GENESIS - Learning Outcome & Mini-project Summary Report

LTTS GLOBAL ENGINEERING ACADEMY

L&T Technology Services

Details

Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	To be Approved	Remarks/Revision Details
1	09/11/2020	Asha N			

Contents

Table of Figures

Miniproject -1 [Team/Individual]

Title : Doctor Appointment System

1. Module/s Used

Modules linked to the miniproject are Linux, SDLC and C++.

C++:

C++ is a general-purpose programming language created by Bjarne Stroustrup as an extension of the C programming language, or "C with Classes.

SDLC:

Software Development Life Cycle (SDLC) is a framework that defines the steps involved in the development of software at each phase. It covers the detailed plan for building, deploying and maintaining the software.

1.1 Topic and Subtopics

- CSV file
- Class and Object-OOP in C++.
- Google test(Unit test)
- Make file
- SDLC and TDLC
- Polymorphism
- Operator overloading
- STL containers.
- Code Quality(Codacy)

2. Objectives & Requirements

2.1 High level requirements

ID	Description
HL_01	Analysis of patient details.
HL_02	Comparison of different diseases
HL_03	Highest and lowest aged patients.

HL_04	Adding new patient details

2.2 Low level requirement

ID	Description
LL_01	Reading data from csv file.
LL_02	Saving all data on list using STL concepts
LL_03	Implementation of CI/CD.

3. Design

3.1 Class Diagram

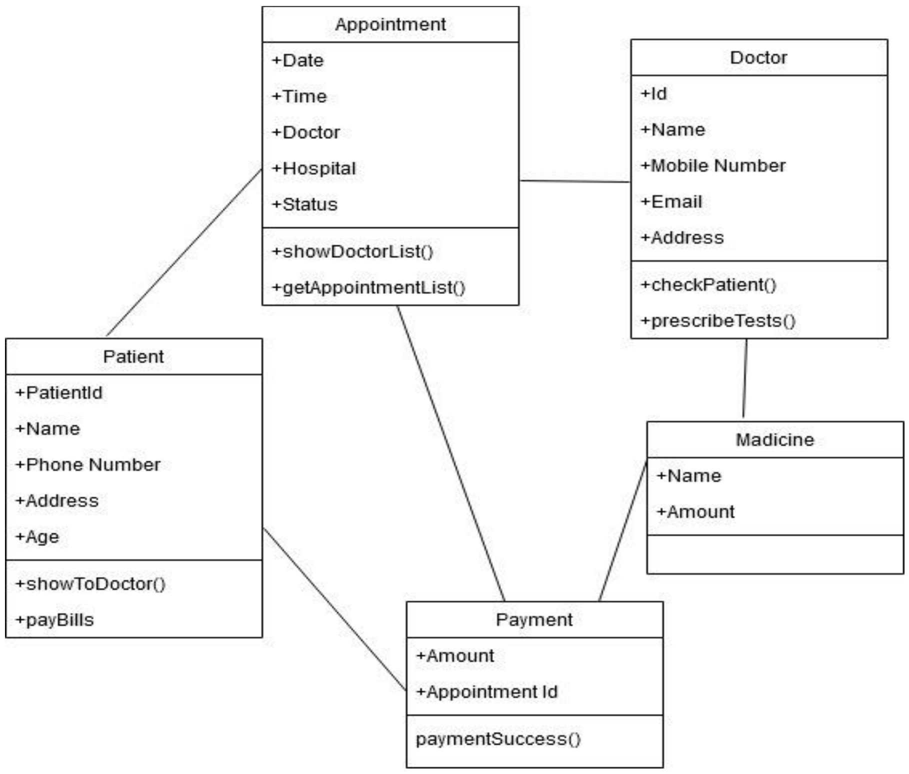


Figure 1 : Class Diagram

3.2 Activity Diagram

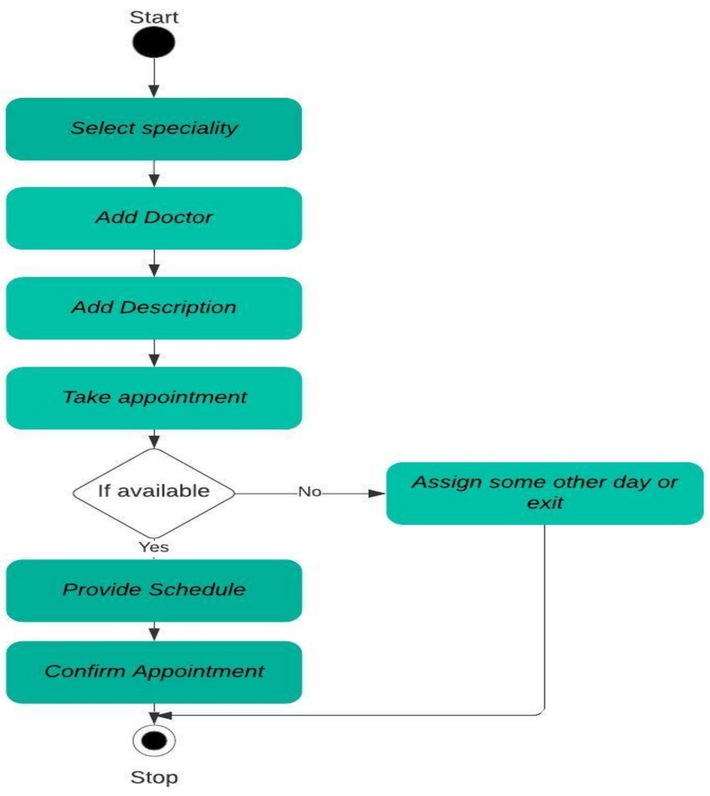


Figure 2 : Activity Diagram

3.3 Component Diagram

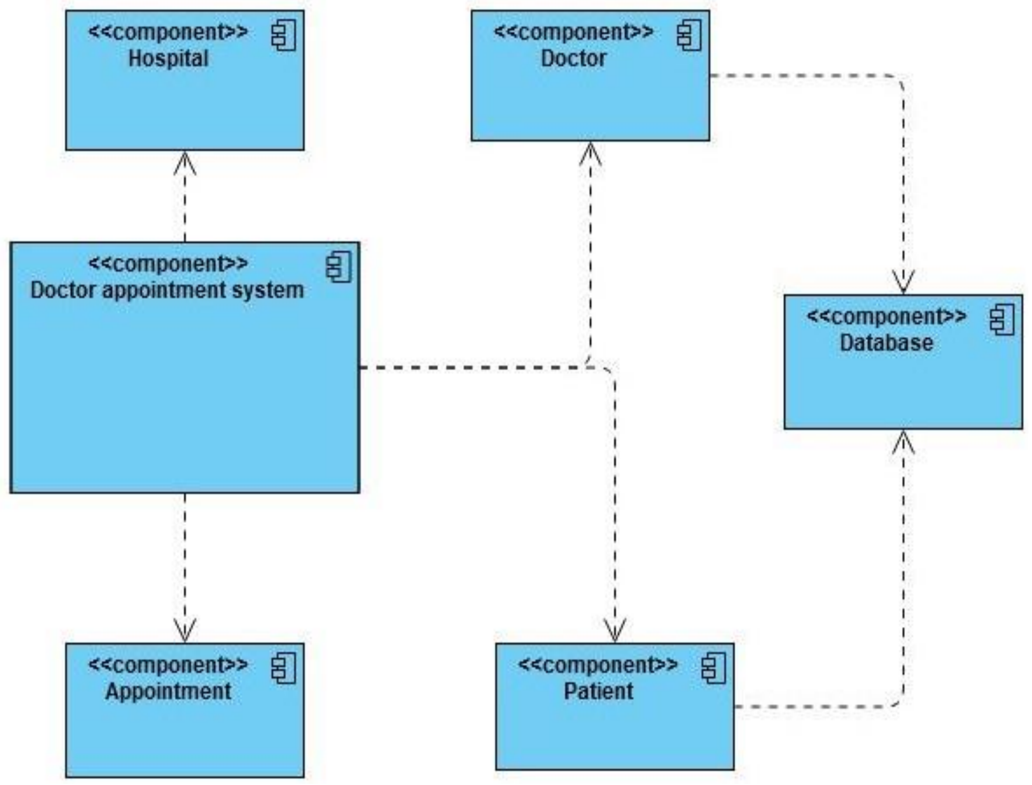


Figure 3 : Component Diagram

3.4 Use Case Diagram

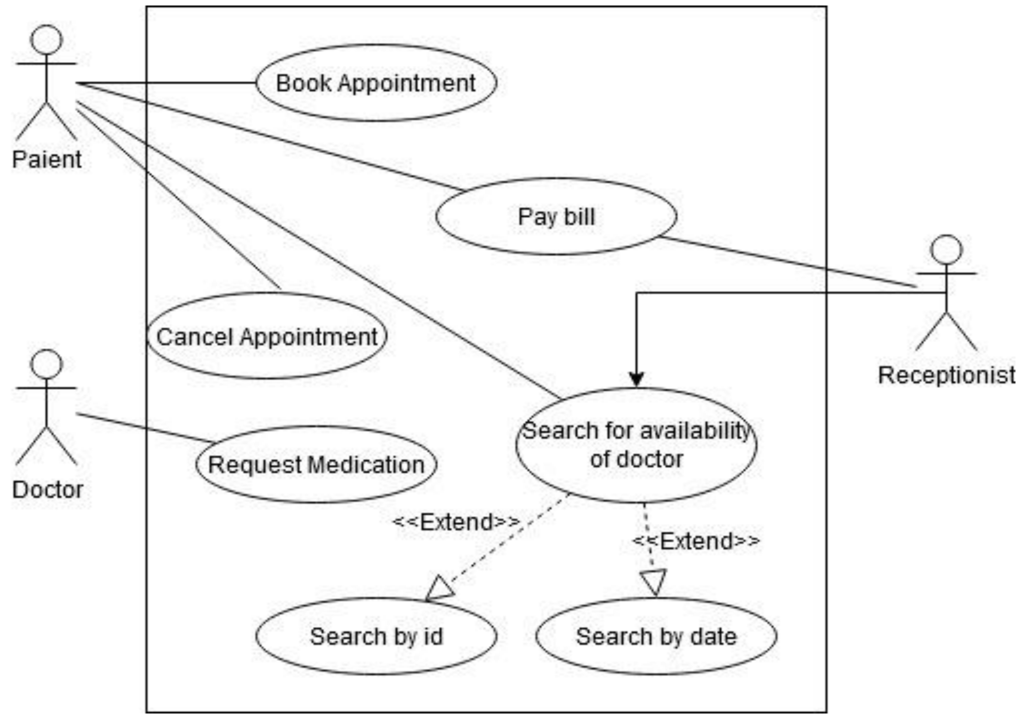


Figure 4 : Use case Diagram

4. Test Plan

4.1 Unit Testing

Test id	Description	Expected input	Expected output	Actual output
HH_01	Knowing of patient details.	Adding the data to list	Display of list where patient is added	Patient added
HH_02	Analysis of different diseases	Checking of different diseases	Printing of different diseases	True
HH_03	Highest aged patients	Giving patient name	Giving the highest aged patient name.	Year patient name
HH_04	Adding of new patient	Adding of new patient	Display of list where new patient is added	True

4.2 Integration Testing

Test id	Description	Expected input	Expected output	Actual output
LL_01	Reading of csv file	Csv file	Adding of all data present in csv to list	Data added to list
LL_02	Adding data to list using STL concepts	Adding data to list	Data added to list	Display of list
LL_03	CI/CD	GitHub Actions	Cppcheck, valgrind, unit testing , codacy	Passing all CI/CD

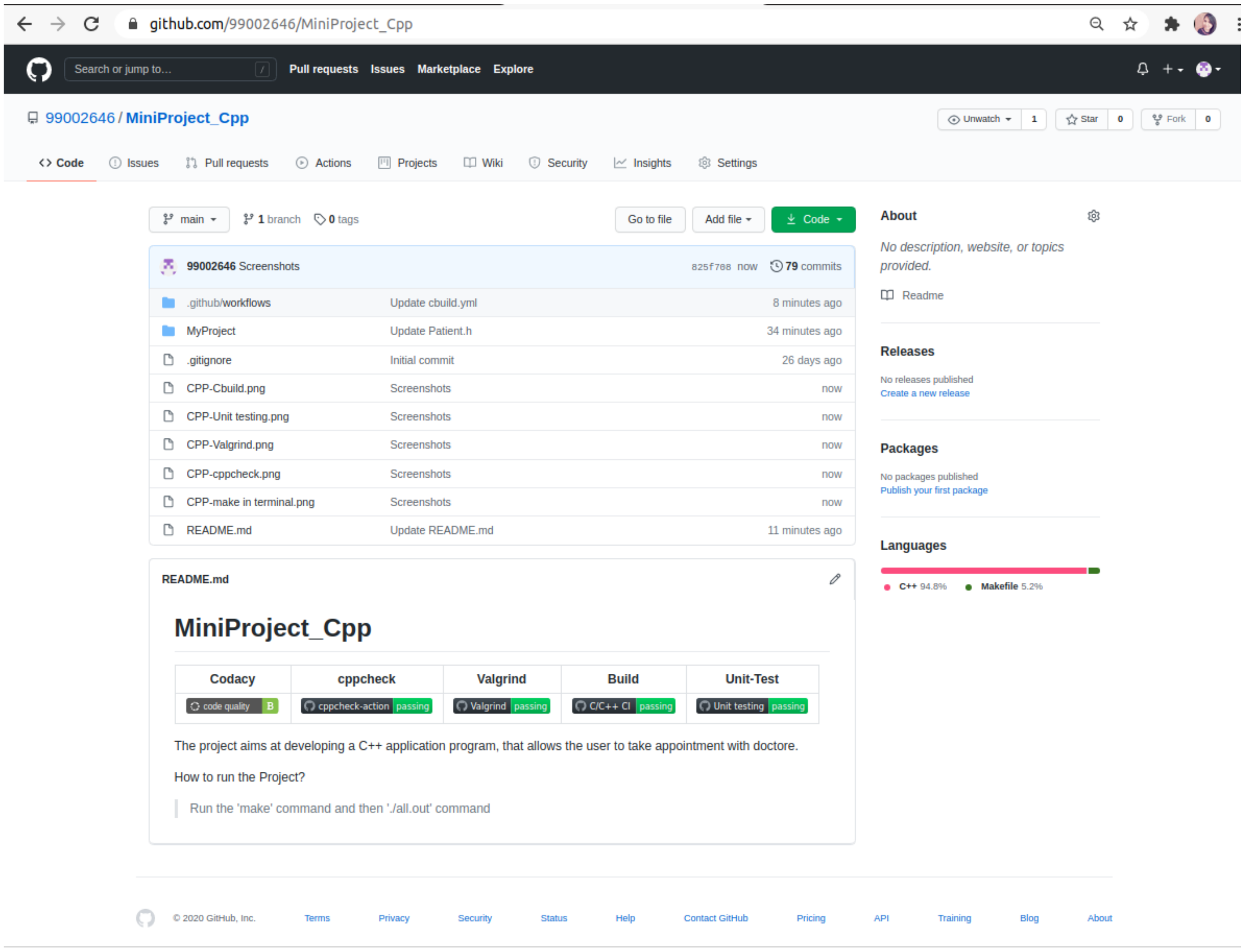
5. Implementation Summary

The implementation of this project is updated in the git repository “99002646/MiniProject_Cpp” https://github.com/99002646/MiniProject_Cpp.git

5.1 Git link

https://github.com/99002646/MiniProject_Cpp.git

5.2 Git Dashboard



99002646 Screenshots — 825f708 now — 79 commits

.github/workflows	Update cbuild.yml	8 minutes ago
MyProject	Update Patient.h	34 minutes ago
.gitignore	Initial commit	26 days ago
CPP-Cbuild.png	Screenshots	now
CPP-Unit testing.png	Screenshots	now
CPP-Valgrind.png	Screenshots	now
CPP-cppcheck.png	Screenshots	now
CPP-make in terminal.png	Screenshots	now
README.md	Update README.md	11 minutes ago

No description, website, or topics provided.

No releases published
Create a new release

No packages published
Publish your first package

README.md

MiniProject_Cpp

Codacy	cppcheck	Valgrind	Build	Unit-Test
code quality B	cppcheck-action passing	Valgrind passing	C/C++ CI passing	Unit testing passing

The project aims at developing a C++ application program, that allows the user to take appointment with doctore.

How to run the Project?

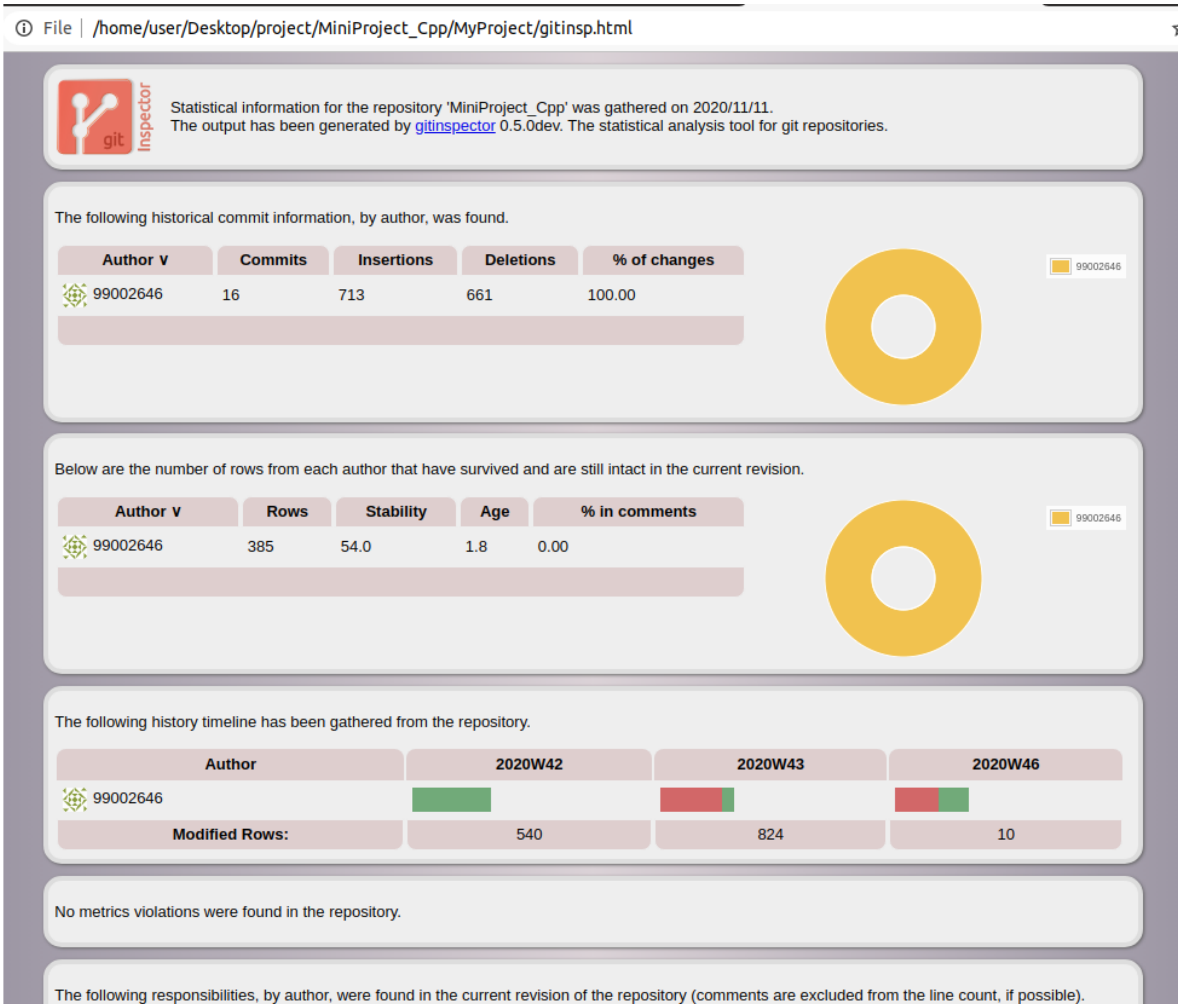
> Run the 'make' command and then './all.out' command

Figure 5 : Git Dashboard

5.3 Summary

- The Doctor appointment system project is implemented using the C++.
- STL Concepts is used to work with the csv file.

Git inspector summary


File | /home/user/Desktop/project/MiniProject_Cpp/MyProject/gitinsp.html

Statistical information for the repository 'MiniProject_Cpp' was gathered on 2020/11/11.
The output has been generated by gitinspector 0.5.0dev. The statistical analysis tool for git repositories.

The following historical commit information, by author, was found.

Author ∨	Commits	Insertions	Deletions	% of changes
99002646	16	713	661	100.00

Below are the number of rows from each author that have survived and are still intact in the current revision.

Author ∨	Rows	Stability	Age	% in comments
99002646	385	54.0	1.8	0.00

The following history timeline has been gathered from the repository.

Author	2020W42	2020W43	2020W46
99002646	🟩	🟥🟩	🟥🟩
Modified Rows:	540	824	10

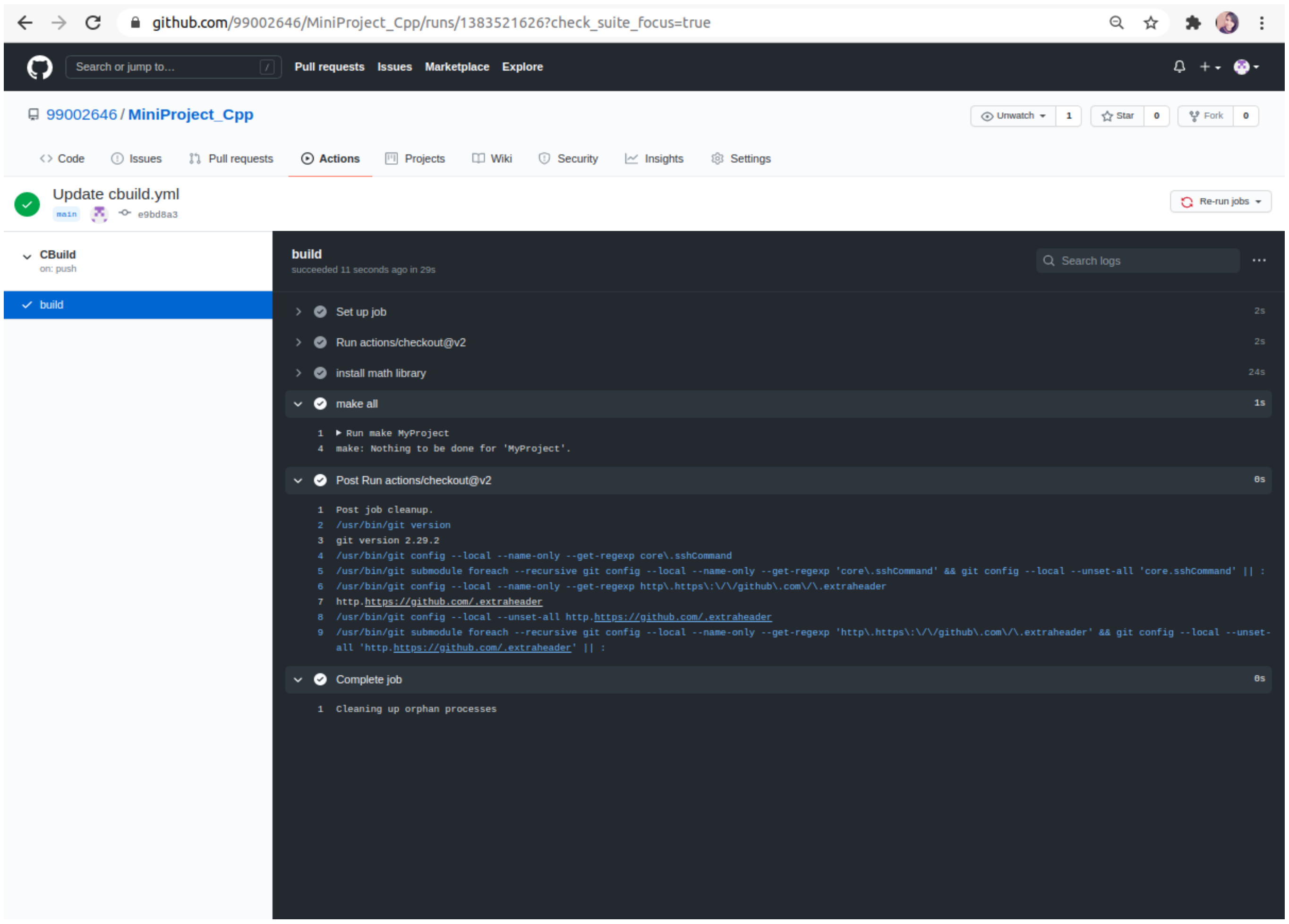
No metrics violations were found in the repository.

The following responsibilities, by author, were found in the current revision of the repository (comments are excluded from the line count, if possible).

Figure 6 : Git Inspector

Build

- Use Cmake to link all the files and generate the Makefile
- Execute generated Makefile
- run ./executeTests
- run valgrind ./executeTests to check for memory leaks


github.com/99002646/MiniProject_Cpp/runs/1383521626?check_suite_focus=true
99002646 / MiniProject_Cpp
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Update cbuild.yml
main
e9bd8a3
Re-run jobs
CBuild
on: push
build
succeeded 11 seconds ago in 29s
Set up job 2s
Run actions/checkout@v2 2s
install math library 24s
make all 1s
Post Run actions/checkout@v2 0s
Complete job 0s

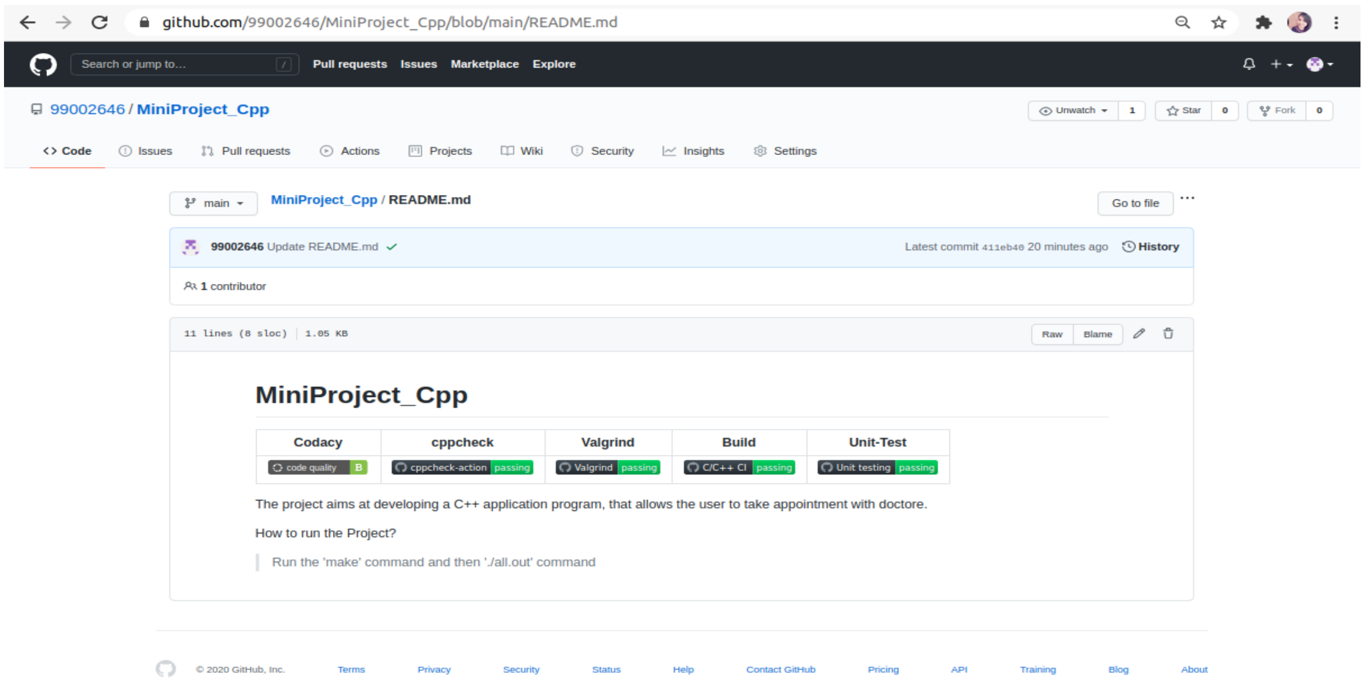
```
▶ Run make MyProject
make: Nothing to be done for 'MyProject'.
```

```
Post job cleanup.
/usr/bin/git version
git version 2.29.2
/usr/bin/git config --local --name-only --get-regexp core\.sshCommand
/usr/bin/git submodule foreach --recursive git config --local --name-only --get-regexp 'core\.sshCommand' && git config --local --unset-all 'core.sshCommand' || :
/usr/bin/git config --local --name-only --get-regexp http\.https\:\/\/github\.com\/\.extraheader
http.https://github.com/.extraheader
/usr/bin/git config --local --unset-all http.https://github.com/.extraheader
/usr/bin/git submodule foreach --recursive git config --local --name-only --get-regexp 'http\.https\:\/\/github\.com\/\.extraheader' && git config --local --unset-all 'http.https://github.com/.extraheader' || :
```

```
Cleaning up orphan processes
```

Figure 7 : Build

Code quality and Issues or Bug Tracking



github.com/99002646/MiniProject_Cpp/blob/main/README.md
Pull requests
Issues
Marketplace
Explore
99002646 / MiniProject_Cpp
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
main
MiniProject_Cpp / README.md
Go to file
99002646 Update README.md
Latest commit 411eb48 20 minutes ago
History
1 contributor
11 lines (8 sloc) | 1.05 KB
Raw
Blame

MiniProject_Cpp

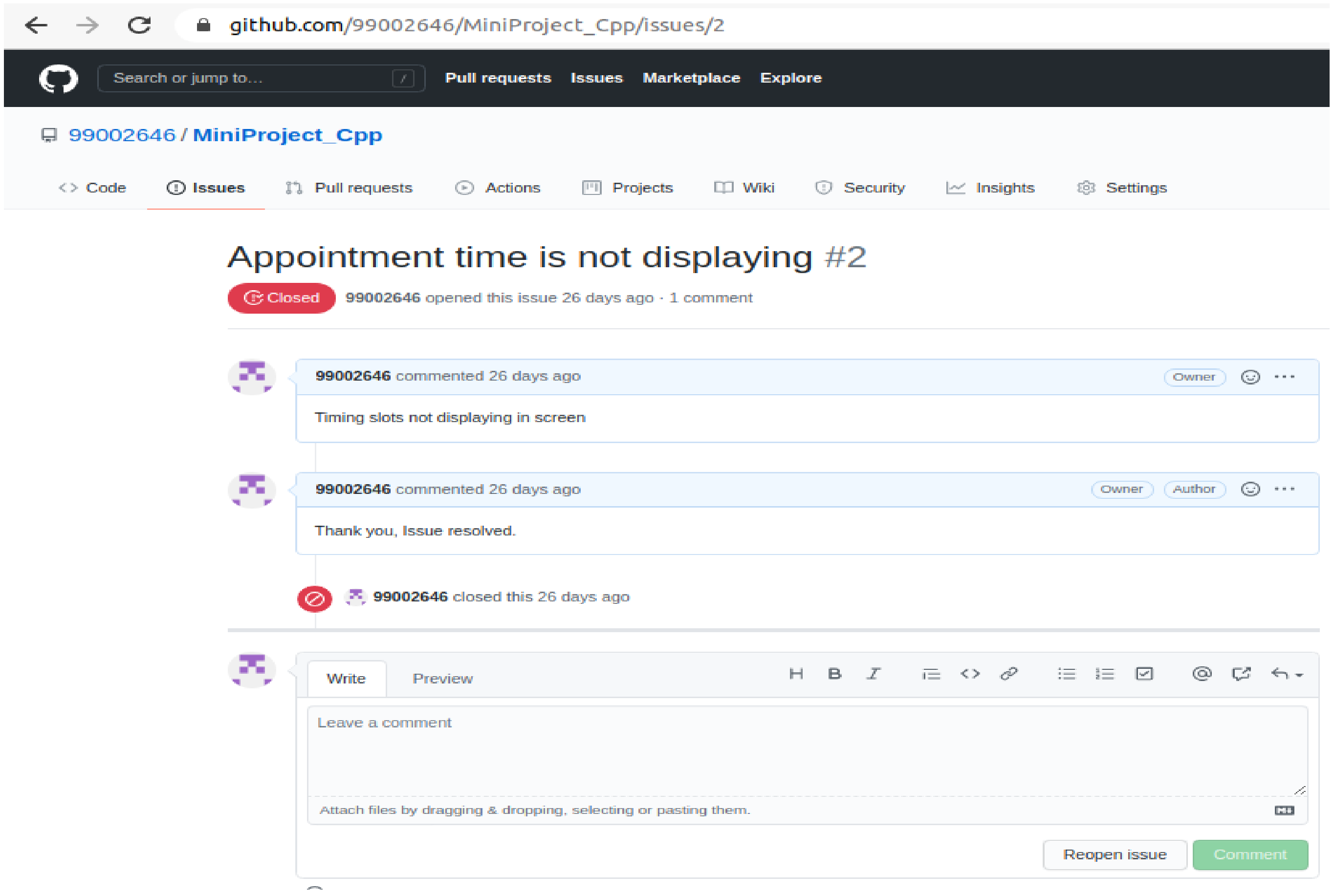
Codacy	cppcheck	Valgrind	Build	Unit-Test
code quality B	cppcheck-action passing	Valgrind passing	C/C++ CI passing	Unit testing passing

The project aims at developing a C++ application program, that allows the user to take appointment with doctore.

How to run the Project?

> Run the 'make' command and then './all.out' command

Figure 8 : Badges


github.com/99002646/MiniProject_Cpp/issues/2

99002646 / MiniProject_Cpp

Appointment time is not displaying #2

Closed 99002646 opened this issue 26 days ago · 1 comment

99002646 commented 26 days ago — Owner

Timing slots not displaying in screen

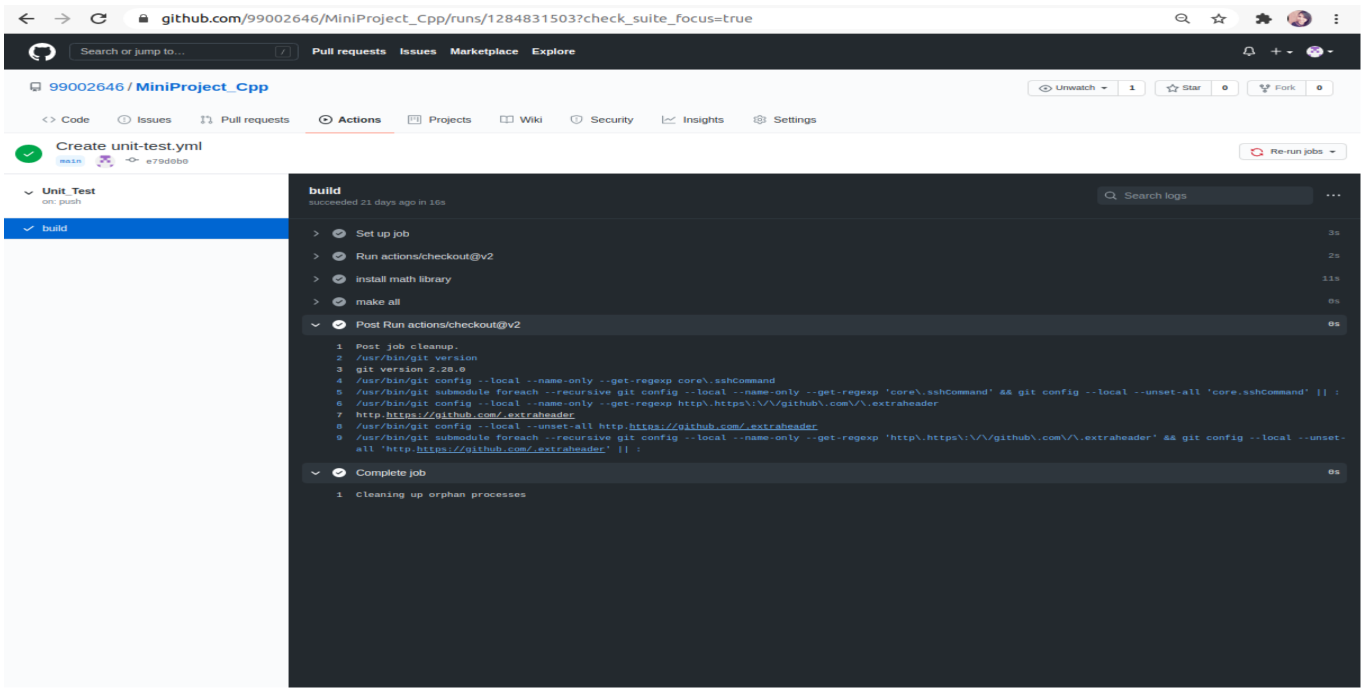
99002646 commented 26 days ago — Owner, Author

Thank you, Issue resolved.

99002646 closed this 26 days ago

Figure 9 : Issue

Unit Testing



```
build
succeeded 21 days ago in 16s

> Set up job                                   3s
> Run actions/checkout@v2                      2s
> install math library                        11s
> make all                                     0s
v Post Run actions/checkout@v2                 0s
Post job cleanup.
/usr/bin/git version
git version 2.28.0
/usr/bin/git config --local --name-only --get-regexp core\.sshCommand
/usr/bin/git submodule foreach --recursive git config --local --name-only --get-regexp 'core\.sshCommand' && git config --local --unset-all 'core.sshCommand' || :
/usr/bin/git config --local --name-only --get-regexp http\.https\:\/\/github\.com\/\.extraheader
http.https://github.com/.extraheader
/usr/bin/git config --local --unset-all http.https://github.com/.extraheader
/usr/bin/git submodule foreach --recursive git config --local --name-only --get-regexp 'http\.https\:\/\/github\.com\/\.extraheader' && git config --local --unset-
all 'http.https://github.com/.extraheader' || :
v Complete job                                 0s
Cleaning up orphan processes
```

Figure 10 :Unit Testing

6.Individual Contribution & Highlights

Not Applicable – Individual Project; Sole Collaborator.

7. Challenges faced and how were they overcome

- While implementing the STL concepts like list, vector we have faced an issue to display the data from the Data set .
- We have overcome this problem by implementing it using the list as the containers.

7.1 Future Scope

- This project can be implemented further by upgrading the appointment schedule and analyzing the shows.

Miniproject -2 [Team/Individual]

Title : Matrix Multiplication Using Multithreading

1. Module/s Used

Mini project is related to linux and OS programming using C programming.

1.1 Topic and Subtopics

- Process, Threads and IPC
- File handling
- Multi threading

2. Objectives & Requirements

- To perform the multiplication in multiple threads
- To decide the user to create number of threads
- reading the input from .txt file.

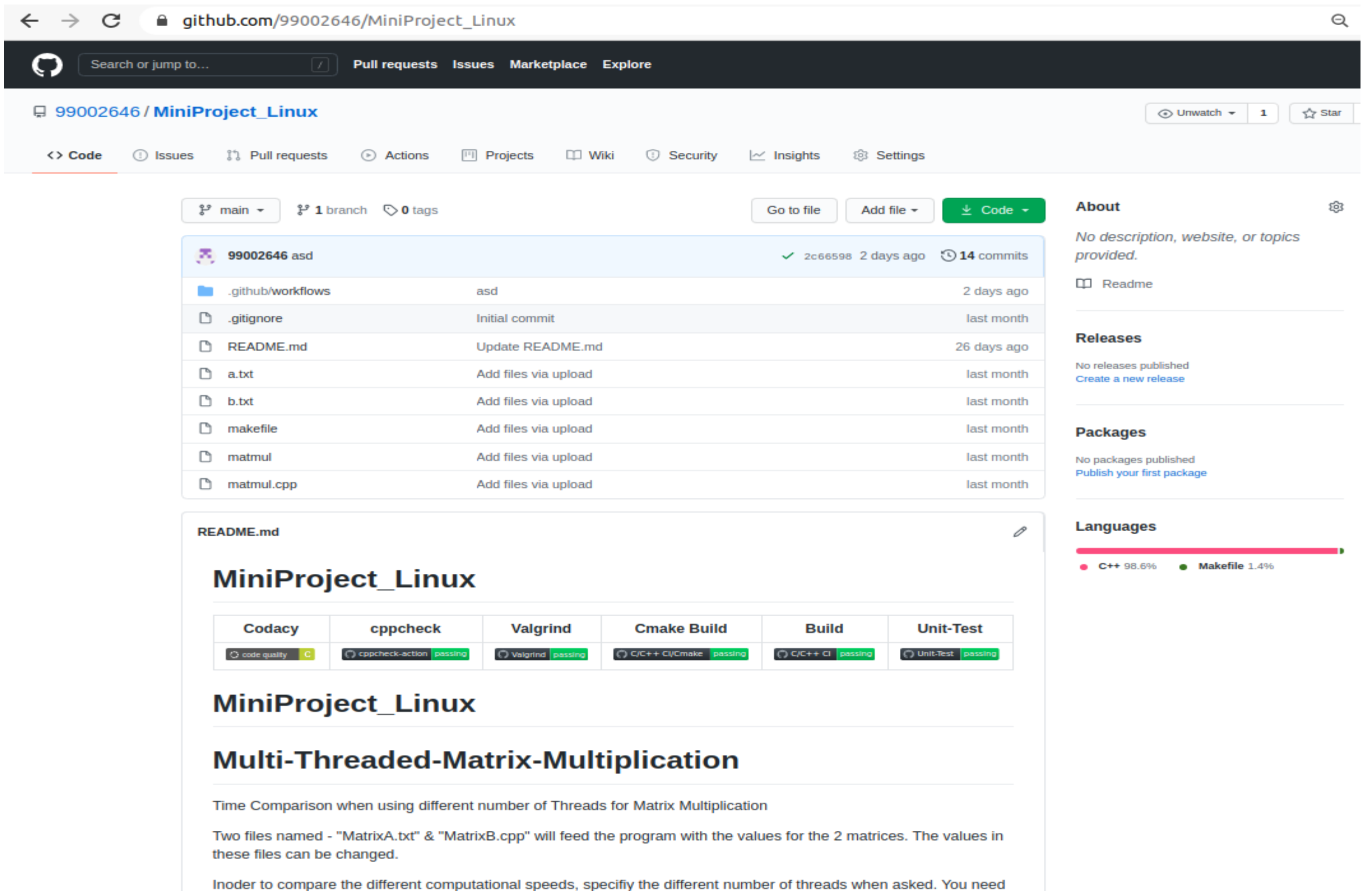
3. Implementation Summary

The linux and OS programming project is updated in the git repository "99002646/MiniProject_Linux"
https://github.com/99002646/MiniProject_Linux.git

3.1 Git Link

https://github.com/99002646/MiniProject_Linux.git

3.2 Git Dashboard


github.com/99002646/MiniProject_Linux

99002646 / MiniProject_Linux

main · 1 branch · 0 tags

99002646 asd · 2c66598 2 days ago · 14 commits

.github/workflows	asd	2 days ago
.gitignore	Initial commit	last month
README.md	Update README.md	26 days ago
a.txt	Add files via upload	last month
b.txt	Add files via upload	last month
makefile	Add files via upload	last month
matmul	Add files via upload	last month
matmul.cpp	Add files via upload	last month

About

No description, website, or topics provided.

Releases

No releases published

Packages

No packages published

Languages

C++ 98.6% · Makefile 1.4%

README.md

MiniProject_Linux

Codacy	cppcheck	Valgrind	Cmake Build	Build	Unit-Test
code quality C	cppcheck-action passing	Valgrind passing	C/C++ CI/Cmake passing	C/C++ CI passing	Unit-Test passing

MiniProject_Linux

Multi-Threaded-Matrix-Multiplication

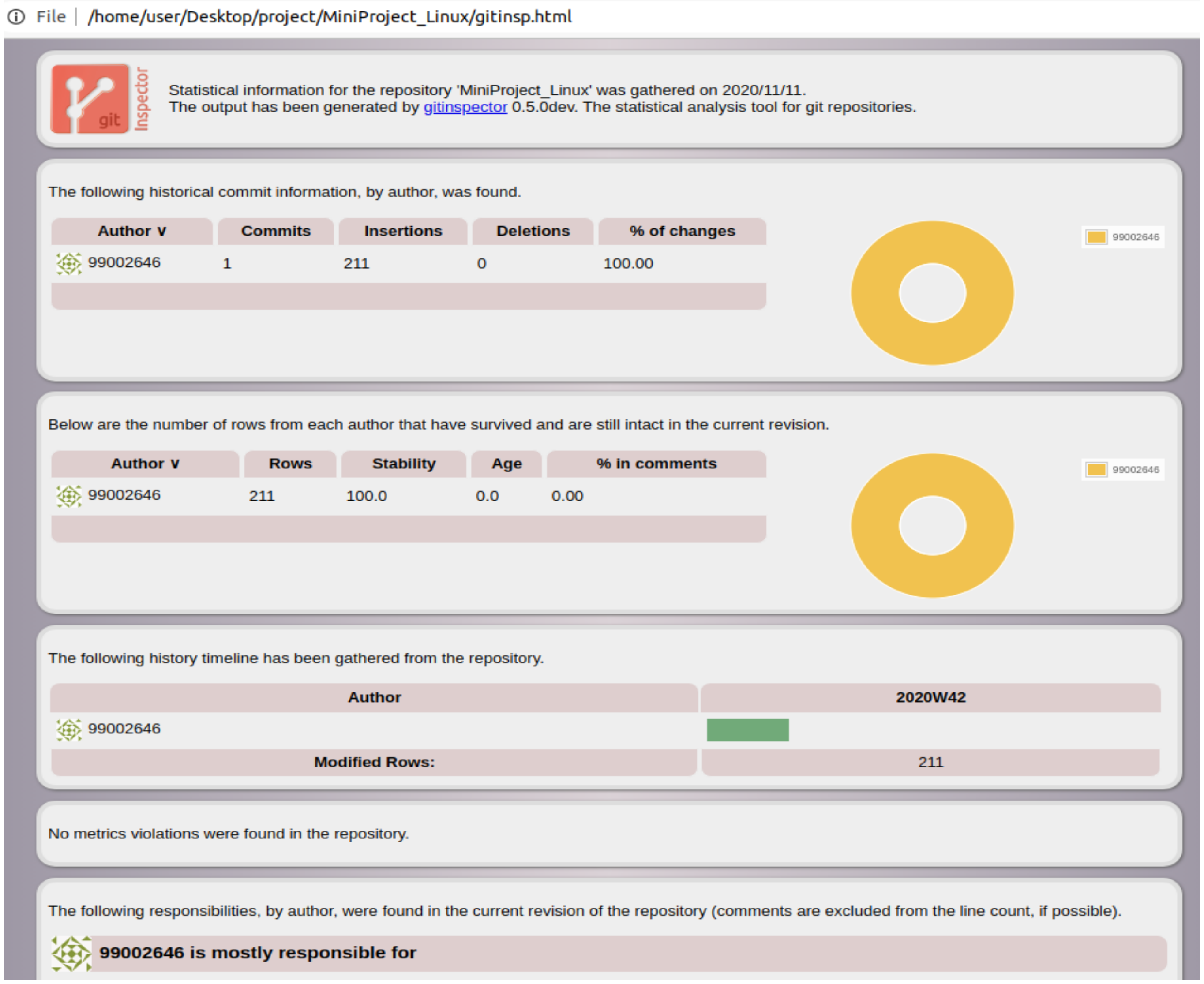
Time Comparison when using different number of Threads for Matrix Multiplication

Two files named - "MatrixA.txt" & "MatrixB.cpp" will feed the program with the values for the 2 matrices. The values in these files can be changed.

Inoder to compare the different computational speeds, specifiy the different number of threads when asked. You need

Figure 11 : Git Dashboard

Git inspector summary



File | /home/user/Desktop/project/MiniProject_Linux/gitinsp.html

Statistical information for the repository 'MiniProject_Linux' was gathered on 2020/11/11.
The output has been generated by gitinspector 0.5.0dev. The statistical analysis tool for git repositories.

The following historical commit information, by author, was found.

Author ∨	Commits	Insertions	Deletions	% of changes
99002646	1	211	0	100.00

Below are the number of rows from each author that have survived and are still intact in the current revision.

Author ∨	Rows	Stability	Age	% in comments
99002646	211	100.0	0.0	0.00

The following history timeline has been gathered from the repository.

Author	2020W42
99002646	🟩
Modified Rows:	211

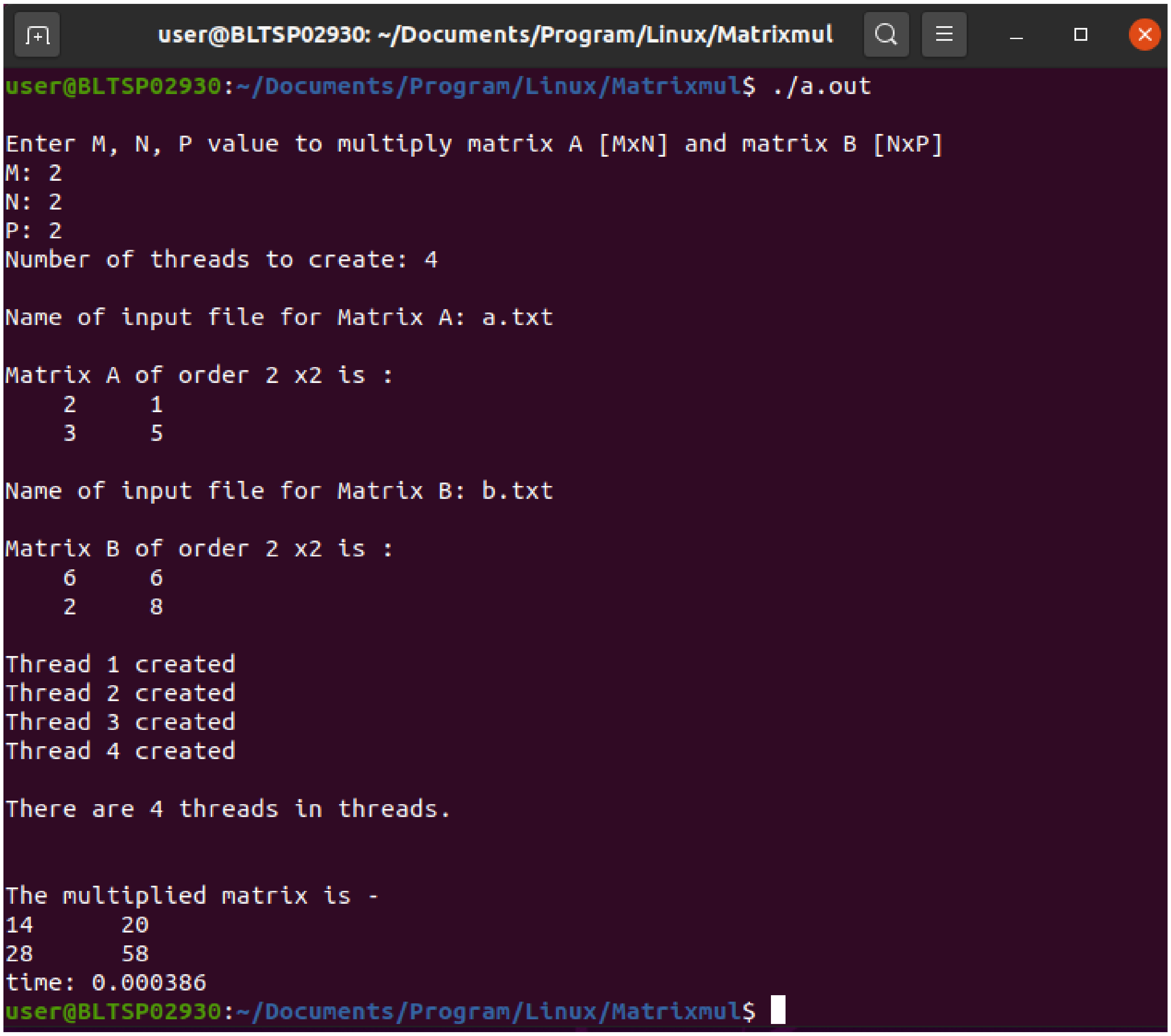
No metrics violations were found in the repository.

The following responsibilities, by author, were found in the current revision of the repository (comments are excluded from the line count, if possible).

99002646 is mostly responsible for

Figure 12 : Git Inspector

Build


user@BLTSP02930: ~/Documents/Program/Linux/Matrixmul

```
user@BLTSP02930:~/Documents/Program/Linux/Matrixmul$ ./a.out

Enter M, N, P value to multiply matrix A [MxN] and matrix B [NxP]
M: 2
N: 2
P: 2
Number of threads to create: 4

Name of input file for Matrix A: a.txt

Matrix A of order 2 x2 is :
    2      1
    3      5

Name of input file for Matrix B: b.txt

Matrix B of order 2 x2 is :
    6      6
    2      8

Thread 1 created
Thread 2 created
Thread 3 created
Thread 4 created

There are 4 threads in threads.


The multiplied matrix is -
14       20
28       58
time: 0.000386
user@BLTSP02930:~/Documents/Program/Linux/Matrixmul$
```

Figure 13 : Build

Code quality

- Code Quality: Codacy: B Grade
- CppCheck: Passing
- C/C++ CI Build: Passing

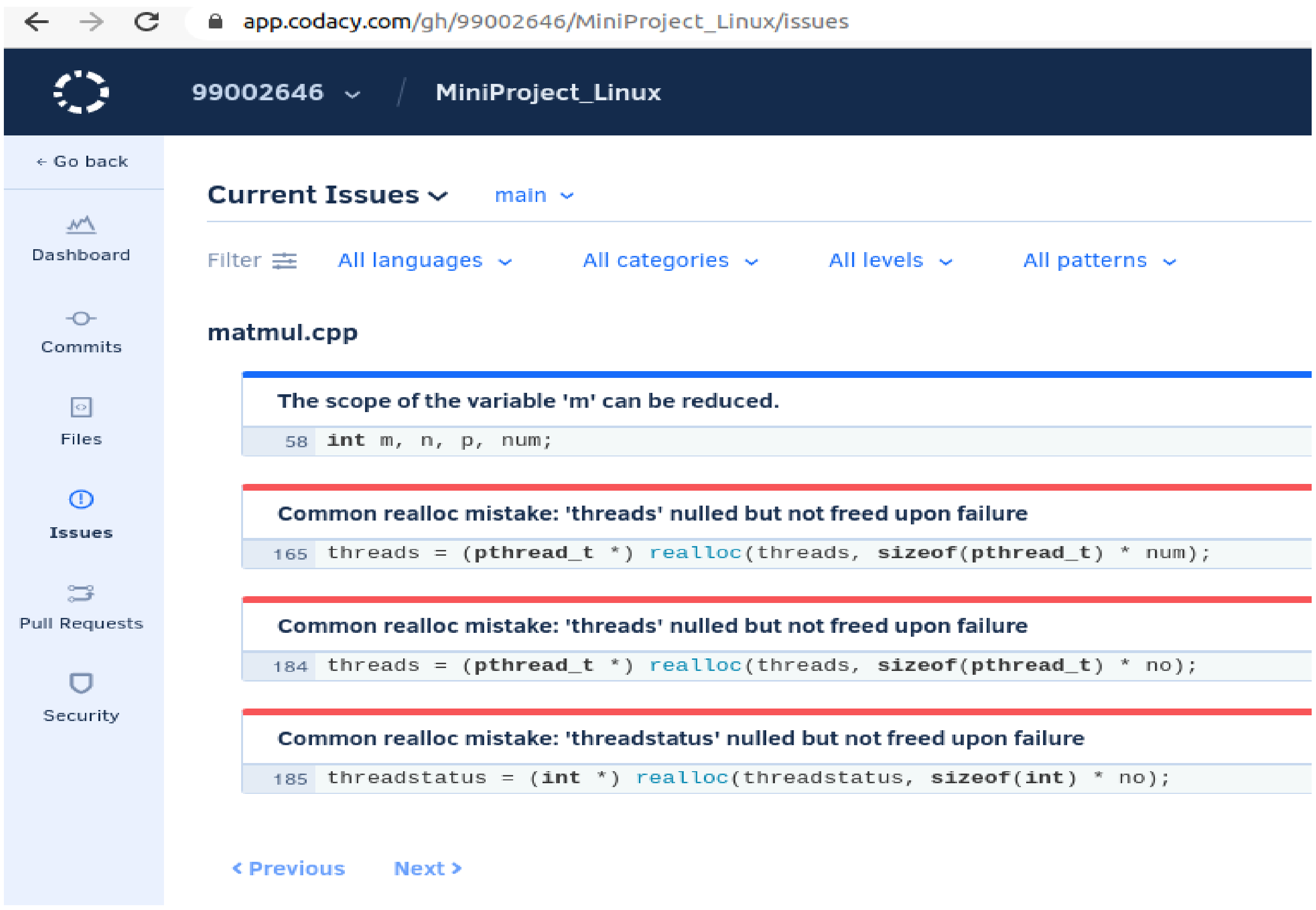
4. Summary

In this project we have not used any synchronization in future it can be implemented while serving the burger with many customer to maintain the process accurately.

5. Individual Contribution & Highlights

Not Applicable – Individual Project; Sole Collaborator.

5.1 Issues in Codacy



matmul.cpp

The scope of the variable 'm' can be reduced.

```
int m, n, p, num;
```

Common realloc mistake: 'threads' nulled but not freed upon failure

```
threads = (pthread_t *) realloc(threads, sizeof(pthread_t) * num);
```

Common realloc mistake: 'threads' nulled but not freed upon failure

```
threads = (pthread_t *) realloc(threads, sizeof(pthread_t) * no);
```

Common realloc mistake: 'threadstatus' nulled but not freed upon failure

```
threadstatus = (int *) realloc(threadstatus, sizeof(int) * no);
```

Figure 14 : Issues in Codacy

5.2 Challenges faced and how were they overcome

While implementing the file handling concept we have faced some issues like reading error, file not found error, then resolved the issue.

Miniproject -3 [Team/Individual]

Title : Top Women Chess Players

1. Module/s Used

Mini project is related to python.

2. Objectives & Requirements

- The top women chess players analysis mini project has fide id, name of the player, title, date of birth, federation, standard rating, rapid rating, blitz rating columns.
- which helps to find the players by their fide id.
- It sorts the names, titles with the ascending and descending order.
- It calculates the standard rating, rapid rating, blitz rating and finds the maximum and minimum rating for the individual players.
- Counts the number of players in the given data set and group the players by their respective federation and region.

2.1 Requirements

2.1.1 High level requirements

-To Compute the minimum and maximum rating of the Top Chess players with standard rating, rapid rating and blitz rating.
-To Count the players by the Federation.
-To Compute the Maximum rating of the players.

2.1.2 Low level requirements

-To sort the names, titles of the players in the ascending and descending order.
-To find women players by the date of birth and federation name.

3. Design

3.1 Class Diagram

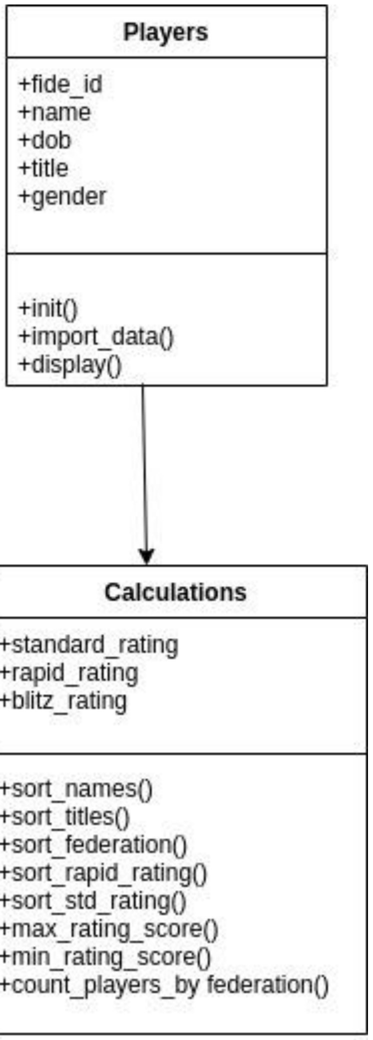


Figure 15 : Class Diagram

3.2 Use Case Diagram

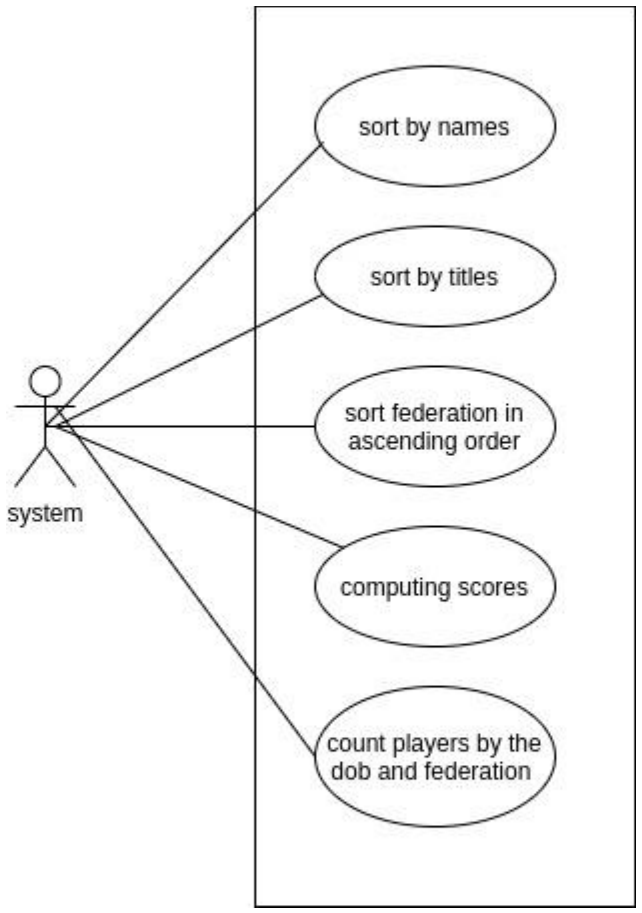

sort by names
sort by titles
sort federation in ascending order
computing scores
count players by the dob and federation
system

Figure 16 : Use case Diagram

4. Implementation Summary

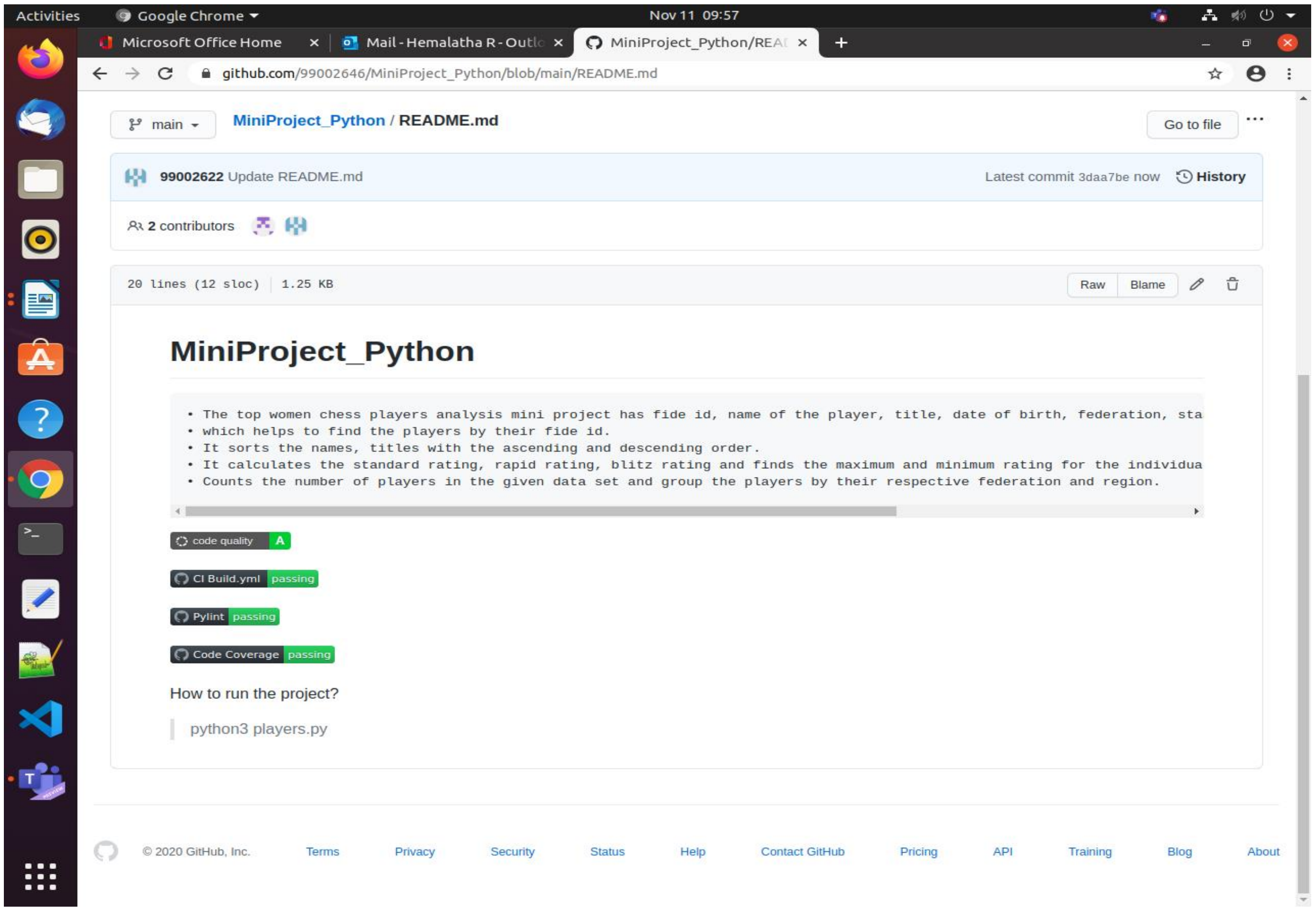
The implementation of this project is updated in the git repository “99002646/MiniProject_Python”

https://github.com/99002646/MiniProject_Python.git

4.1 Git link

https://github.com/99002646/MiniProject_Python.git

4.2 Git Dashboard



```
20 lines (12 sloc) | 1.25 KB
```

MiniProject_Python

```
• The top women chess players analysis mini project has fide id, name of the player, title, date of birth, federation, sta
• which helps to find the players by their fide id.
• It sorts the names, titles with the ascending and descending order.
• It calculates the standard rating, rapid rating, blitz rating and finds the maximum and minimum rating for the individua
• Counts the number of players in the given data set and group the players by their respective federation and region.
```

code quality A

CI Build.yml passing

Pylint passing

Code Coverage passing

How to run the project?

```
python3 players.py
```

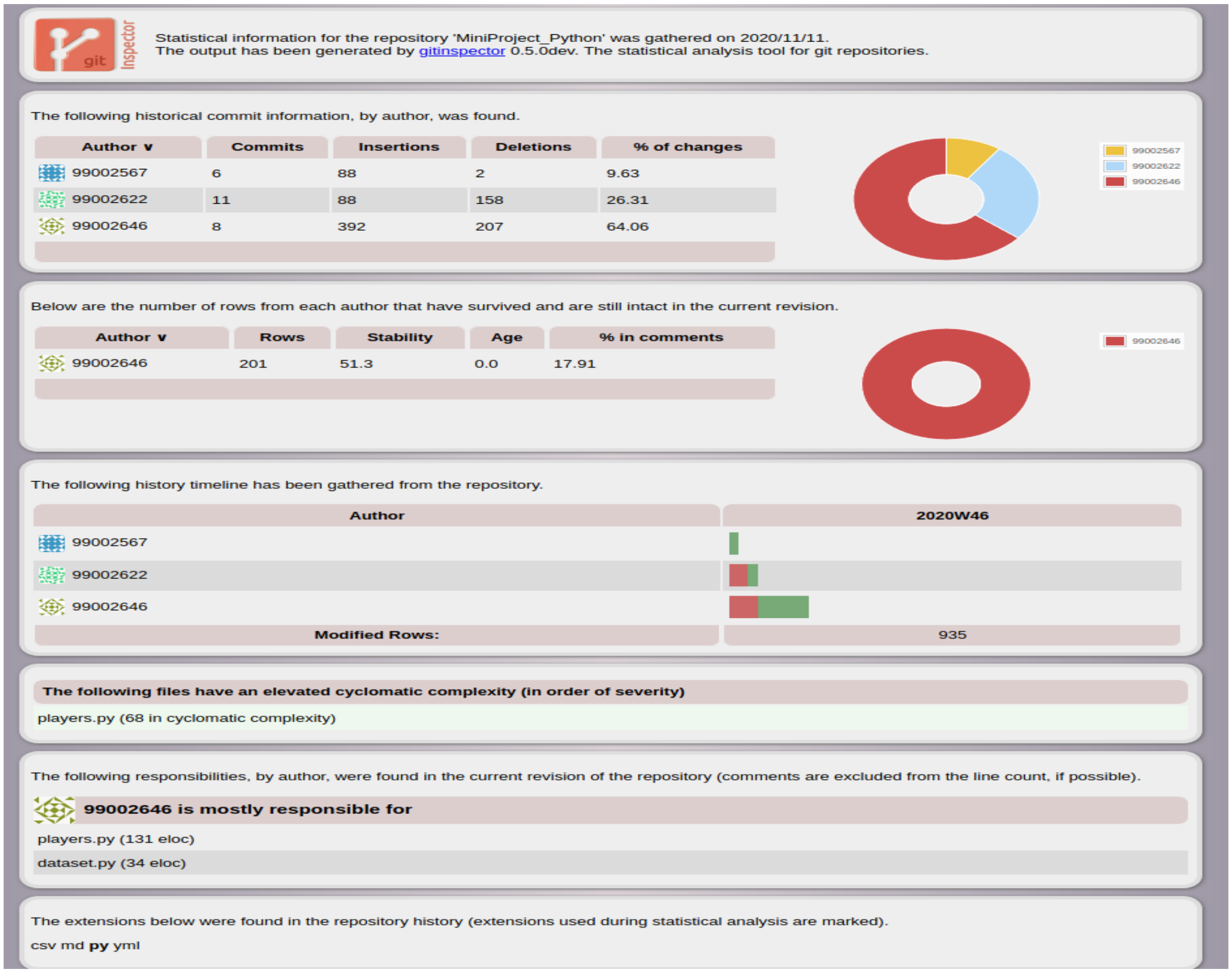
github.com/99002646/MiniProject_Python/blob/main/README.md
MiniProject_Python / README.md
99002622 Update README.md
Latest commit 3daa7be now
History
2 contributors
Raw
Blame
Go to file

Figure 17 : Git Dashboard

4.3 Summary

- The Top women chess player analysis Project is implemented using the C++ which displays the players name, fide id, date of birth, gender, federation, Titles and ratings.
- STL Concepts is used to retrieve the DataSet.
- Here, we perform some of the functions like computing the ratings of all the three different ratings and displaying the maximum ratings of all the players.
- By using the Federation as the key displaying the players within that federation.
- Identifying the player using the Fide ID by using the Id as parameter.
- Finding total number of women players by using the count function in the dataset.

Git inspector summary


Statistical information for the repository 'MiniProject_Python' was gathered on 2020/11/11.
The output has been generated by gitinspector 0.5.0dev. The statistical analysis tool for git repositories.

The following historical commit information, by author, was found.

Author	Commits	Insertions	Deletions	% of changes
99002567	6	88	2	9.63
99002622	11	88	158	26.31
99002646	8	392	207	64.06

Below are the number of rows from each author that have survived and are still intact in the current revision.

Author	Rows	Stability	Age	% in comments
99002646	201	51.3	0.0	17.91

The following history timeline has been gathered from the repository.

Author	2020W46
99002567	
99002622	
99002646	
Modified Rows:	935

The following files have an elevated cyclomatic complexity (in order of severity)

players.py (68 in cyclomatic complexity)

The following responsibilities, by author, were found in the current revision of the repository (comments are excluded from the line count, if possible).

99002646 is mostly responsible for

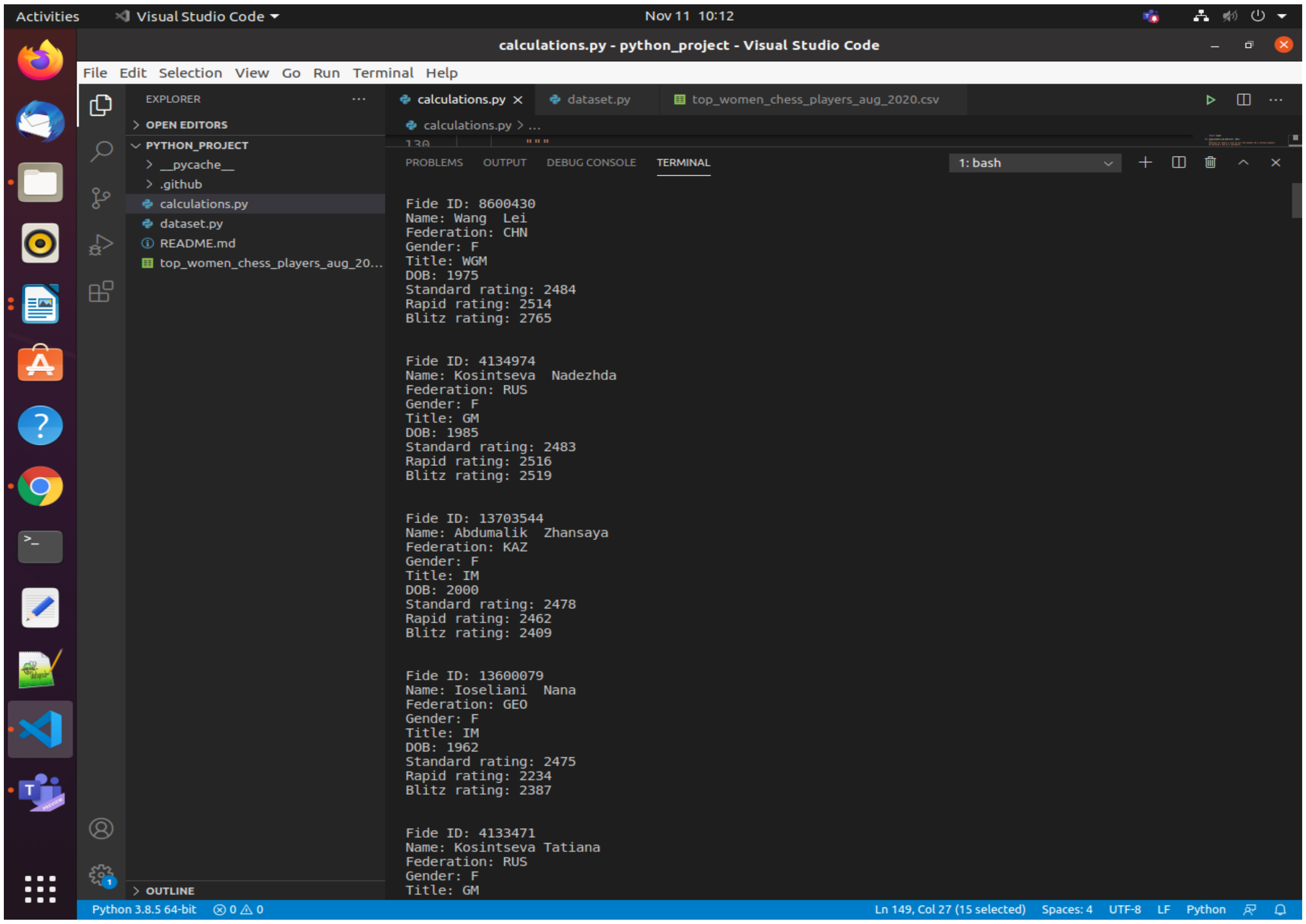
players.py (131 eloc)
dataset.py (34 eloc)

The extensions below were found in the repository history (extensions used during statistical analysis are marked).

csv md **py** yml

Figure 18 : Git Inspector

Build


Activities
Visual Studio Code
Nov 11 10:12
calculations.py - python_project - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS
PYTHON_PROJECT
__pycache__
.github
calculations.py
dataset.py
README.md
top_women_chess_players_aug_20...
calculations.py
dataset.py
top_women_chess_players_aug_2020.csv
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: bash
OUTLINE
Python 3.8.5 64-bit
Ln 149, Col 27 (15 selected) Spaces: 4 UTF-8 LF Python

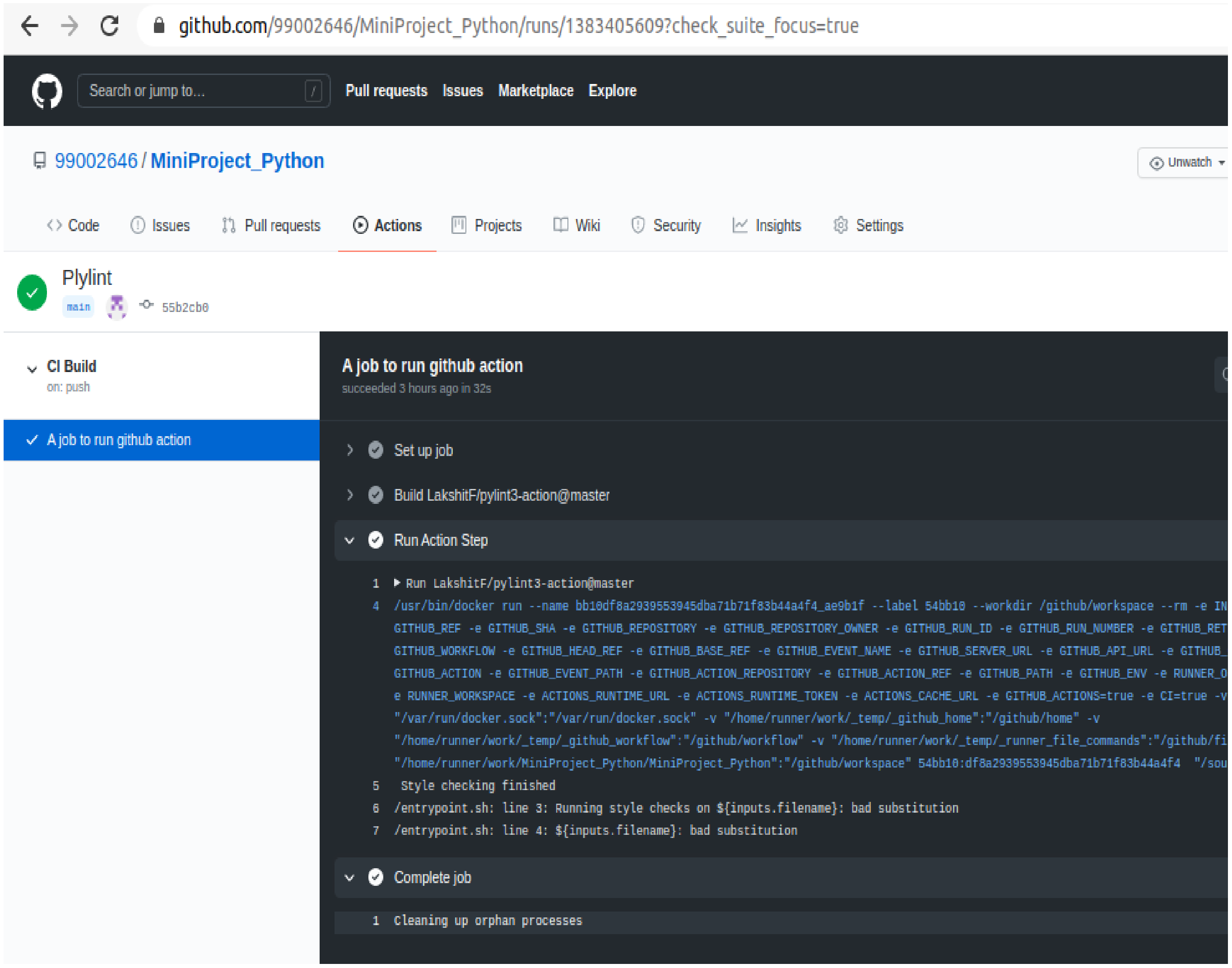
```
Fide ID: 8600430
Name: Wang  Lei
Federation: CHN
Gender: F
Title: WGM
DOB: 1975
Standard rating: 2484
Rapid rating: 2514
Blitz rating: 2765


Fide ID: 4134974
Name: Kosintseva  Nadezhda
Federation: RUS
Gender: F
Title: GM
DOB: 1985
Standard rating: 2483
Rapid rating: 2516
Blitz rating: 2519


Fide ID: 13703544
Name: Abdumalik  Zhansaya
Federation: KAZ
Gender: F
Title: IM
DOB: 2000
Standard rating: 2478
Rapid rating: 2462
Blitz rating: 2409


Fide ID: 13600079
Name: Ioseliani  Nana
Federation: GEO
Gender: F
Title: IM
DOB: 1962
Standard rating: 2475
Rapid rating: 2234
Blitz rating: 2387


Fide ID: 4133471
Name: Kosintseva Tatiana
Federation: RUS
Gender: F
Title: GM
```


github.com/99002646/MiniProject_Python/runs/1383405609?check_suite_focus=true

Search or jump to... Pull requests Issues Marketplace Explore

99002646 / MiniProject_Python

Unwatch

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Plylint
main 55b2cb0

CI Build
on: push

✓ A job to run github action

A job to run github action
succeeded 3 hours ago in 32s

Set up job

Build LakshitF/pylint3-action@master

Run Action Step

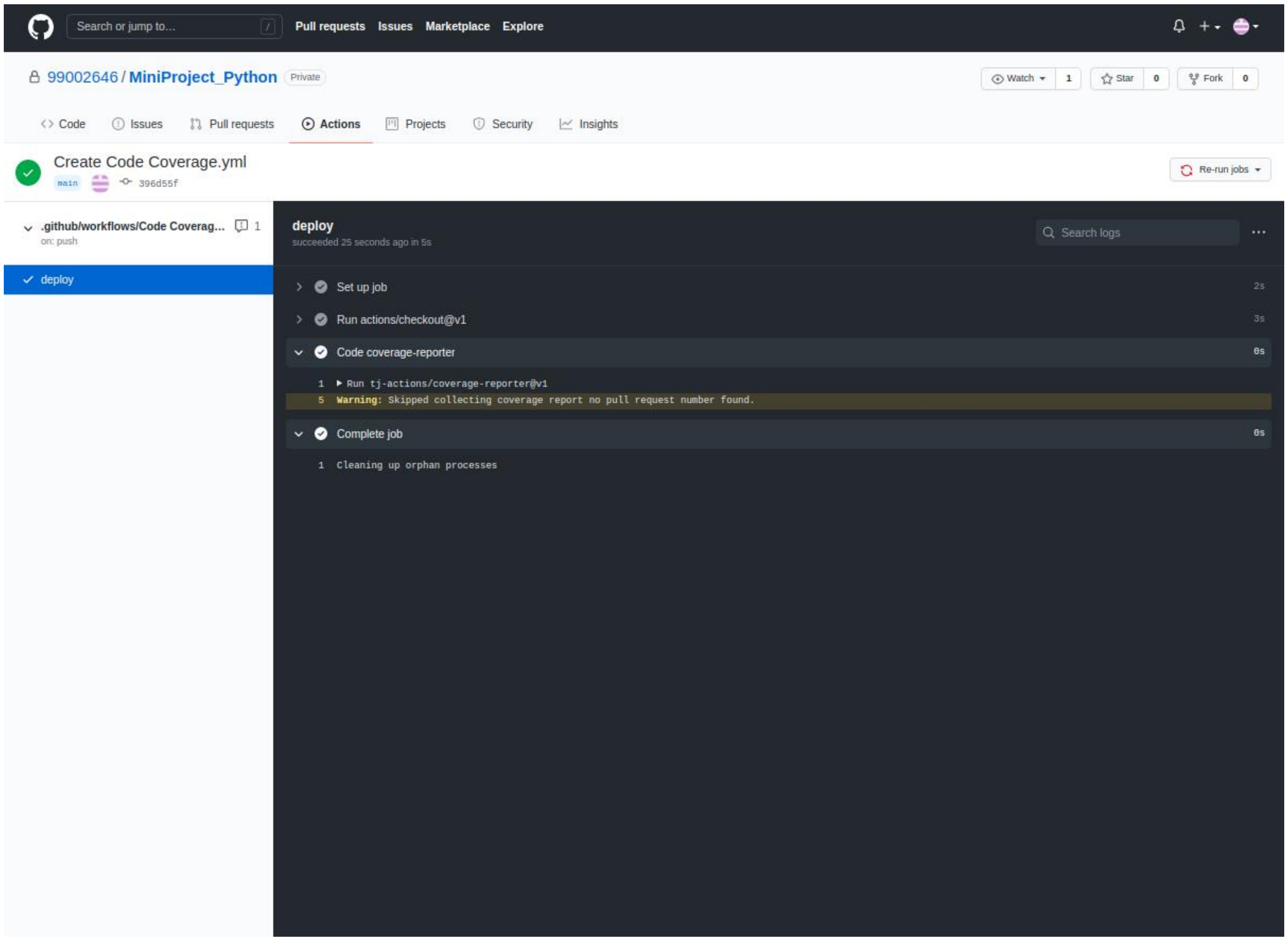
```
▶ Run LakshitF/pylint3-action@master
/usr/bin/docker run --name bb10df8a2939553945dba71b71f83b44a4f4_ae9b1f --label 54bb10 --workdir /github/workspace --rm -e IN
GITHUB_REF -e GITHUB_SHA -e GITHUB_REPOSITORY -e GITHUB_REPOSITORY_OWNER -e GITHUB_RUN_ID -e GITHUB_RUN_NUMBER -e GITHUB_RET
GITHUB_WORKFLOW -e GITHUB_HEAD_REF -e GITHUB_BASE_REF -e GITHUB_EVENT_NAME -e GITHUB_SERVER_URL -e GITHUB_API_URL -e GITHUB_
GITHUB_ACTION -e GITHUB_EVENT_PATH -e GITHUB_ACTION_REPOSITORY -e GITHUB_ACTION_REF -e GITHUB_PATH -e GITHUB_ENV -e RUNNER_O
e RUNNER_WORKSPACE -e ACTIONS_RUNTIME_URL -e ACTIONS_RUNTIME_TOKEN -e ACTIONS_CACHE_URL -e GITHUB_ACTIONS=true -e CI=true -v
"/var/run/docker.sock":"/var/run/docker.sock" -v "/home/runner/work/_temp/_github_home":"/github/home" -v
"/home/runner/work/_temp/_github_workflow":"/github/workflow" -v "/home/runner/work/_temp/_runner_file_commands":"/github/fi
"/home/runner/work/MiniProject_Python/MiniProject_Python":"/github/workspace" 54bb10:df8a2939553945dba71b71f83b44a4f4  "/sou
 Style checking finished
/entrypoint.sh: line 3: Running style checks on ${inputs.filename}: bad substitution
/entrypoint.sh: line 4: ${inputs.filename}: bad substitution
```

Complete job

```
Cleaning up orphan processes
```

Figure 19 : Bulid

Code quality and Issues or Bug Tracking

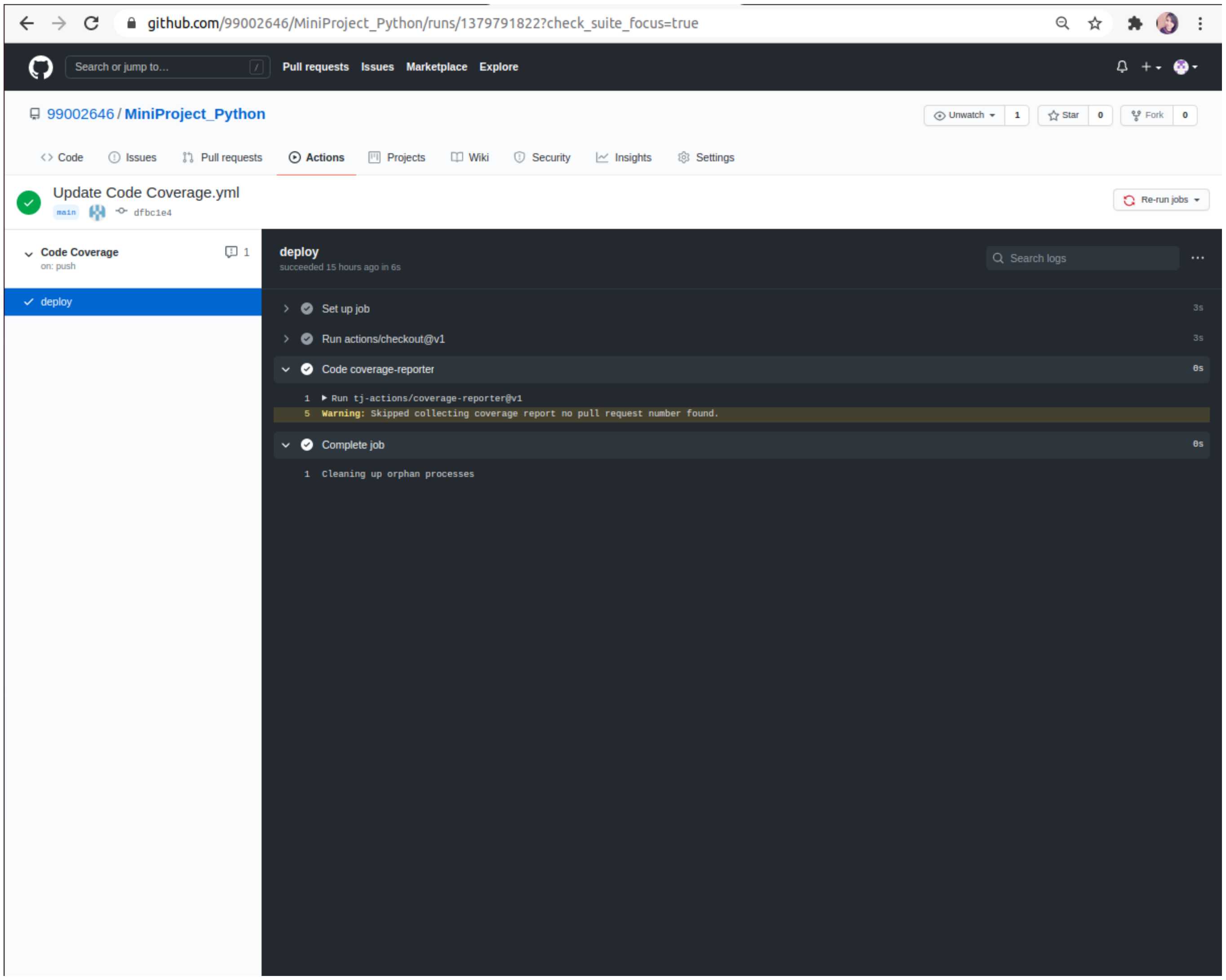


Create Code Coverage.yml

deploy
succeeded 25 seconds ago in 5s

```
1  ▶ Run tj-actions/coverage-reporter@v1
5  Warning: Skipped collecting coverage report no pull request number found.
```

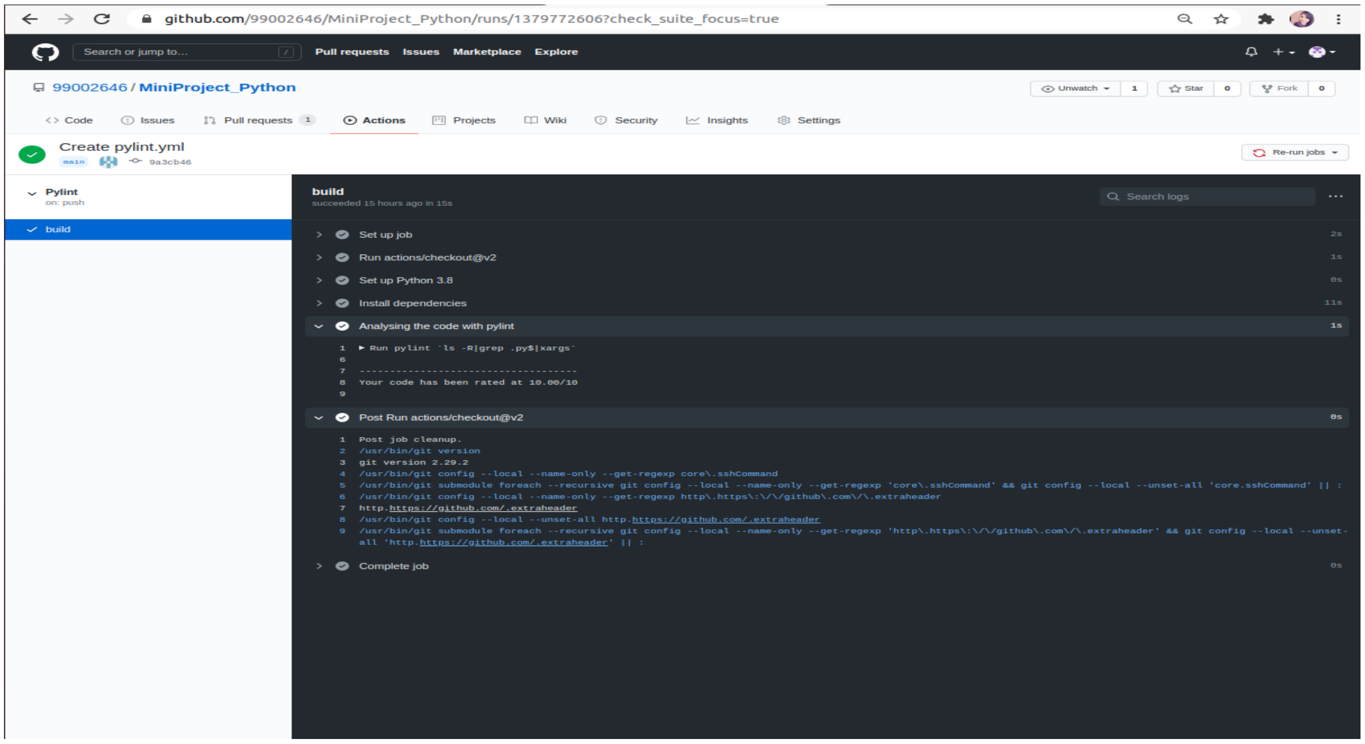
```
1  Cleaning up orphan processes
```


github.com/99002646/MiniProject_Python/runs/1379791822?check_suite_focus=true
Pull requests Issues Marketplace Explore
99002646 / MiniProject_Python
Code Issues Pull requests Actions Projects Wiki Security Insights Settings
Update Code Coverage.yml
Re-run jobs
Code Coverage
on: push
deploy
succeeded 15 hours ago in 6s
Set up job
Run actions/checkout@v1
Code coverage-reporter
Complete job

```
▶ Run tj-actions/coverage-reporter@v1
Warning: Skipped collecting coverage report no pull request number found.
```

```
Cleaning up orphan processes
```

Figure 20 : Code Coverage



build
succeeded 15 hours ago in 15s

```
> Set up job                         2s
> Run actions/checkout@v2            1s
> Set up Python 3.8                  0s
> Install dependencies               11s
v Analysing the code with pylint     1s
  ▶ Run pylint `ls -R|grep .py$|xargs`

  ------------------------------------
  Your code has been rated at 10.00/10

v Post Run actions/checkout@v2       0s
  Post job cleanup.
  /usr/bin/git version
  git version 2.29.2
  /usr/bin/git config --local --name-only --get-regexp core\.sshCommand
  /usr/bin/git submodule foreach --recursive git config --local --name-only --get-regexp 'core\.sshCommand' && git config --local --unset-all 'core.sshCommand' || :
  /usr/bin/git config --local --name-only --get-regexp http\.https\:\/\/github\.com\/\.extraheader
  http.https://github.com/.extraheader
  /usr/bin/git config --local --unset-all http.https://github.com/.extraheader
  /usr/bin/git submodule foreach --recursive git config --local --name-only --get-regexp 'http\.https\:\/\/github\.com\/\.extraheader' && git config --local --unset-
  all 'http.https://github.com/.extraheader' || :
> Complete job                       0s
```

Figure 21 : Pylint

5. Individual Contribution & Highlights

5.1 Challenges faced and how were they overcome

- While importing the data from the data set we have faced some of the problems with the particular row and columns.
- We have overcome that problem with trail and error.

5.2 Future Scope

- This project can be implemented further by adding some other features like displaying the players personal details if we give their Name or ID..

6. References

[1] https://www.geeksforgeeks.org/introduction-to-linux-operating-system/
[2] https://www.w3schools.com/python/
[3] https://en.cppreference.com/w/
[4] https://www.cplusplus.com/reference/