User Manual

Project Name: Gitulyse

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Abstract

Gitulyse is a comprehensive tool designed to analyse GitHub repositories and user data, providing insights and metrics essential for effective software development management. With its user-friendly interface and powerful features, Gitulyse offers a holistic view of project history, facilitating informed decision-making and optimisation of development workflows. This document provides users with a manual on how to install and use all the features that Gitulyse has to provide.

Table of Contents

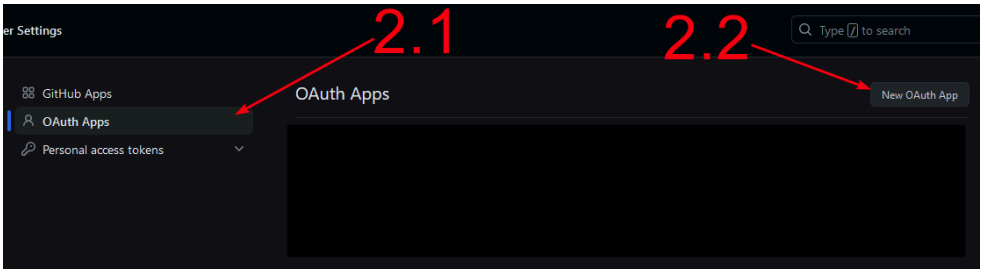
Installation

Prerequisites

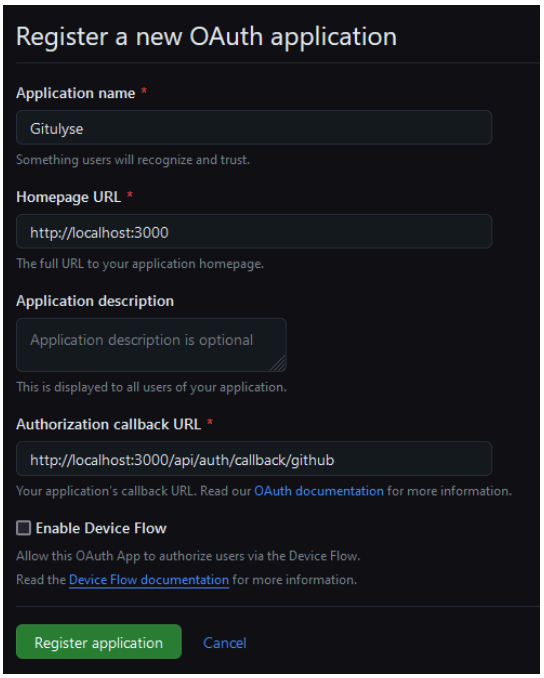
- Git
- Docker Desktop
- Python 3.12
- Node.js 20.12.2 LTS
- GitHub OAuth Application Client ID and Secret

GitHub OAuth App Setup

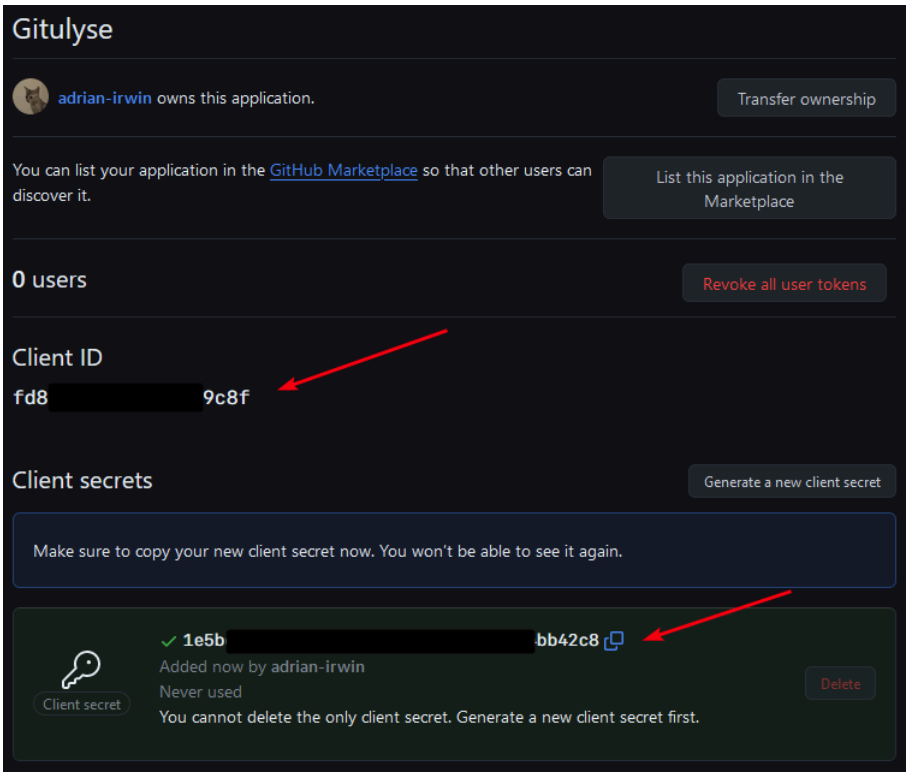
1. Navigate to https://github.com/settings/developers
2. Go to the “OAuth Apps” tab and click “New OAuth App” on the right side of the screen.



3. Enter the name of your choosing under “Application name” e.g. ‘Gitulyse’
4. Enter http://localhost:3000 for the “Homepage URL” field and http://localhost:3000/api/auth/callback/github for the “Authorization callback URL” field



5. Click “Register Application”
6. Create a Client Secret by clicking the “Generate a new client secret” button
7. Note down the generated Client Secret and the Client ID



Steps

1. Open a terminal and clone the repository using this command: `git clone https://gitlab.computing.dcu.ie/irwina7/2024-ca400-irwina7-fatogua2.git`
2. Navigate to the src folder e.g. `cd 2024-ca400-irwina7-fatogua2/src`
3. Create a ‘.env’ file by renaming the ‘.env.example’ file to ‘.env’
4. In this file input the Client Secret and the Client ID, from the GitHub OAuth App Setup section, into `GITHUB_CLIENT_ID=""` and `GITHUB_CLIENT_SECRET=""` respectively.
5. In the `NEXTAUTH_SECRET=""`, input a randomly generated string.
   A random string can be generated on Linux by using this command
   `openssl rand -base64 32`
   or on Windows by using this command (if you run into errors install the latest version of npm)
   `npx auth secret`
6. Enter a username and password for the MongoDB instance under `MONGODB_USERNAME=""` and `MONGODB_PASSWORD=""`
7. Save the ‘.env’ file.

8. In your terminal run the application by entering the following command
   `docker compose up -d`
   This will build the docker containers and run the docker compose application automatically detached from the terminal.

```
 => [frontend internal] load build definition from Dockerfile                                                0.0s
 => => transferring dockerfile: 130B                                                                         0.0s
 => [frontend internal] load metadata for docker.io/library/node:lts-alpine                                  1.0s
 => [frontend internal] load .dockerignore                                                                   0.1s
 => => transferring context: 74B                                                                             0.0s
 => [frontend 1/4] FROM docker.io/library/node:lts-alpine@sha256:ec0c413b1d84f3f7f67ec986ba885930c57b5318d2eb3abc  0.1s
 => => resolve docker.io/library/node:lts-alpine@sha256:ec0c413b1d84f3f7f67ec986ba885930c57b5318d2eb3abc6960ee05d  0.1s
 => [frontend internal] load build context                                                                   0.2s
 => => transferring context: 393.41kB                                                                        0.0s
 => CACHED [frontend 2/4] WORKDIR /app                                                                       0.0s
 => CACHED [frontend 3/4] COPY package*.json ./                                                              0.0s
 => CACHED [frontend 4/4] RUN npm install                                                                    0.0s
 => [frontend] exporting to image                                                                            0.0s
 => => exporting layers                                                                                      0.0s
 => => writing image sha256:47fcf6b4082b22910c3515594d6db2f07316feefb043e99acca7dd5b07e884b6                 0.0s
 => => naming to docker.io/library/gitulyse-frontend                                                         0.0s
[+] Running 5/5
 ✓Network gitulyse_default      Created                                                                     0.0s
 ✓Volume "gitulyse_mongo-data"  Created                                                                     0.0s
 ✓Container gitulyse-db         Started                                                                     2.0s
 ✓Container gitulyse-api        Started                                                                     0.3s
 ✓Container gitulyse-web        Started                                                                    26.3s
```

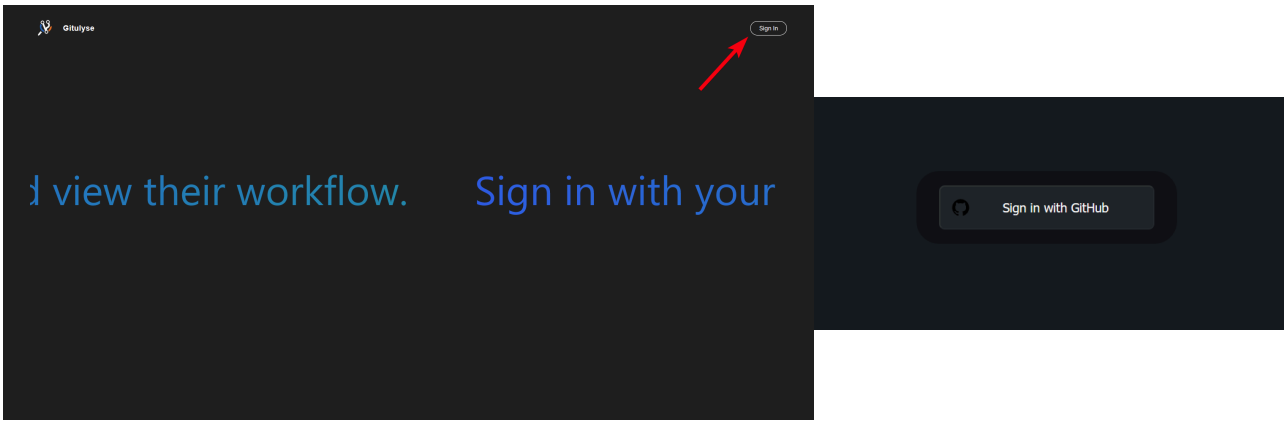
9. In your web browser navigate to http://localhost:3000/ to ensure that the application is running.

User Guide

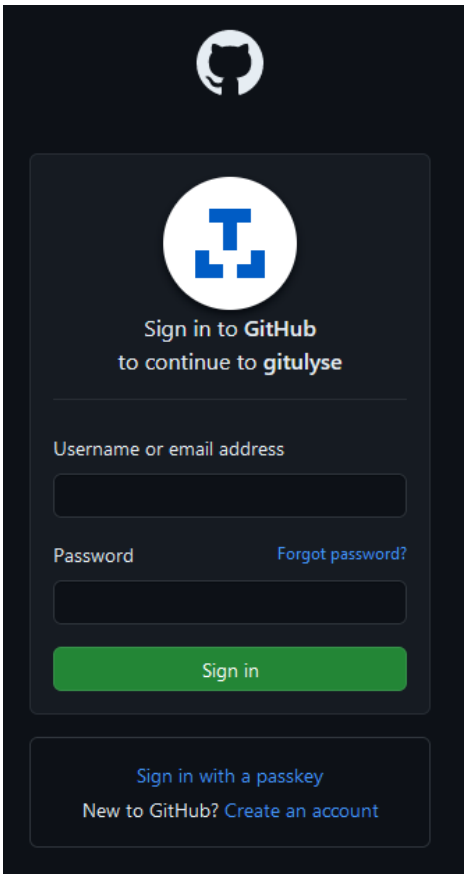
After running through the installation steps the application can be accessed from this URL: http://localhost:3000/ and this URL will be referenced to as the homepage throughout the rest of this guide.

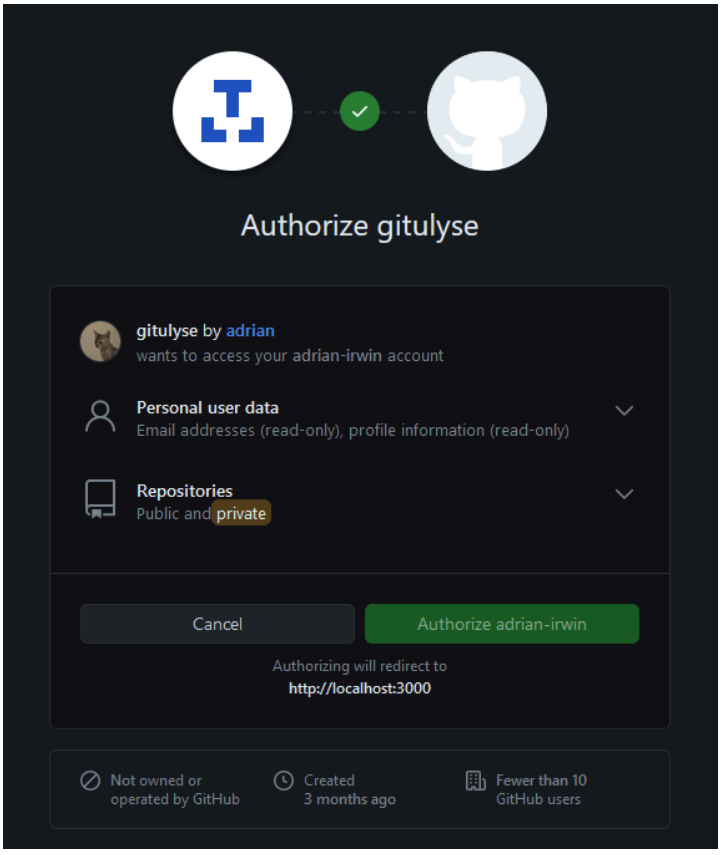
Sign In

To Sign In click the ‘Sign In’ button in the top right of the screen. This will bring you to the sign-in screen. Click ‘Sign in with GitHub’.

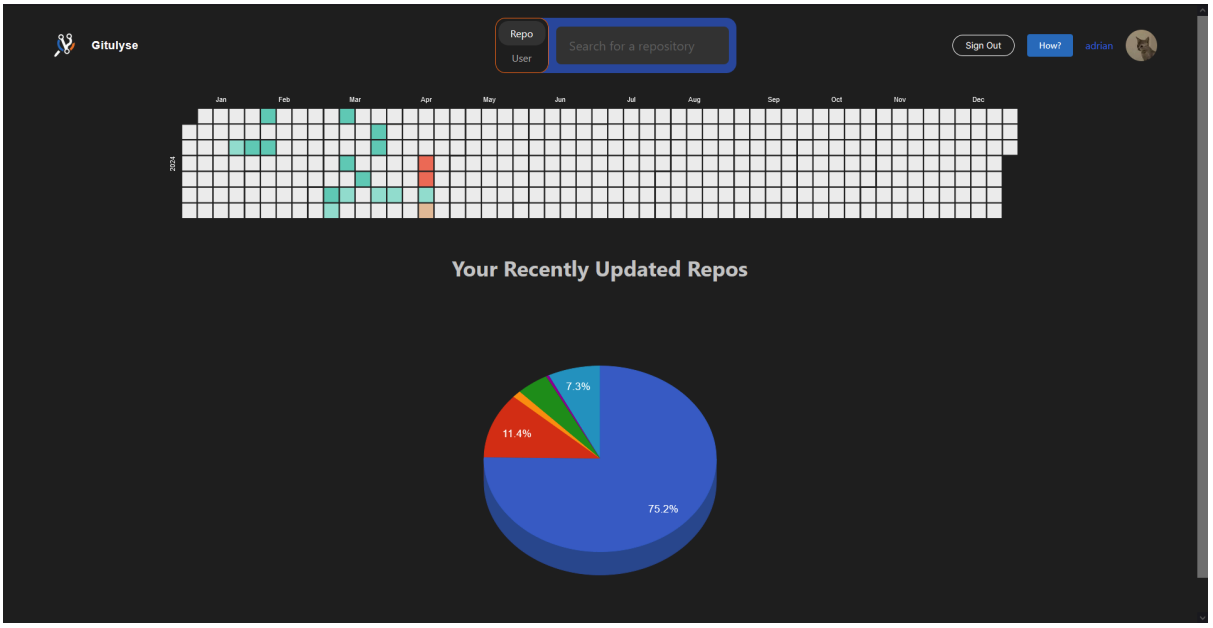


You will then be asked to login to GitHub and authorise your account with the OAuth application.



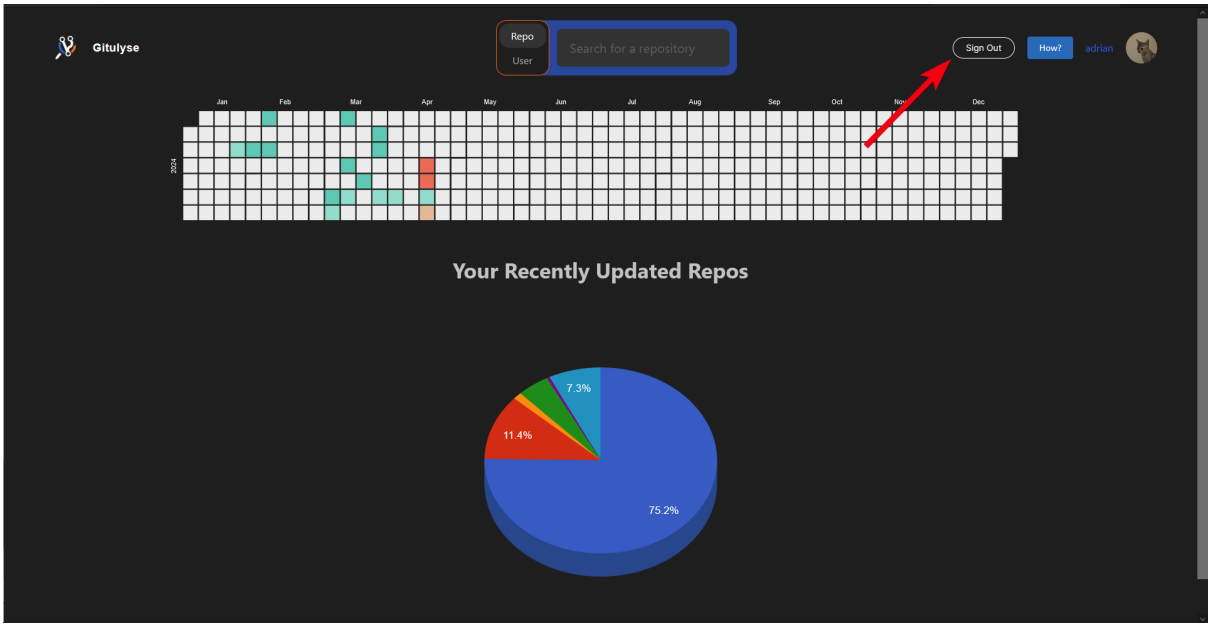


After authorising you will be redirected to the homepage of the application. Which shows you your activity calendar and the 6 most recent repos you have contributed to



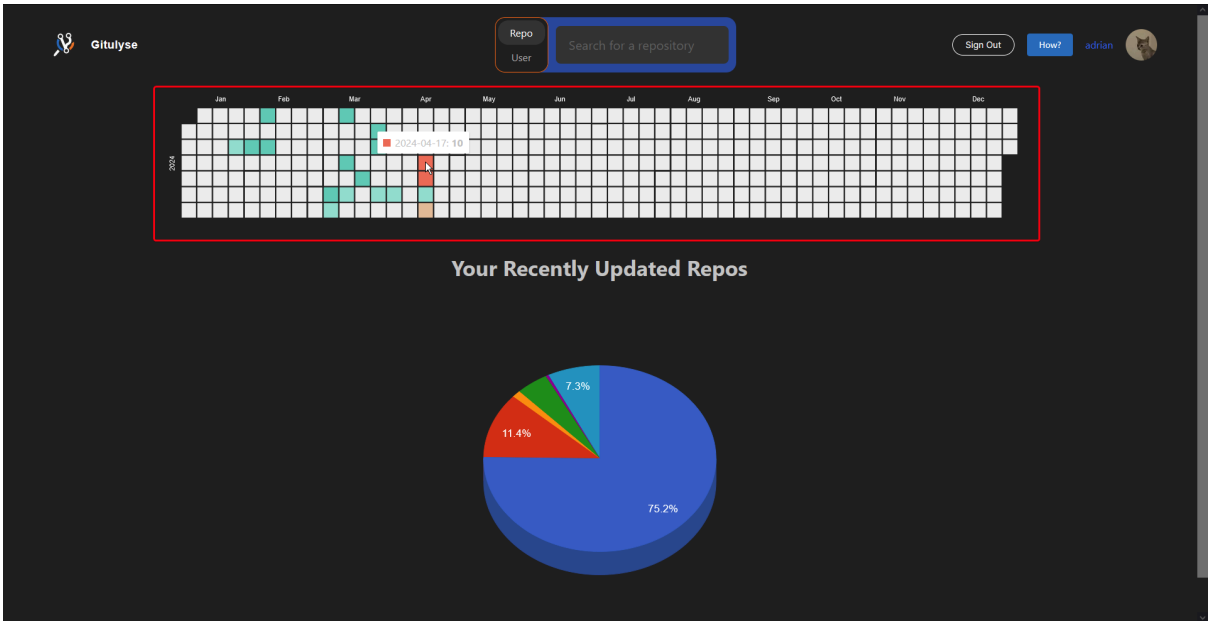
Sign Out

From any screen on the application you can sign out by clicking the ‘Sign Out’ button in the top right on the navigation bar.



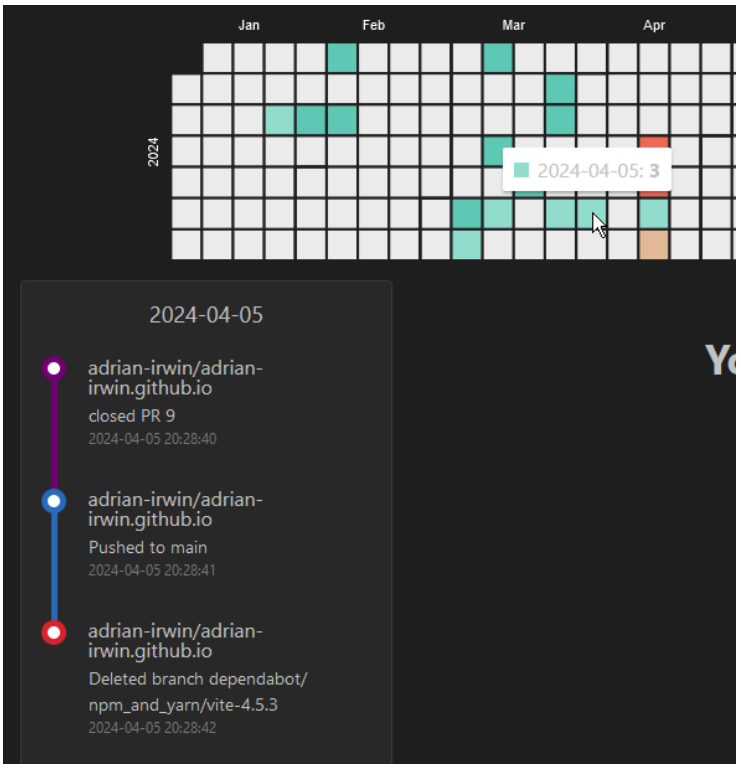
View Calendar Activity

You are able to view your activity over the course of the current year on the Calendar that is displayed on the homepage. Hovering over the coloured dates will show dates with the corresponding amount of events that occurred on that date.



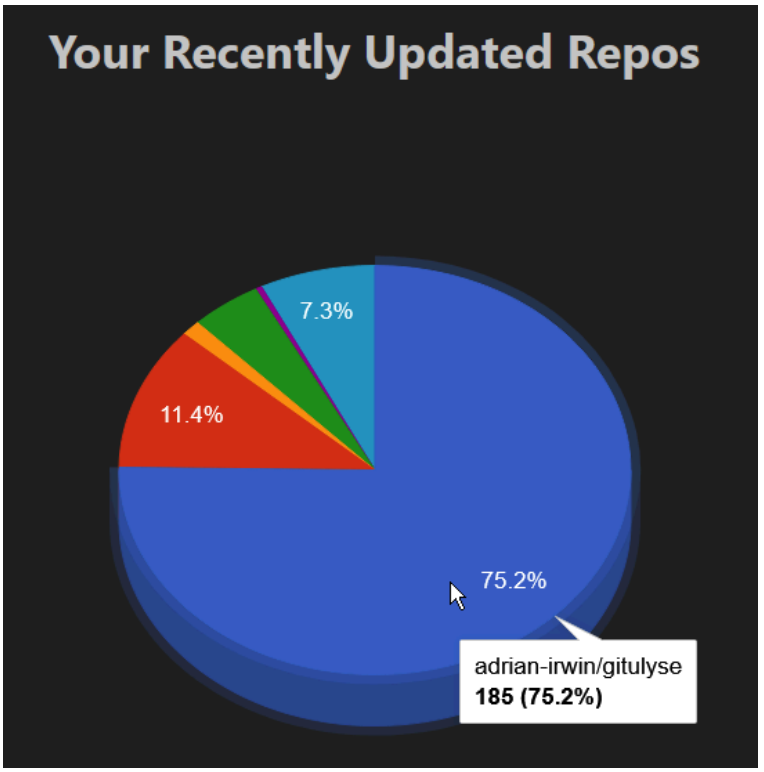
Activity Per Day

You are also able to view the activities that occurred on specific dates. This can be done by clicking on any of the highlighted boxes on the Calendar. Doing so will display a timeline of events on the selected date.



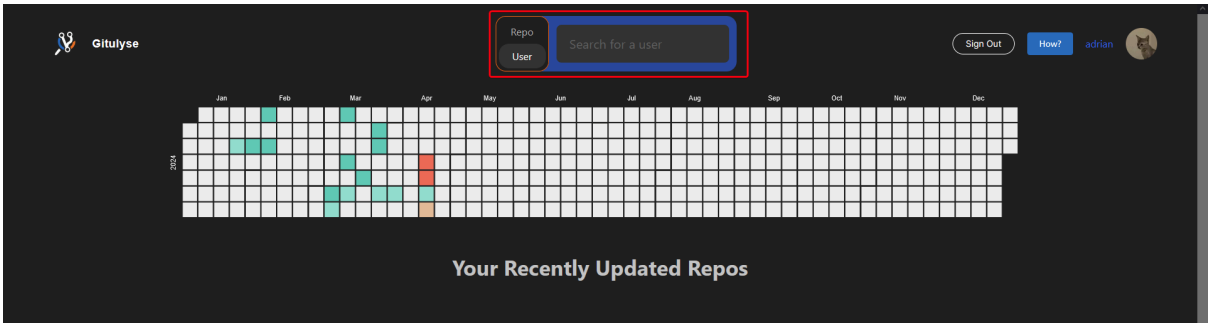
Overview of Recently Updated Repositories

On the homepage, you are able to view your six most recently updated repositories. This allows an at-a-glance view of the repositories with the most contributions compared to other repositories on the chart.



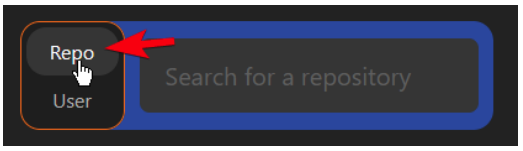
Search

The application allows you to search for any repository or user on GitHub. This can be done by using the search bar that is accessible at the top of every page.

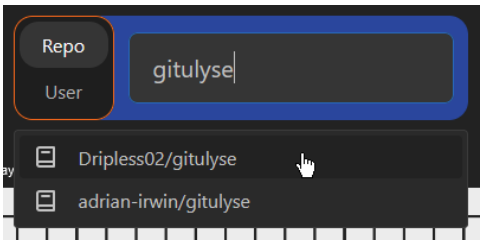


Repositories

By default, the search bar is in repository search mode. If it is not, you can click the ‘Repo’ button to the left of the input field and you will change the search to repository mode. The ‘Repo’ button will be highlighted and the placeholder text will say ‘Search for a repository’.

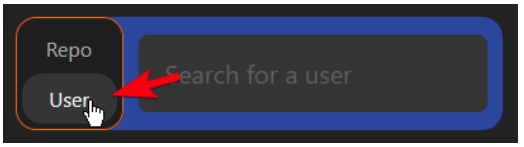


To search for a repository you enter the name of the repository you are searching for into the input field. After a second of inactivity or by pressing the Enter key, the search will be conducted. A list of 25 repositories will be displayed and you can click any of these to be brought to the repository information page for the selected repository.



Users

To search for users you must change the search mode to users by clicking the ‘User’ button to the left of the input field and you will change the search to user mode. The ‘User’ button will be highlighted and the placeholder text will say ‘Search for a user’.

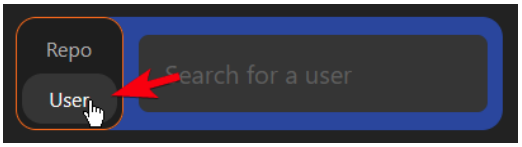


Similar to searching for a repository you simply enter the name of the user you are searching for

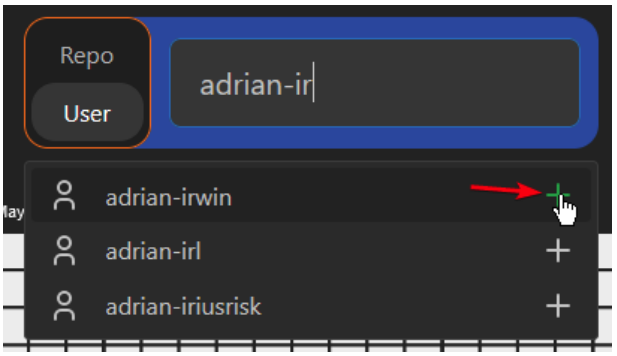
into the input field. After a second of inactivity or by pressing the Enter key, the search will be conducted. A list of 25 users will be displayed and you can click any of these to be brought to the user's page.

User Comparison

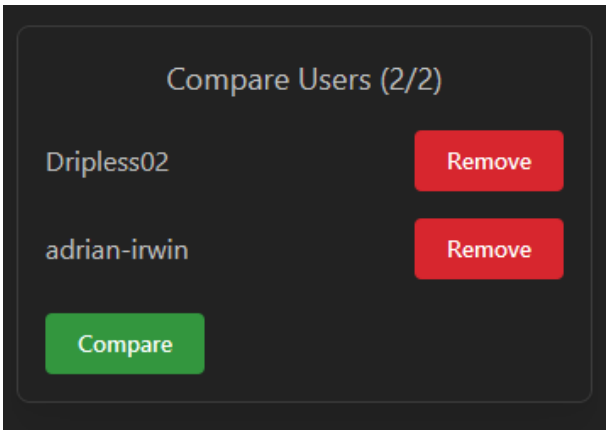
Users can be compared to one another through the search bar. To do so, the search bar must first be in user mode. This can be verified by the 'User' button being highlighted next to the input field.



Input the name of the first user you would like to add to the comparison. When the list of results appears each result will have a plus on the right side. Clicking this plus button will add them to the comparison and a compare dialog will appear in the bottom right of the screen and the plus will disappear.

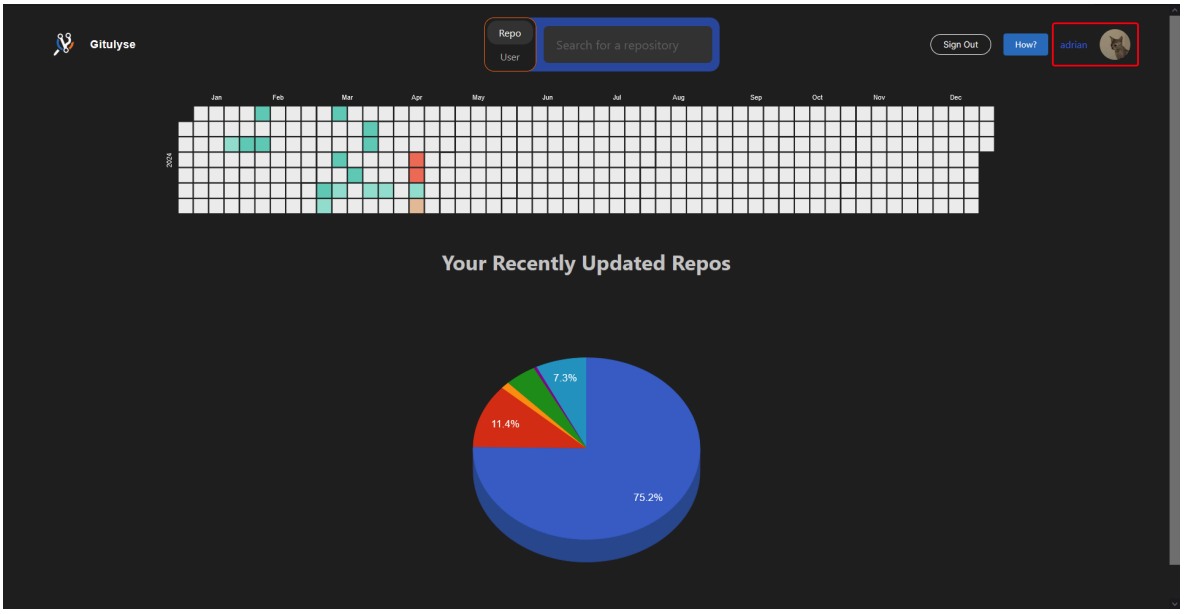


Search for another user and add them to the comparison. From the 'Compare Users' dialogue in the bottom right corner of the screen, you will be able to remove a user from the comparison log in case of a wrong selection by selecting the 'Remove' button. Once you are satisfied with the users selected, you can press the 'Compare' button. This will bring you to the user comparison page.



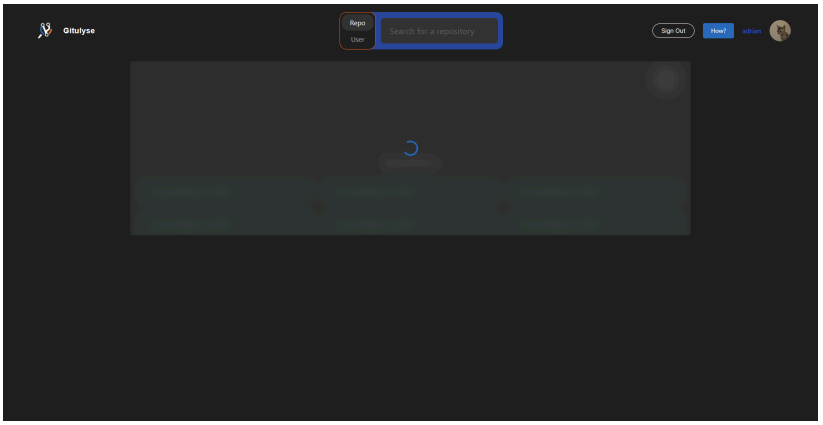
User Page

You can access your own user page from any page on the application by clicking on your username or avatar in the top right corner of the screen.

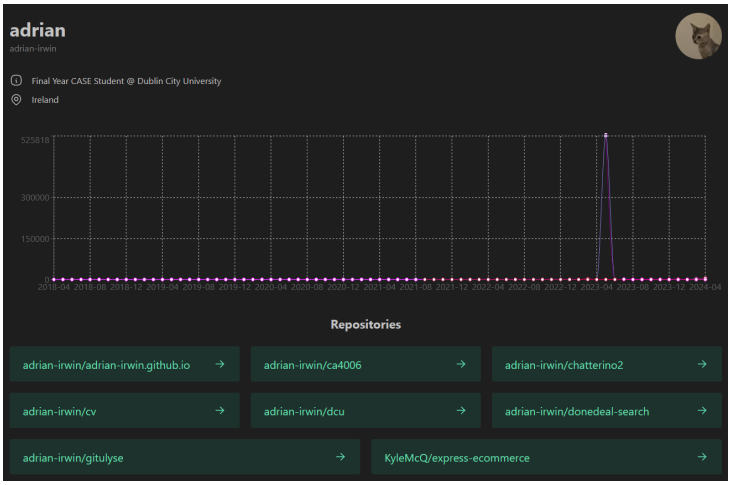


You can also access other user's pages from any page by utilising the Search Bar at the top of each page. Further information on the Search Bar's functionality can be found in the Search section above.

Upon accessing a user page you will be presented with a loading screen as data is being gathered and analysed on the chosen user. (This time this process scales depending on the number of contributions that a user has made over time)



Upon completion of loading, you will be presented with the user page. This page consists of basic information on the user, a chart showing the user's contributions over the lifetime of their account and a list of the repositories that they have created or contributed to.

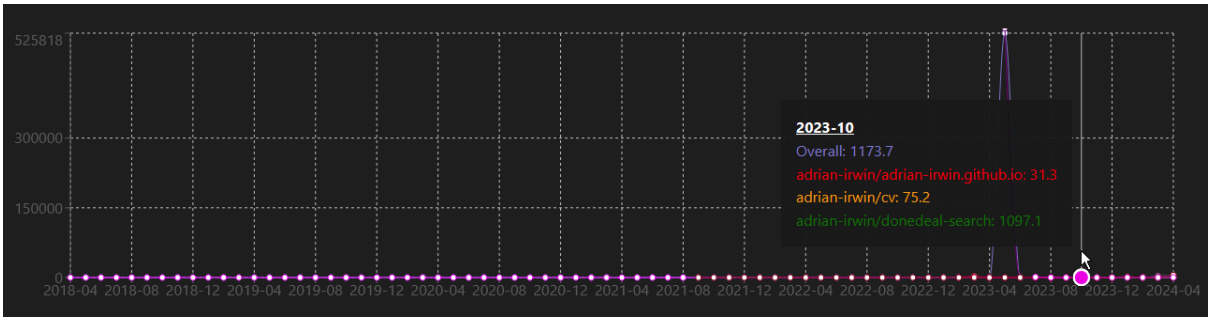


Basic Information

The basic information provided consists of the user's username, display name, bio, location and avatar. All of this information is taken from the user's own GitHub profile.

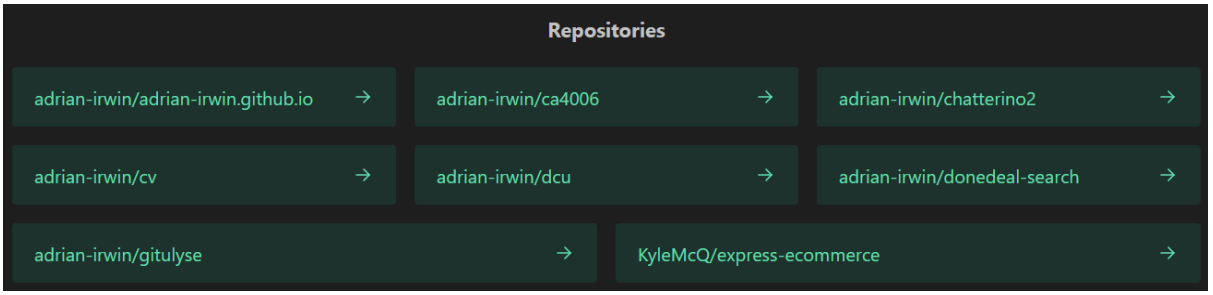
Contribution Graph

The contribution graph is broken up into months from the creation of the user's account till date. Hovering over the graph at any point will show the user's overall average contributions per commit and the average contributions per commit to each repository in that month.



Repository List

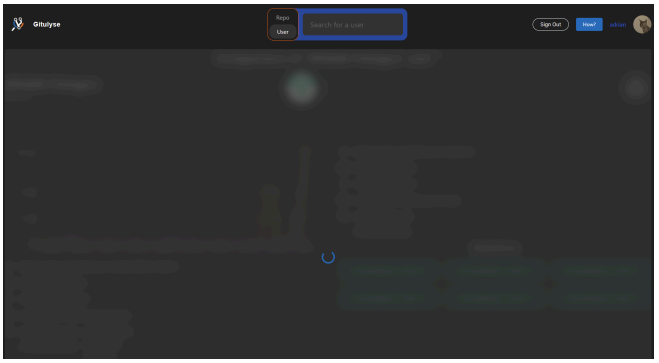
Below the contribution graph is a list of all the repositories that the user has contributed to or created. This quickly shows you how many repositories a user has contributed. It also allows you to quickly access the repository information page of any of the user's repositories with a single click.



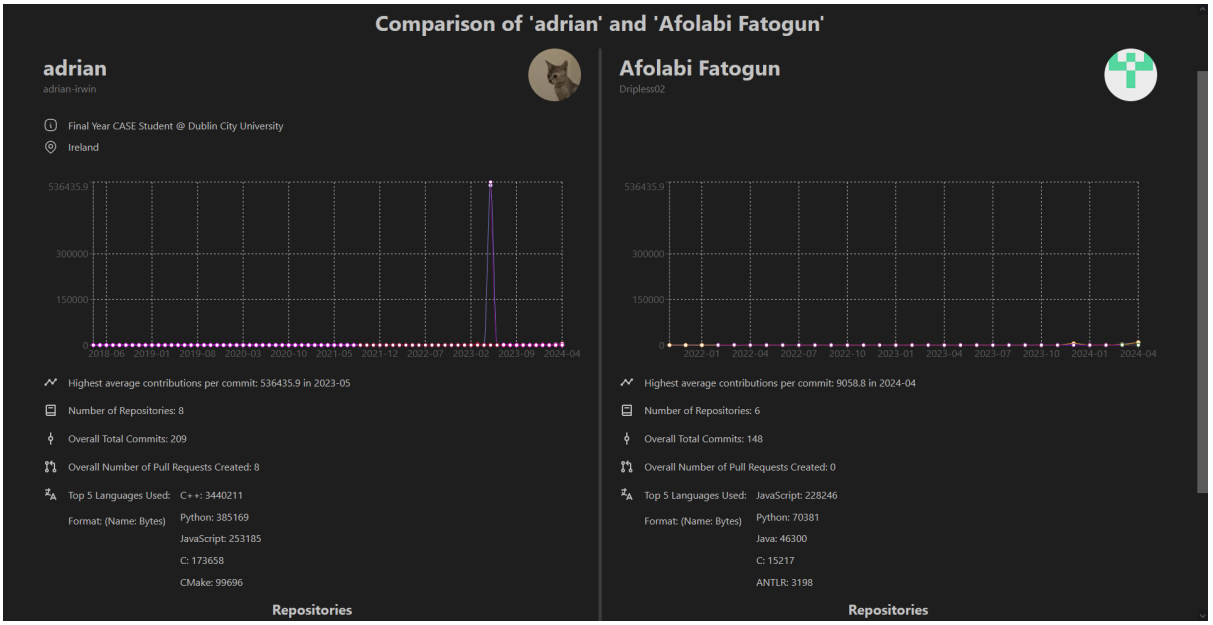
User Comparisons

User comparisons are started on the search bar, you must first change to ‘User’ mode on the search bar. You can then enter the first person you would like to add to the comparison into the input field of the search bar. When the list of results appears you can press the plus on the right side of their name to add them to the comparison. You can now enter the second person you would like to compare into the input field of the search bar. Once again click on the plus to the right of their name once the results appear. Both users will now be in the Compare dialog in the bottom right of the page, once you click ‘Compare’ you will be brought to the User Comparison page. (More detailed instructions are in the Search section above.)

Once the ‘Compare’ button is clicked you will be shown a loading screen as data is gathered and analysed for both of the users. (This time for this process scales depending on the number of contributions that a user has made over time)

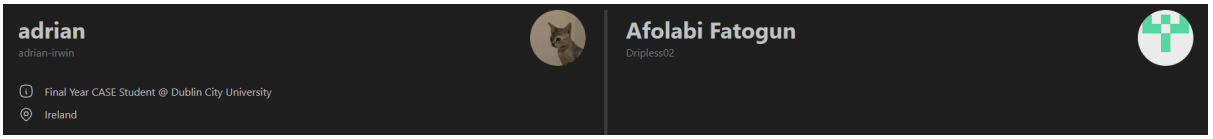


Once loaded you are shown a header with both user’s display names and both user’s basic information, contribution graph, repository list and extra information on the user’s contributions are displayed.



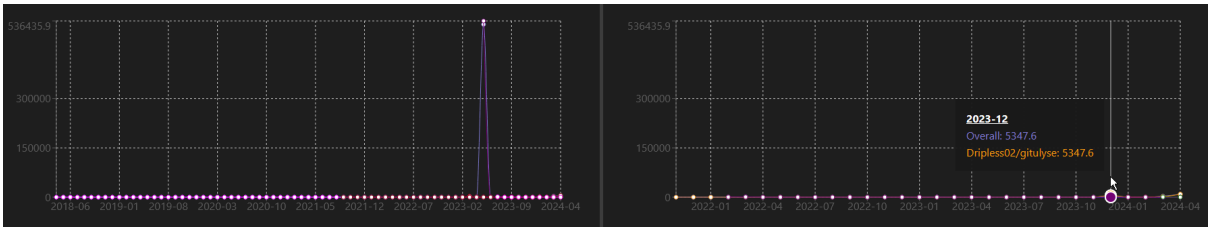
Base Information

Similar to the regular user page, you will be displayed with both the user's basic information that is gathered from their GitHub account. This consists of the user's username, display name, bio, location and avatar.



Contribution Graph

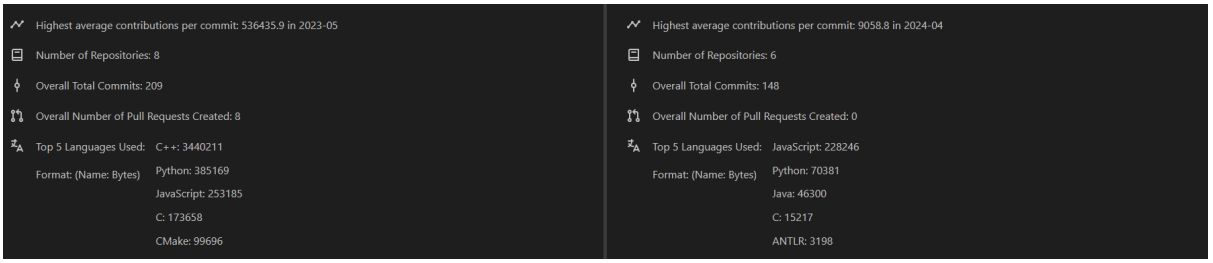
Both users will have a contribution graph, both graphs are broken up into months from the creation of the user's account till date. The graphs display overall average contributions per commit and the average contributions per commit to each repository. They are both scaled to the highest number overall to make for better comparisons between the two users. Hovering over a graph will show the user's average contributions for the month being hovered over.



Extra User Information

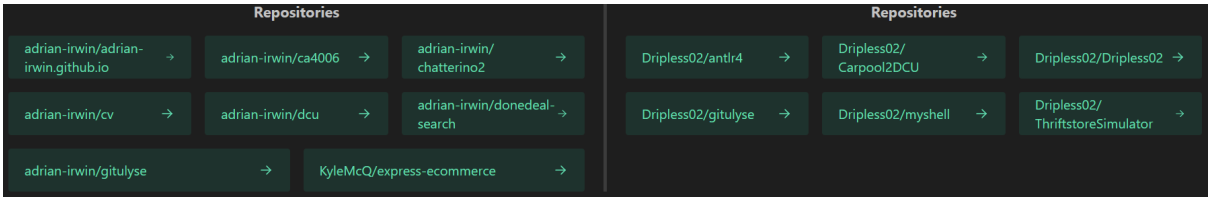
On both sides, you are given extra information about each user that helps with comparisons. This information consists:

- Their highest overall average contributions per commit in the month
- The total number of repositories they have contributed to
- Their overall total number of commits
- Their overall total number of created pull requests
- Top five languages they have used across all of their repositories, with the number of characters per language



Repository List

At the bottom of the page you are shown a list of both user's repositories. This allows you to quickly see the number of repositories they have at a glance. You are also able to click into each of the repositories to access the chosen repositories information page.

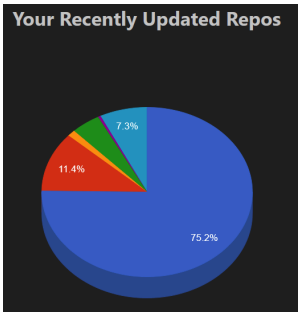


Repository Information

Ways to access repositories

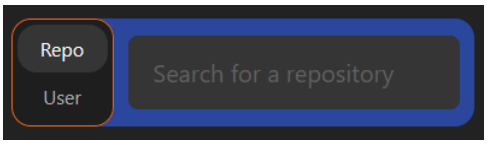
There are multiple ways to access repository information in the application.

Recently Updated Repos Chart



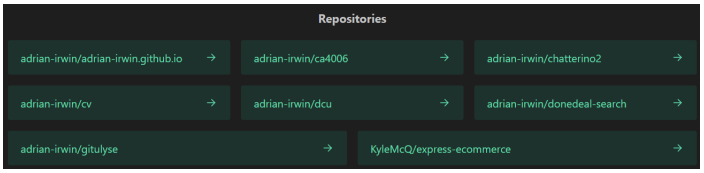
Repositories can be accessed from the pie chart of recently updated repos on the homepage. Clicking on any of the repositories in the pie chart will navigate you to the repository information page for that repository.

Search Bar



Repositories can be accessed from any page on the application by using the Search Bar at the top of the page in the navigation bar. Further information on this can be found in the Search section above.

User Page



Repositories can also be accessed from a user's page. Every user page has a list of repositories that the user has contributed to. Clicking on any of these repositories will bring you to the respective repositories' information page.

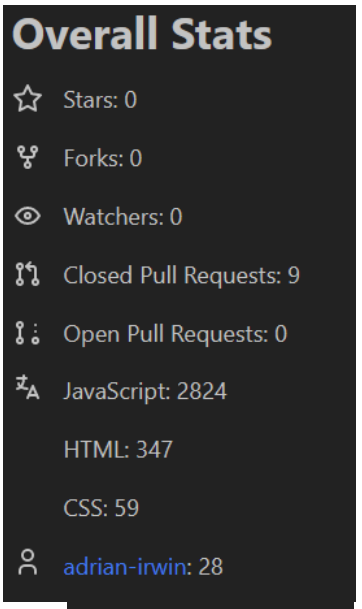
Using the Page

Upon accessing the page through any of the three methods you will be presented with a page showing the overall repository statistics on the left side of the screen. Above the overall stats, there are stats that can be dragged onto the four drop points highlighted on the right to show the visualisations of the labelled stats.

Overall Stats

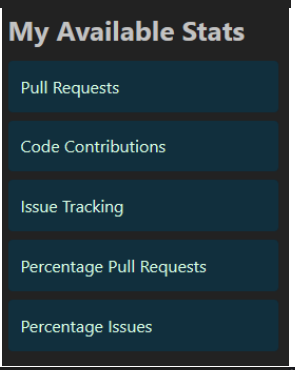
The overall stats include different stats that outline the repository. These stats are:

- Number of stars
- Number of forks created
- Amount of users watching the repository
- Number of closed pull requests
- Current number of open pull requests
- All the languages used and the number of characters in that language
- Contributors and the number of contributions they have made

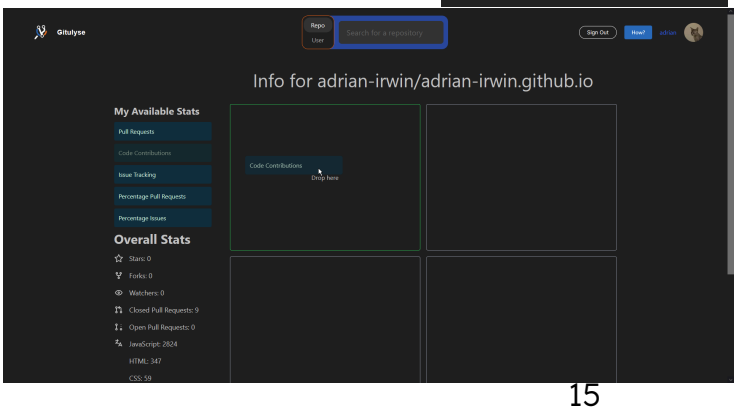


Draggable Stats

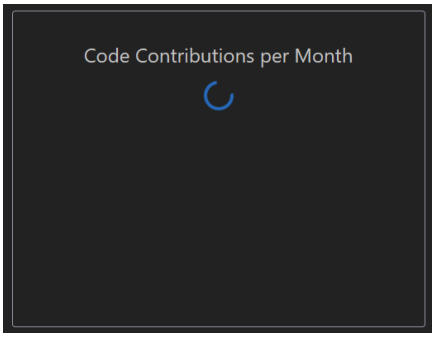
There are a selection of states that can be displayed on the indicated boxes, these stats are displayed above the Overall stats.



To view any of these stats you must drag the stat from the left side of the screen onto one of the four boxes on the right. Once hovering over a box the outline will turn green and display ‘Drop here’ text allowing you to drop the stat into that box.

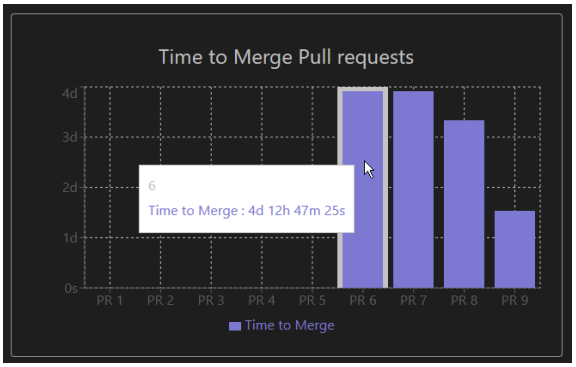


Once a stat has been dropped on a box it will populate the chosen box. It will display a loader while it fetches the data. This data is then used to create the graph for the chosen stat.



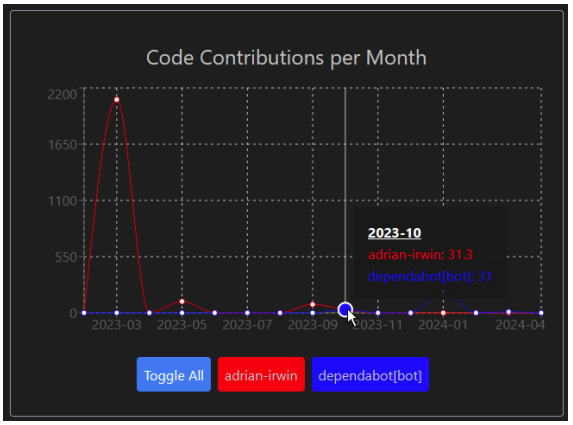
Pull Requests

The ‘Pull Requests’ stat shows you the amount of time it took to merge pull requests. This information is displayed on a bar chart. Upon hovering over the chart you will be displayed with the time to merge for the pull request that you are hovering over.



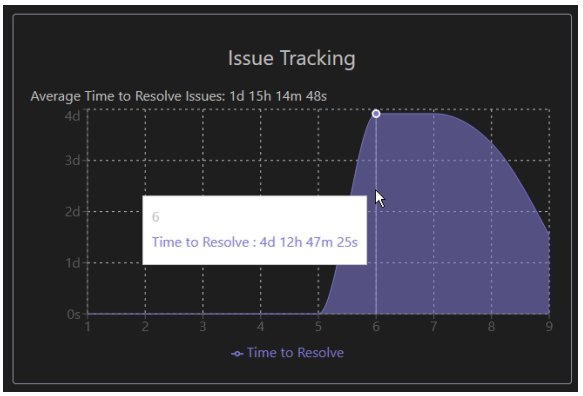
Code Contributions

The ‘Code Contributions’ displays the average contributions per commit per month, with a line for each of the individual contributors to the project. This information is displayed on a line chart. You are able to toggle which user’s lines appear on the chart based on what information you are looking for. When you hover over the chart at any point you will be shown a tooltip with each toggled user’s average contributions for that month.



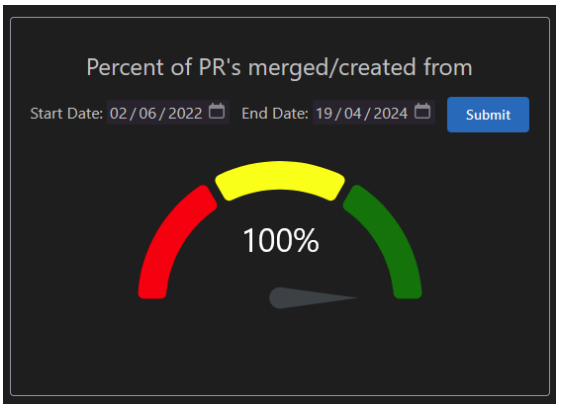
Issue Tracking

‘Issue Tracking’ displays the amount of time it took to resolve each issue. This information is displayed on an area chart. At the top of the chart, you are given the overall average time it takes to resolve an issue. When hovering over the chart, you will be displayed with the time it took to resolve the issue you are currently hovering over.



Percentage Pull Requests

‘Percentage Pull Requests’ uses a gauge chart to display its metrics. It displays the percentage of PRs closed against the number of PRs opened within a given time period.



Percentage Issues

‘Percentage Issues’ displays the percentage of issues resolved against the number of issues opened within a given time period. This metric also uses a gauge chart to display its metrics.