

Find and Replace Console

SAVE REQUEST

Requests in Postman are saved in collections (a group of requests).

[Learn more about creating collections](#)

Request name

Request description (Optional)

Descriptions support [Markdown](#)

Select a collection or folder to save to:

◀ to_do_items + Create Folder

Cancel

Save to to_do_items

POST

http://127.0.0.1:8000/api/v1/item/create/washing

Params ●

Authorization

Headers (9)

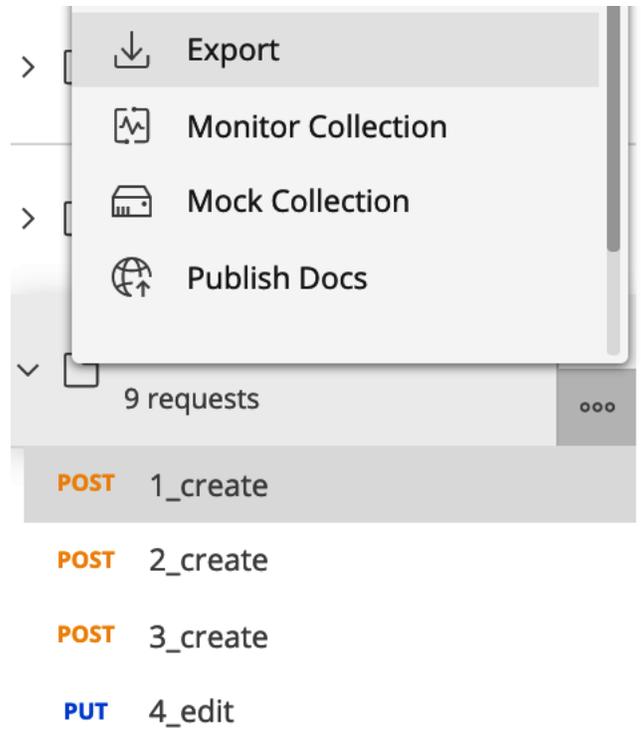
Body ●

Pre-request Script

Tests

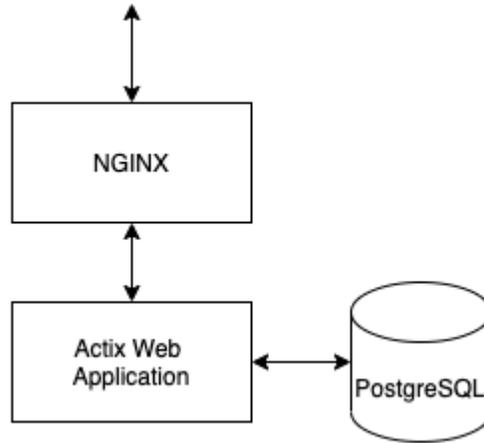
Settings

1 |



	executed	failed
iterations	1	0
requests	8	0
test-scripts	8	0
prerequisite-scripts	0	0
assertions	64	0
total run duration: 775ms		
total data received: 1.05KB (approx)		
average response time: 64ms [min: 44ms, max: 115ms, s.d.: 21ms]		

Chapter 10: Deploying Our Application on AWS



The screenshot shows the Docker Hub interface for creating a new repository. The top navigation bar includes the Docker Hub logo, a search bar with the text 'Search for great content (e.g., mysql)', and links for 'Explore', 'Repositories', and 'Organizations'. Below the navigation bar, there is a dropdown menu showing 'maxwellflitton' and a search input field with the placeholder 'Search by repository name...'. A blue 'Create Repository' button is located to the right of the search field. The main content area is titled 'Create Repository' and shows the repository name 'actix_web_application' entered in the input field. Below the name, there is a description: 'A basic example of how to deploy Rust Actix Web applications to servers'. Under the 'Visibility' section, the 'Public' option is selected with a radio button, and the 'Private' option is unselected. The 'Build Settings (optional)' section is visible at the bottom, showing 'Autobuild' settings and a 'Connected' status for GitHub.

maxwellflitton / actix_web_application

A basic example of how to deploy Rust Actix Web applications to servers 

 Last pushed: in 2 minutes

Tags and Scans

 VULNERABILITY SCANNING - **DISABLED**
[Enable](#)

This repository contains 1 tag(s).

TAG	OS	PULLED	PUSHED
 latest		in 2 minutes	in 2 minutes

[See all](#)

-  New EC2 Experience
Tell us what you think 
- EC2 Dashboard** New
- Events New
- Tags
- Limits
- ▼ **Instances**
- Instances New
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
- Reserved Instances
- Dedicated Hosts New
- Capacity Reservations
- ▼ **Images**
- AMIs
- ▼ **Elastic Block Store**
- Volumes
- Snapshots
- Lifecycle Manager
- ▼ **Network & Security**
- Security Groups New

Resources

You are using the following Amazon EC2 resources in the Europe (London) Region:

Instances (running)	1	Dedicated Hosts	0	Elastic IPs	2
Instances (all states)	1	Key pairs	4	Load balancers	0
Placement groups	0	Security groups	7	Snapshots	0
Volumes	1				

 Easily size, configure, and deploy Microsoft SQL Server Always On availability groups on AWS using the AWS Launch Wizard for SQL Server. [Learn more](#) 

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

[Launch instance](#)

Note: Your instances will launch in the Europe (London) Region

Scheduled events



Service health

 [Service Health Dashboard](#)

Region: Europe (London) | Status:  This service is operating normally

Zone status

Zone	Status
------	--------

Quick Start 1 to 39 of 39 AMIs

My AMIs

AWS Marketplace

Community AMIs

Free tier only

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0e80a462ede03e653 (64-bit x86) / ami-03144ab666315a8a3 (64-bit Arm) Select

Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is approaching end of life on December 31, 2020 and has been removed from this wizard.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)
 64-bit (Arm)

Red Hat Enterprise Linux 8 (HVM), SSD Volume Type - ami-06178cf087598769c Select

Free tier eligible

Red Hat Enterprise Linux version 8 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)

SUSE Linux Enterprise Server 15 SP2 (HVM), SSD Volume Type - ami-0d7db5fc4b5075b0d (64-bit x86) / ami-0fdd4500e38324e55 (64-bit Arm) Select

Free tier eligible

SUSE Linux Enterprise Server 15 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)
 64-bit (Arm)

Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0ff4c8fb495a5a50d (64-bit x86) / ami-0bbd1b7c1501b5858 (64-bit Arm) Select

Free tier eligible

Ubuntu Server 20.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)
 64-bit (Arm)

Microsoft Windows Server 2019 Base - ami-019b399cca02b2cd3 Select

Free tier eligible

Microsoft Windows 2019 Datacenter edition. [English]

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)

Are you launching a database instance? Try Amazon RDS. Hide

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale your database on AWS by automating time-consuming database management tasks. With RDS, you can easily deploy [Amazon Aurora](#), [MariaDB](#), [MySQL](#), [Oracle](#), [PostgreSQL](#), and [SQL Server](#) databases on AWS. [Aurora](#) is a MySQL- and PostgreSQL-compatible, enterprise-class database at 1/10th the cost of commercial databases. [Learn more about RDS](#)

[Launch a database using RDS](#)

Filter by: All instance families Current generation Show/Hide Columns

Currently selected: t2.micro (- ECU, 1 vCPUs, 2.5 GHz, -, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	t2	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.large	2	8	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.xlarge	4	16	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.2xlarge	8	32	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes

Select an existing key pair or create a new key pair



A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair 

Key pair name

rust_app

Download Key Pair



You have to download the **private key file** (*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

Cancel

Launch Instances

Instances (1/2) [Info](#)

[Refresh](#) [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

Filter instances

< 1 > [Settings](#)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4
-	[REDACTED]	Running	t2.micro	2/2 checks ...	No alarms	eu-west-2c	[REDACTED]	[REDACTED]
-	i-065322cde553e92e8	Running	t2.micro	2/2 checks ...	No alarms	eu-west-2a	ec2-3-8-1-220.eu-wes...	3.8.1.220

Instance: i-065322cde553e92e8

[Details](#) [Security](#) [Networking](#) [Storage](#) [Status Checks](#) [Monitoring](#) [Tags](#)

Instance summary [Info](#)

Instance ID i-065322cde553e92e8	Public IPv4 address 3.8.1.220 open address	Private IPv4 addresses 172.31.13.36
Instance state Running	Public IPv4 DNS ec2-3-8-1-220.eu-west-2.compute.amazonaws.com open address	Private IPv4 DNS ip-172-31-13-36.eu-west-2.compute.internal
Instance type t2.micro	Elastic IP addresses -	VPC ID vpc-6e6a6307
AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more	IAM Role -	Subnet ID subnet-5283bc29

Instance details [Info](#)

Platform Amazon Linux (Inferred)	AMI ID ami-08b993f76f42c3e2f	Monitoring disabled
Platform details Linux/UNIX	AMI name amzn2-ami-hvm-2.0.20201126.0-x86_64-gp2	Termination protection Disabled
Launch time Tue Dec 15 2020 21:12:56 GMT+0000 (Greenwich Mean Time) (3 minutes)	AMI location amazon/amzn2-ami-hvm-2.0.20201126.0-x86_64-gp2	Lifecycle normal
Stop-hibernate behavior disabled	AMI Launch index 0	Key pair name rust_app

▼ Security details

IAM Role

-

Owner ID

 875019845375

Security groups

 [sg-0929f2dff51d8c1e3 \(launch-wizard-1\)](#)

▼ Inbound rules

Port range	Protocol	Source	Security groups
All	All	0.0.0.0/0	launch-wizard-1

▼ Outbound rules

Port range	Protocol	Destination	Security groups
All	All	0.0.0.0/0	launch-wizard-1

sg-0929f2dff51d8c1e3 - launch-wizard-1 Actions ▼

Details

Security group name  launch-wizard-1	Security group ID  sg-0929f2dff51d8c1e3	Description  launch-wizard-1 created 2020-12-15T20:59:06.945+00:00	VPC ID  vpc-6e6a6307
Owner  875019845375	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

Inbound rules |
 Outbound rules |
 Tags

Inbound rules Edit inbound rules

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	0.0.0.0/0	-

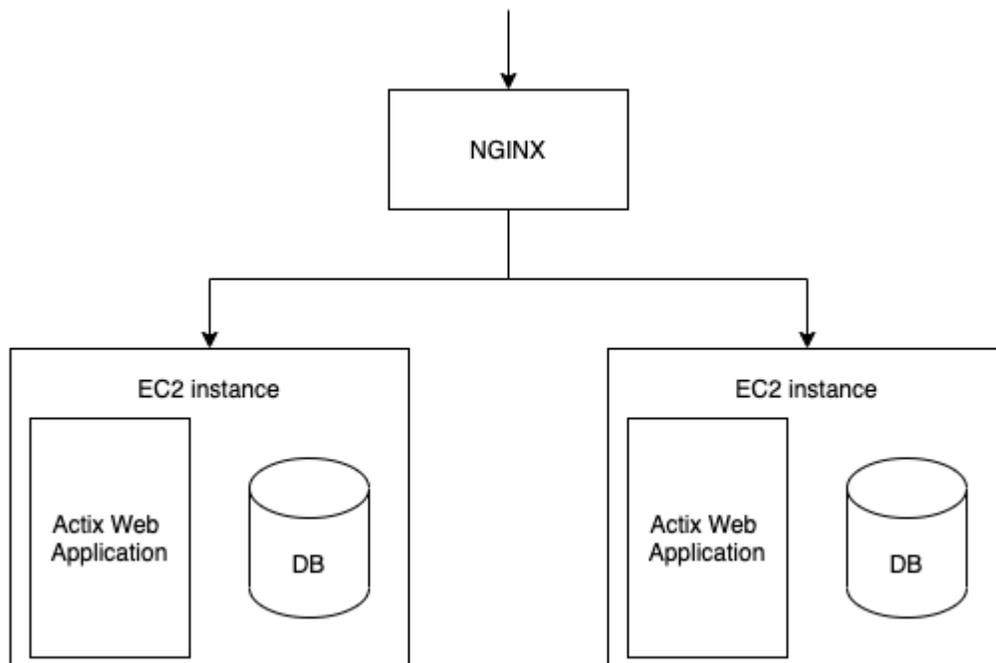
Edit inbound rules Info

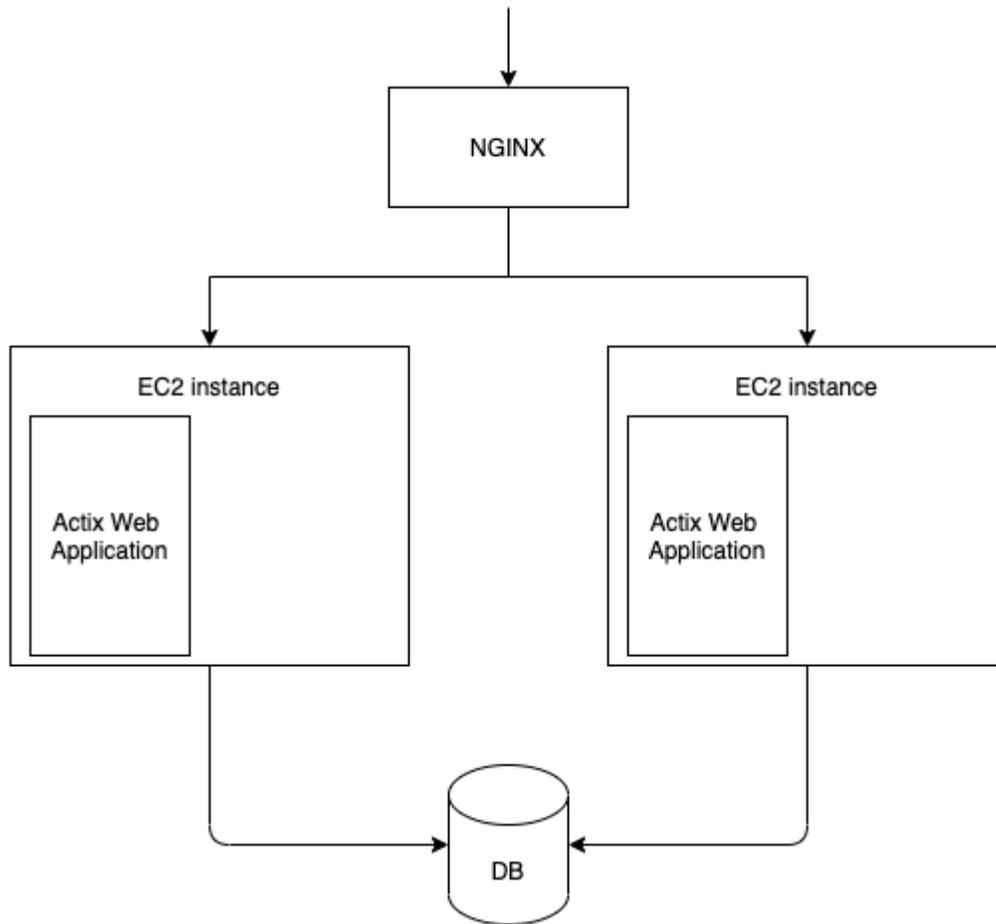
Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>	
SSH	TCP	22	Custom <input type="text" value="Q"/> <input type="text" value="0.0.0.0/0"/>	<input type="text"/>	Delete
HTTP	TCP	80	Custom <input type="text" value="Q"/> <input type="text" value="0.0.0.0/0"/>	<input type="text"/>	Delete

⚠ NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created.





Amazon RDS ×

Dashboard

Databases

Query Editor

Performance Insights

Snapshots

Automated backups

Reserved instances

Amazon Aurora
×

Amazon Aurora
 Amazon Aurora is a MySQL- and PostgreSQL-compatible enterprise-class database, starting at <\$1/day. Aurora supports up to 64TB of auto-scaling storage capacity, 6-way replication across three availability zones, and 15 low-latency read replicas. [Learn more](#)

[Create database](#)

Or, [Restore Aurora DB cluster from S3](#)

Resources

Refresh

Recommended for you

Chapter 11: Understanding Rocket Web Framework

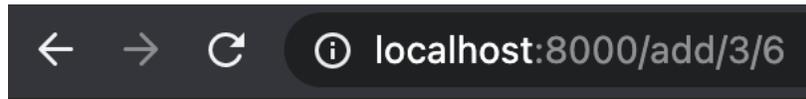


Hello, 31 year old named maxwell!



URL does not exist

Appendix A: Understanding the Warp Framework



9



Missing request header "user-token"

The screenshot shows a web browser's developer tools interface. The top bar indicates a GET request to http://127.0.0.1:8000/user/1. The 'Headers' tab is selected, showing 10 headers. Two 'user-token' headers are visible: one with a checked checkbox and a long alphanumeric value, and another with an unchecked checkbox and the value 'test'. Below the headers, the 'Body' tab is selected, showing a JSON response with a status of 200 OK. The JSON response is displayed in 'Pretty' format.

KEY	VALUE
<input checked="" type="checkbox"/> user-token	eyJhbGciOiJIUzI1NiJ9.eyJ1c2VyX2lkIjo2fQ.uVo7u877IT2GEMpB_gxVtxhMAYAJD8W_XiUoNvR7_iM
<input type="checkbox"/> user-token	test
Key	Value

```
1 {
2   "pending_items": [
3     {
4       "title": "go dragon boat racing",
5       "status": "pending"
6     }
7   ],
8   "done_items": [],
9   "pending_item_count": 1,
10  "done_item_count": 0
11 }
```

POST

http://127.0.0.1:8000/make

```
1 {  
2   "title": "eat dinner",  
3   "status": "pending"  
4 }  
5  
6  
7  
8  
9
```

Body Cookies Headers (3) Test Results

Status: 200 OK

Pretty

Raw

Preview

Visualize

JSON



```
1 {  
2   "pending_items": [  
3     {  
4       "title": "this is a title",  
5       "status": "pending"  
6     },  
7     {  
8       "title": "cook dinner",  
9       "status": "pending"  
10    },  
11    {  
12      "title": "eat dinner",  
13      "status": "pending"  
14    }  
15  ],  
16  "done_items": [],  
17  "pending_item_count": 3,  
18  "done_item_count": 0  
19 }
```