

Assignment #5

Atef Bader, PhD

Overview:

In this Assignment you will use your personal development computer to create containerized cloud-native microservices on GCP to collect data from GitHub and StackOverflow for different packages/libraries and show summery metrics using Prometheus

Submission:

Submit your assignment as a SINGLE ZIP file online by the due date.
Your submitted ZIP file must have the name:
Assignment_5_Your_LastName.zip

Deliverables:

Your ZIP file for the Assignment submission must include the following:

- A detailed Report as a PDF document that has your answers for the requirements listed below.
- Your source code
- Panopto video recording (MP4 file) of a live run (10 to 15 minutes) of your code on your personal development computer.

(PART I: 150 points) Requirements Specification:

1. Use **Go** languages, **Docker**, **GCP** (Google Cloud Platform), **Postgres** to create microservices to collect data of the **Posts** (Question/body and Answer/body) from **StackOverflow** and **Issues** from **GitHub** and store the data collected in two databases: **StackoverflowDB** and **GitHubDB** using **Postgres** database server.
2. Collect the data from **StackOverflow** and **GitHub** for the following frameworks/libraries:
 - a. Prometheus
 - i. <https://stackoverflow.com/search?q=Prometheus>
 - ii. <https://github.com/prometheus/prometheus>
 - b. Selenium
 - c. OpenAI
 - d. Docker
 - e. Milvus
 - f. Go
 - i. <https://stackoverflow.com/search?q=golang>
 - ii. <https://github.com/golang/go>
3. You will need to create **developer accounts** and **API KEYS** on **GitHub** and **StackExchange**
 - <https://api.github.com>
 - <https://docs.github.com/en>
 - Here is the URL to guide you on how to generate your GITHUB_TOKEN
 - <https://help.github.com/articles/creating-an-access-token-for-command-line-use/>
 - Create your GitHub personal access tokens from
 - <https://github.com/settings/tokens>
 - <https://api.stackexchange.com/>
 - <https://api.stackexchange.com/docs>
 - <https://stackapps.com/apps/oauth/register>
4. Use Prometheus to show how many API calls to GitHub and StackOverflow were made per second, and how much data collected per second.
5. Run 3 experiments using data collected for past 2 days, 7 days, and 45 days.

(PART II: 50 points) Requirements Specification:

After you review the documentation for creating a GitHub Repo (<https://docs.github.com/en/get-started/quickstart/create-a-repo>), provide the detailed steps for the **software change control process** of creating and approving **issues** on **GitHub**.