

# GPU Graph Layout Timer

## Documentation

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### README

This repository contains a Bash script (`run_graph_viewer.sh`) that runs a graph layout program (`graph_viewer`) multiple times and measures the execution time for each run. It also calculates the average execution time after running the command a specified number of times (default is 10).

### Features

- Run a command multiple times (default: 10 times)
- Measure and log the execution time for each run
- Calculate the average execution time across all runs

### Prerequisites

- Cygwin or a Unix-like environment (such as Linux or WSL) to run the Bash script.
- Ensure that the `graph_viewer` executable is available and executable within the directory.
- Basic knowledge of command-line tools.

### Setup Instructions

1. Clone the repository or download the script:

```
``bash
git clone https://github.com/yourusername/gpu-graph-layout-timer.git
cd gpu-graph-layout-timer
``
```

2. Ensure that the `graph_viewer` file has execution permissions:

```
``bash
chmod +x graph_viewer
``
```

3. Ensure that the `run_graph_viewer.sh` script is also executable:

```
```bash
chmod +x run_graph_viewer.sh
```
```

## How to Use

1. Run the script:

```
```bash
./run_graph_viewer.sh
```
```

2. The script will:

- Run the `graph\_viewer` command 10 times.
- Measure the execution time for each run in milliseconds.
- Display the time taken for each run.
- Calculate and display the average execution time for all 10 runs.

3. Modify the iterations:

If you want to run the command more or fewer times, open the script and change the `iterations` variable at the top:

```
```bash
iterations=10 # Change this to the number of runs you want
```
```

## Example Output

```
```bash
Run 1:
Time for run 1: 3240 ms
Run 2:
Time for run 2: 3290 ms
Run 3:
Time for run 3: 3190 ms
...
Average time for 10 runs: 3250 ms
```
```

## File Structure

- **\*\*run\_graph\_viewer.sh\*\***: The Bash script that runs the `graph\_viewer` executable multiple times and calculates

the average execution time.

- **graph\_viewer**: The executable program that generates the graph visualization (not included in this repository).

## License

This project is licensed under the MIT License - see the [LICENSE](LICENSE) file for details.

## Contributing

If you wish to contribute to this project, feel free to submit a pull request or open an issue for suggestions and improvements.

## Documentation

### Script: run\_graph\_viewer.sh

The script is designed to run the `graph_viewer` program multiple times (default is 10) and measure the execution time of each run.

After all runs are completed, it calculates the average time.

### Variables:

- **total\_time**: Stores the cumulative time for all runs.
- **iterations**: Specifies how many times the command should run (default: 10).

### Flow:

1. The script starts a loop for `iterations` number of times.
2. For each iteration:
  - It captures the start time using the `date` command.
  - It executes the `graph_viewer` program with predefined parameters.
  - It captures the end time.
  - It calculates the time taken for that iteration by subtracting the start time from the end time.
  - It adds the elapsed time to `total_time`.
  - It prints the time taken for each run.
3. After the loop, the script calculates the average time by dividing `total_time` by

`iterations`.

4. Finally, the script prints the average execution time.

### Modifying the Script:

- **Change the number of iterations**: Edit the `iterations` variable at the top of the script to adjust how many times the command runs.
- **Change the command parameters**: Modify the command inside the loop to customize the execution of `graph\_viewer`.