

COSC 3P95 Assignment Two
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Question 2c Report

I used the included spring-boot-todo-app as my starting point. Looking at the application, there wasn't a whole lot to actually track metrics, logs, and traces for. I focused on the actual controller for the application, inside of `TodoController.java`. To implement OpenTelemetry in the already existing project, I first added the necessary Maven dependencies and dependency manager. After that, I created a global declaration of OpenTelemetry in the main class of the program "`SpringBootTestApplication.java`". From here, I now had a program-wide reference of OpenTelemetry by taking advantage of `GlobalOpenTelemetry`. Moving into the `TodoController` class, I added a single instance of a trace at the class level. For each route inside of the controller, I then implemented parent spans that had children spans for each sub-task of the route. For example, there was an overall "deletion span", which then had the children spans of "delete specific ID", "redraw the list of todos", etc. This idea was applied to every route. To implement metrics, I created a gauge that incremented by one whenever the todo list was re-rendered based off the background list. I called this "redrawing todos". This gives an example of a performance metric for something like a video player, or an image on a website where drawing it can be expensive. Originally, I planned on implementing a CPU usage tracker but had many issues. I left the code in, commented out.

To visualize the traces, their spans, and the metrics, I installed and used Jaeger. OpenTelemetry naturally fires information off in a way that Jaeger had no issues picking up on once I had it running in the background of my computer. I've included multiple pictures of the visualizations available in Jaeger for this section of the assignment.

Unfortunately, I did have issues capturing full logs, but I did attach information to spans in a way that it offers some form of logs. You can see this in the attributes being set for things like edits, deletes, and additions, which all include some form of potential in tracking.