EventStoreDB From Scratch: Running .NET in GitHub Codespaces

Overview

Welcome to the .NET (C#) example of Event Store's **From Scratch** series. This series allows you to quickly overcome the common challenges of setting up and configuring a new development environment, and focus on advancing your EventStoreDB skills.

The **From Scratch** series provides working code examples for basic reads and writes to EventStoreDB, a tested environment to run the code and instructions that clearly describe the steps required to run the code successfully.

Each **From Scratch** repository provides the following:

- A working GitHub Codespaces environment
- Instructions on running EventStoreDB locally
- Instructions to set up a similar project on your own

We recommend you progress through the **From Scratch** projects in the following order:

1. Run the code in Codespaces
2. Clone the **From Scratch** GitHub repo and follow the instructions to run it locally
3. Build your own project

This document provides detailed instructions on launching GitHub Codespaces, starting an EventStoreDB Docker container, and running the sample .NET code that writes and reads from EventStoreDB. ***This is the recommended starting point for running .NET code with EventStoreDB.***

Other clients in the **From Scratch** series include:

- Node
- Java
- Python

Topics covered

1. Launching Codespaces
2. Running code in Codespaces

1. Launching Codespaces

GitHub created Codespaces to answer the *"It doesn't run on my machine"* problem faced by developers of all experience levels. Codespaces provides the IDE, the repo, and the environment so you can focus on running code.

Here are the steps to launch the **FromScratch** repos in GitHub Codespaces.

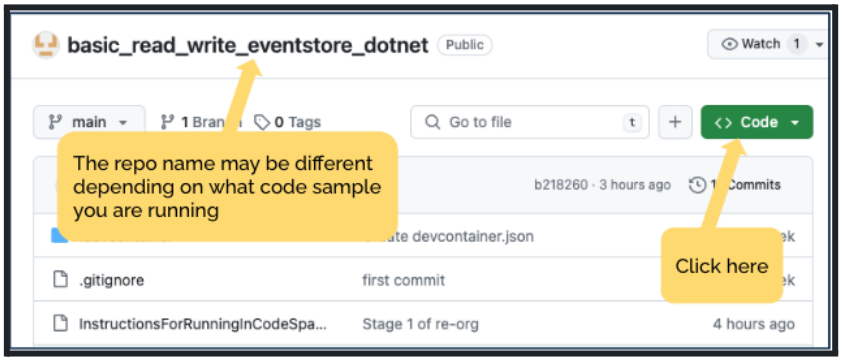
Requirements

1. A GitHub account
2. A browser
3. Access to the internet

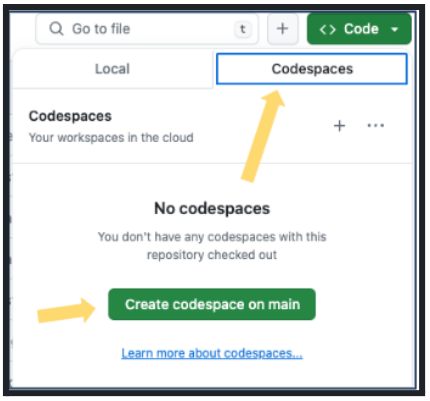
Steps

1. Navigate to the .NET **FromScratch** repository

2. Click on the green "<> Code" button



3. You will see two tabs titled "Local" and "Codespaces." Select "Codespaces," then click the green button labeled "Create codespace on main."



4. Wait for your Codespace to launch. Depending on the container's configurations, this can take anywhere from a few seconds to a few minutes. While it launches you will see this image.

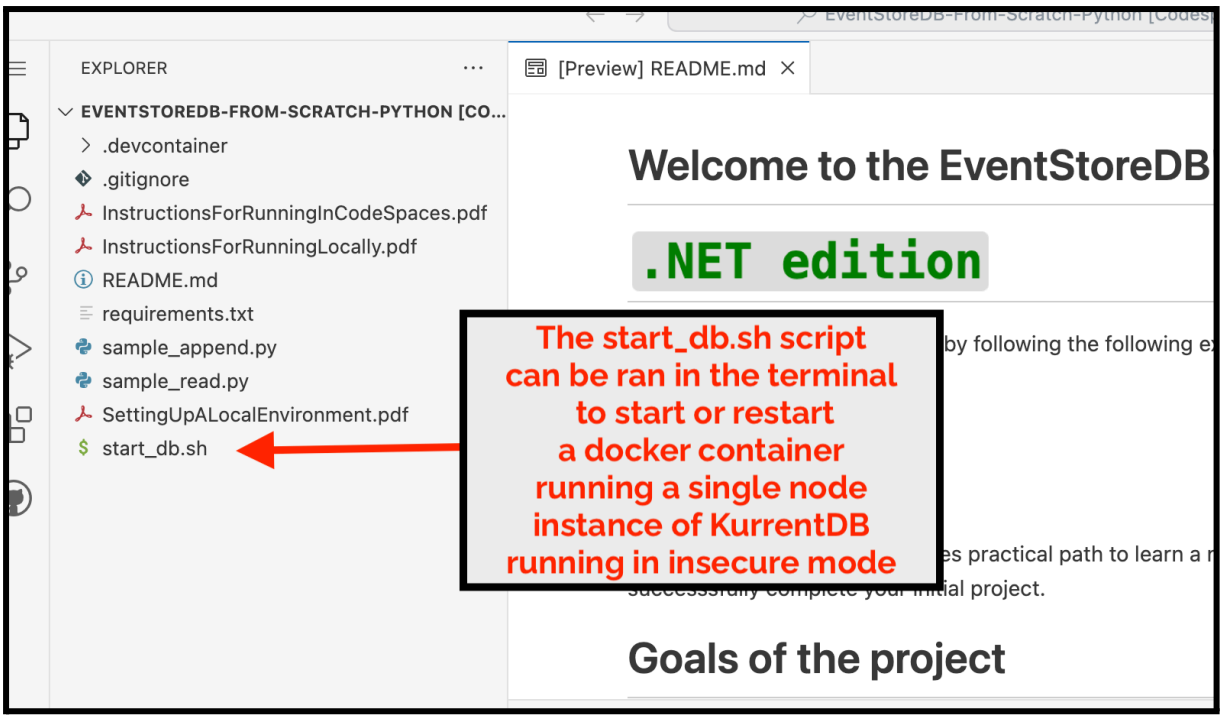
5. You can make some formatting choices on the welcome page of VS Code (embedded in Codespaces). VS Code is the default IDE in Codespaces for the **From Scratch** project. Choose your preferred theme or use the default theme by closing the "Welcome" tab.

2. Running the Code in Codespaces

You'll need a running instance to read and write code with EventStoreDB.

Using a Docker container is a quick way to get started. More information is available at https://developers.eventstore.com/server/v24.2/installation.html#run-with-docker

We provide a shell script for the **From Scratch** project that starts or restarts a Docker container running EventStoreDB.



Some notes on the 'start_db.sh'

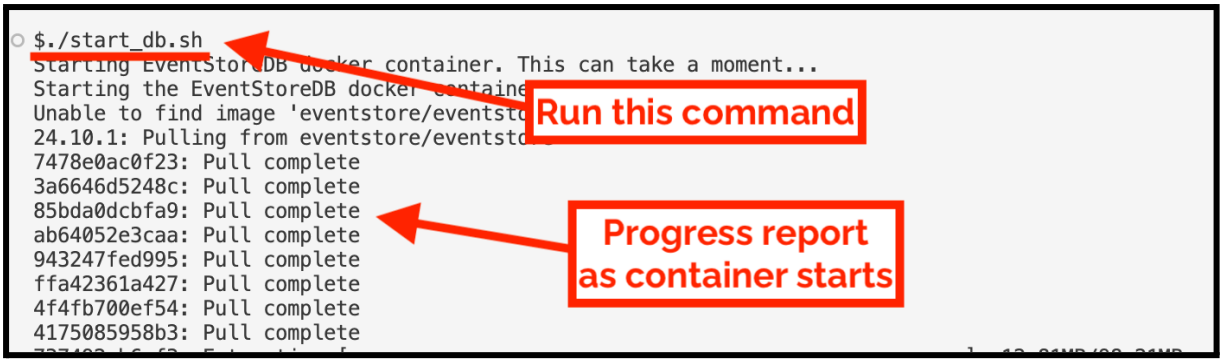
The 'start_db.sh' script is designed to either start, or in the case of an already running Docker container, restart the container. Restarting the container with `start_db.sh` will delete any streams you had written to the previous instance of the Docker container. This design decision is intentional.

Please note that Codespaces are set to pause after a period of inactivity. When restarting an inactivated Codespace, the `start_db.sh` script may fail to restart the Docker container. The most straightforward solution to this issue is terminating the Codespace and starting a new one.

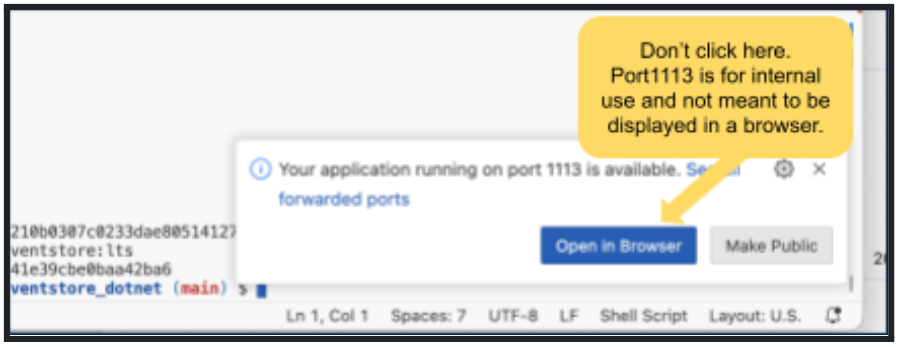
Follow the steps below to start your database.

1. To launch a Docker container running EventStoreDB where the "FromScratch" code will write and read events, run the `start.sh` script. Type the following command into the terminal located at the bottom of your Codespace.

```
./start_db.sh
```

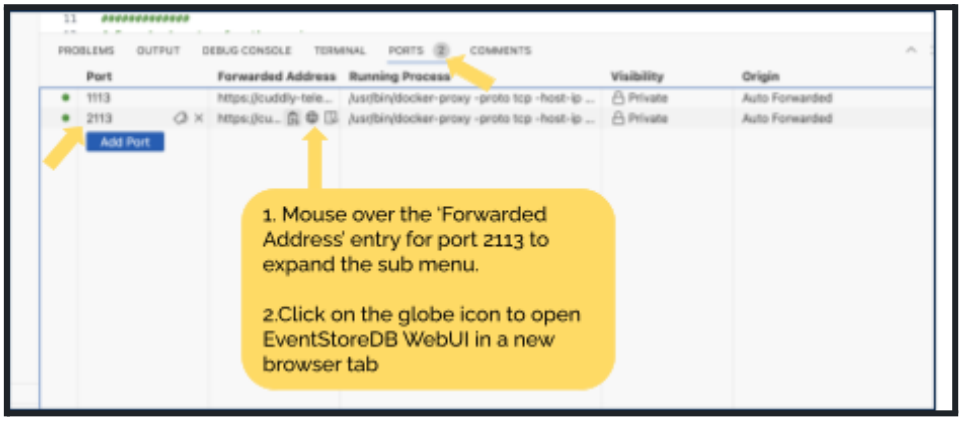


Once your Docker container has finished downloading, you may see a pop-up stating, "*Your application running on port 113 is available…*" **Do not click** "Open in Browser." Port :1113 is used for RPC calls and will not direct you to the WebUI (which you will do in the next step).

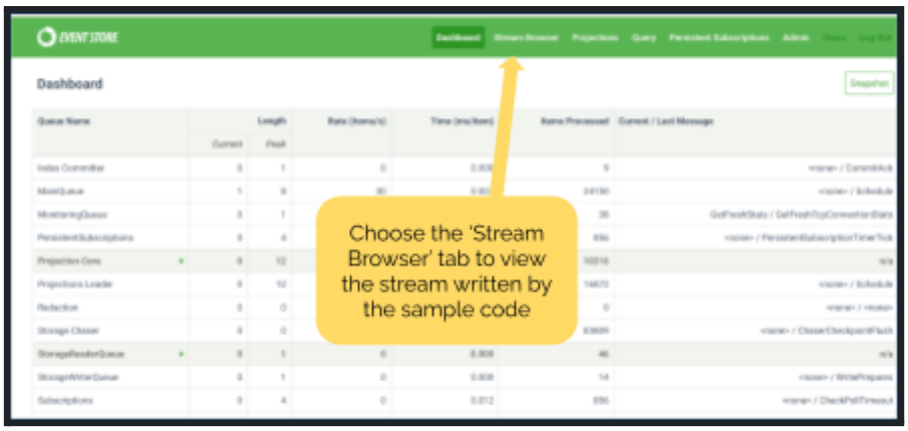


Access the EventStoreDB WebUI Stream Browser

1. Open the WebUI of EventStoreDB running in the Docker container. EventStoreDB uses ports :1113 and :2113. Open the WebUI **'port:2113'** in a browser tab.



2. Select the Stream Browser tab from the EventStoreDB WebUI. After running the sample append code, the events written in the demo will be visible here.

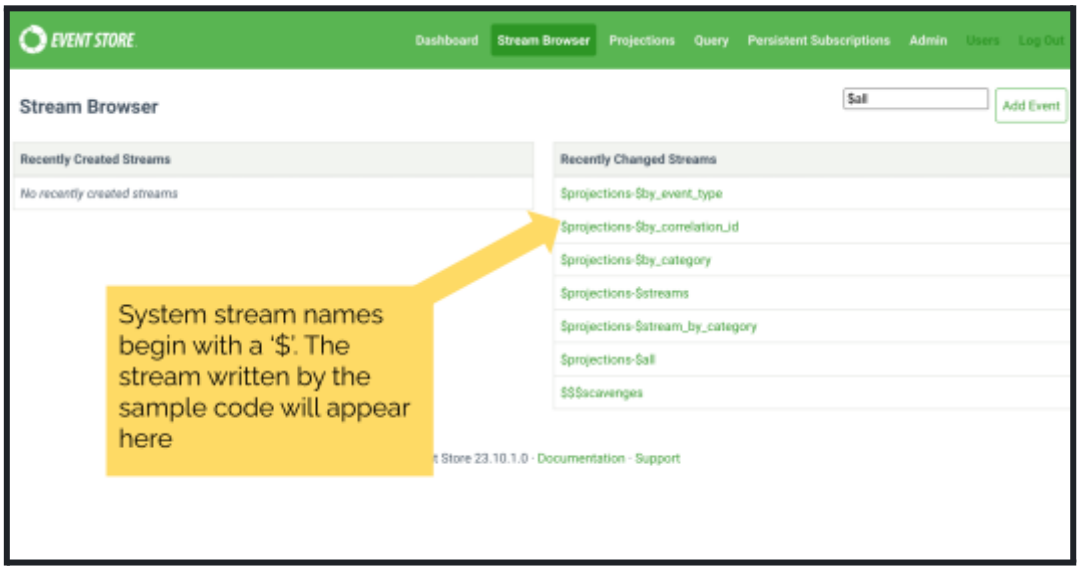


Stream Browser view explained

The 'Stream Browser' tab provides an overview of recently created and changed streams. Clicking on a stream name shows details about the individual stream.

A system stream in EventStoreDB is a type of stream that is used for system-level operations and information. A "$" prefix distinguishes these streams. For example, the stream metadata for the "foo" stream is $foo. System streams can contain metadata for other streams or system-level information.

You can ignore system streams for this example. However, as you continue on your EventStoreDB journey, you will find them helpful information sources.



Congratulations! You have successfully started the EventStoreDB instance and viewed the stream browser from the EventStoreDB WebUI.

Run the .NET(C#) code sample

1. View the WebUI to verify that you have a running EventStoreDB instance. If you need to start the instance, run the following in a terminal window.

```
./start_db.sh
```

2. Open the stream browser in the WebUI of the instance.

3. In the VS Code Explorer tab on the left, you will see:

   .devcontainer (a file to manage Codespaces)
   .gitignore (file exclusion list for GitHub)
   SampleAppend (directory that contains sample code for append)
   SampleRead (directory that contains sample code for read)
   InstructionsForRunningInCodeSpace.pdf (this instruction)
   InstructionsForRunningLocally.pdf (instructions for how to run locally)
   README.md (github README)
   SettingUpALocalEnvironment.pdf (instructions for how to setup environment)
   Start.sh (a shell script that starts EventStoreDB docker)

4. Write an event to EventStoreDB by running the following command in the repository's root directory.

```
dotnet run --project SampleAppend/SampleAppend.csproj
```

5. Read the event back from EventStoreDB by running the following command in the repository's root directory.

```
dotnet run --project SampleRead/SampleRead.csproj
```

6. Verify that an event has been written to EventStoreDB by viewing the Stream Browser on the EventStoreDB WebUI.

Congratulations! After running program.cs you have succeeded in Writing and Reading events to and from EventstoreDB.

Next Steps

Now that you have successfully leveraged GitHub Codespaces to read and write code to EventStoreDB, we recommend you continue your learning with the **From Scratch** .NET instructions for running code locally.

As you progress with your EventStoreDB skills, you can also find additional examples in the following repo:

https://github.com/EventStore/samples

In particular, we recommend the Quickstart examples here:

https://github.com/EventStore/samples/tree/main/Quickstart