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# GUI representation of monitoring System Activity with the `system_stats` Extension in pgAdmin 4

Google Summer of Code 2022 PostgreSQL Project Proposal

## MOTIVATION

In my 4 years of being a full stack developer, I have used numerous open source softwares, frameworks and libraries. I've always marveled at the quality of these frameworks and how they enhance the developer experience. A passion for coding and development, along with the urge to contribute to and get to know other people within the open source community, gave me a strong reason to be a part of Google Summer of Code.

Among the various databases I have used across my projects, Postgres is the one I have used the most. Consequently, contributing to Postgres and providing some value to this open source project seems like the perfect opportunity.

## PROJECT OVERVIEW

The primary objective of this project is to design and develop a dashboard with various charts and graphs to show the system level statistics for monitoring Postgres activity with the help of the `system_stats` extension. The project aims at providing a user with the ability to monitor postgres activity through system-level statistics.

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## POTENTIAL IDEAS

1. We can have a dashboard, created in React, generated when a Postgres server is started.
2. We can utilize libraries like chart.js, react-charts etc. to display the various kinds of data available to us from the system\_stats.
3. System\_stats provides us with a number of functions to fetch system level statistics. We can make groups of functions providing data about similar things and show them together.
4. Along with charts and graphs, there could also be tabular representation of data for better readability.
5. There should be a way to update the data in these graphs in real-time without manual refreshing. For this we can either implement polling or a function like setInterval which calls the system\_stats function repeatedly for data.
6. Additionally, we can also offer the user the ability to view/hide various graphs/charts according to their needs.

## DELIVERABLES

1. A dashboard with clean, responsive and minimalistic user interface.
2. Various charts, graphs and tables efficiently displaying the system level statistics.
3. Any backend API/functionality required to fetch system\_stats data.
4. Proper documentation of the project

## MILESTONES

The estimated time given for the project is 175 hours. I will be able to work 15-20 hours per week, starting in June. So that will make the duration of the project to about 10-11 weeks or 2 and a half months. The detailed timeline is as follows:-

### May 20 - June 12

- Bonding with the mentor and the community.
- Understanding the codebase thoroughly.
- Planning and finalizing expectations.

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## June 13 - June 17 (1 week)

- Designing the UI for the dashboard.
- Getting the design reviewed, discussing user experience and making suggested changes.
- Finalizing a clean, responsive and minimal design for the dashboard.
- Setting up the development environment.

## June 20 - July 8 (3 weeks)

- Working on the UI development of the dashboard using React.
- Implementing the graphs and charts for each `system_stat` function and testing them with dummy data.
- Implementing the hide/view feature for these graphs and charts.
- Styling the graphs and charts according to the finalized UI design.

## July 11 - July 29 (3 weeks)

- Connecting the frontend with the actual data fetched from `system_stats` and displaying the data on the graphs and charts.
- Refactoring the design according to the data wherever needed.
- Implementing real-time fetching of data.

## August 1 - August 19 (3 weeks)

- Connecting this dashboard with the starting/creation of a postgres server so that it is available every time a user starts a postgres server.
- Bug fixes and improvements.
- Finishing up with the development process and working on the project documentation.
- Time for any unplanned or unexpected work.

## ABOUT ME

I am a Computer Engineering graduate student at New York University and I completed my graduation in Electronics and Communication Engineering from Delhi Technological University in India. I have always been more interested towards the software side of

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things than hardware. I'm a self-taught web developer and I have done numerous internships as a frontend and a backend developer. More recently I have worked as a freelance developer and my first full-time job was that of a Software Engineer for Web Applications. Across my various work experiences and projects, I've worked on frontend technologies like HTML, CSS, React, Angular and on backend technologies like Node.js (with Express), Django, Spring Boot, and also on databases like PostgreSQL, MySQL and MongoDB. You can find my resume [here](#).

I have some experience in contributing to open source projects as a part of Hacktoberfest 2020. I have also been a mentor in an open source project as a part of [Cross Winter of Code](#) 2021 organized by IEEE Delhi Technological University. CrossWoC is an open-source event similar to GSoC, but at a smaller scale. As a mentor, I had created an [open source project](#) along with some issues (bug fixes and new improvements) that were supposed to be worked on by budding open source contributors.