CSU33012 - Software Engineering - Assignment 1

- Haskell implementation of Calculator for the Second Assignment.

Brief Discription of the App

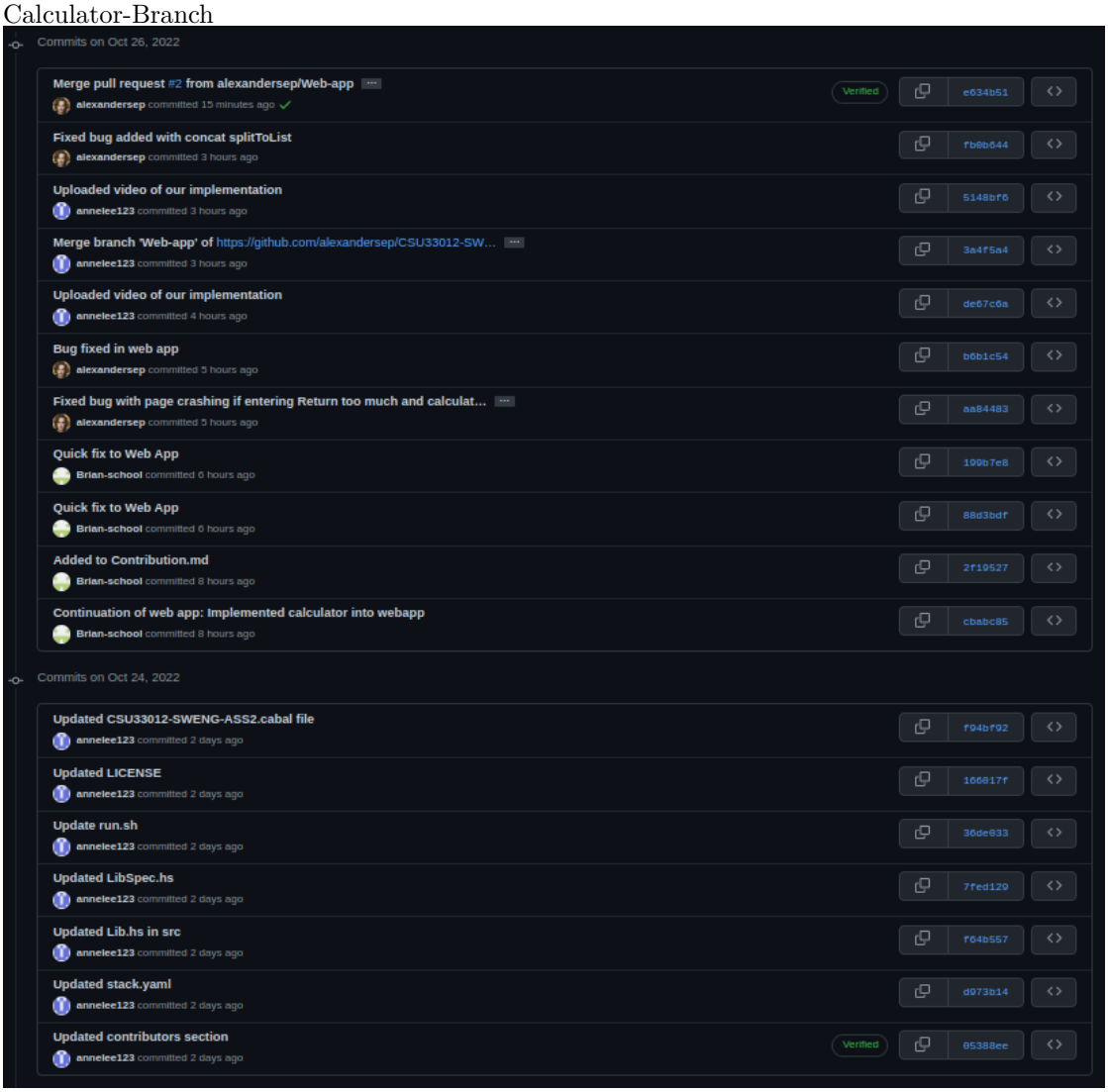
- The app was written in Haskell.
  - Both the frontend and backend were written in Haskell.
    - For the frontend we used a library called Lucid and Spock to create a html from haskell.
    - For the backend we simply used Haskell with Hunit and QuickCheck for unit testing using `stack test`
  - The calculator took in operators `+-*/^el` where the operators are characters that do addition, subtraction, multiplication, division, exp, and log respectively.
    - Algorithm implemented was the shutting yard algorithm to compute and infix expression to postfix and calculated the postfix expression.
    - The expression validator also uses a similar approach to the shutting yard algorithm to check whether an expression is infix and valid.
      - Operators `e` and `l` are prefix expressions. So a workaround was created which converted a single prefix argument of `l 5` to `0 l 5` where the first operand was ignored in its calculation. In a sense creating a prefix to infix converter.
    - Unary operators were implemented for `+-` on the case of numbers. This unary operator does not work on `l` or `e` however since they are not considered numbers in the calculator. Also if starting with brackets you cannot have a unary operator in the calculator e.g. `- - ( 1 + 2 )` is not allowed but `1 - - ( 1 + 2)` is allowed.
    - The answer will be returned to 3 decimal places as required.
    - The textbox does not take into carriage returns when inputting in the web app. Hence a correct answer will be given if something like `3\n+\n\n\r\n2` is given. (The $\backslash r$ and or $\backslash n$ are inputted in the web app when pressing enter).
  - CI/CD
    - Continuous Integration will be triggered to run unit tests whenever anything is pushed to the main branch including a merge.
    - Continuos Delivery will be triggered when creating a new release tag and it will publish the docker image to dockerhub `asepelenco/interactive-calculator`
      - Two releases are in that dockerhub, v1.0.1 (CLI) and v2.0.0 (GUI html).
  - Releases
    - First release v1.0.1 is an implementation of the app before web app. This means it works in the terminal and would be considered a command line interface (CLI) of the app
    - Second release v2.0.0 is the final implementation. No terminal support and works on the web with html. The web app runs in `localhost:8080`

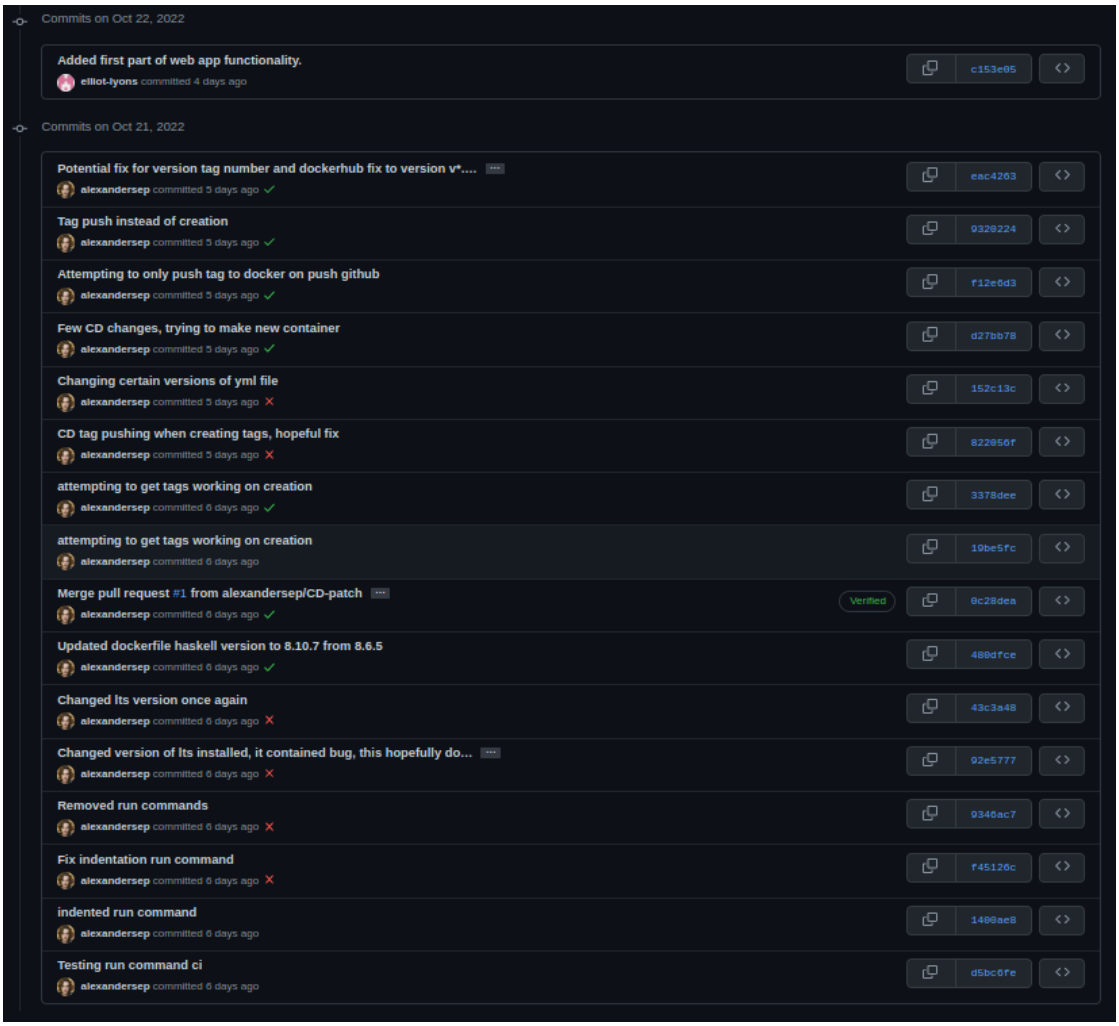
Contributors & Contributions

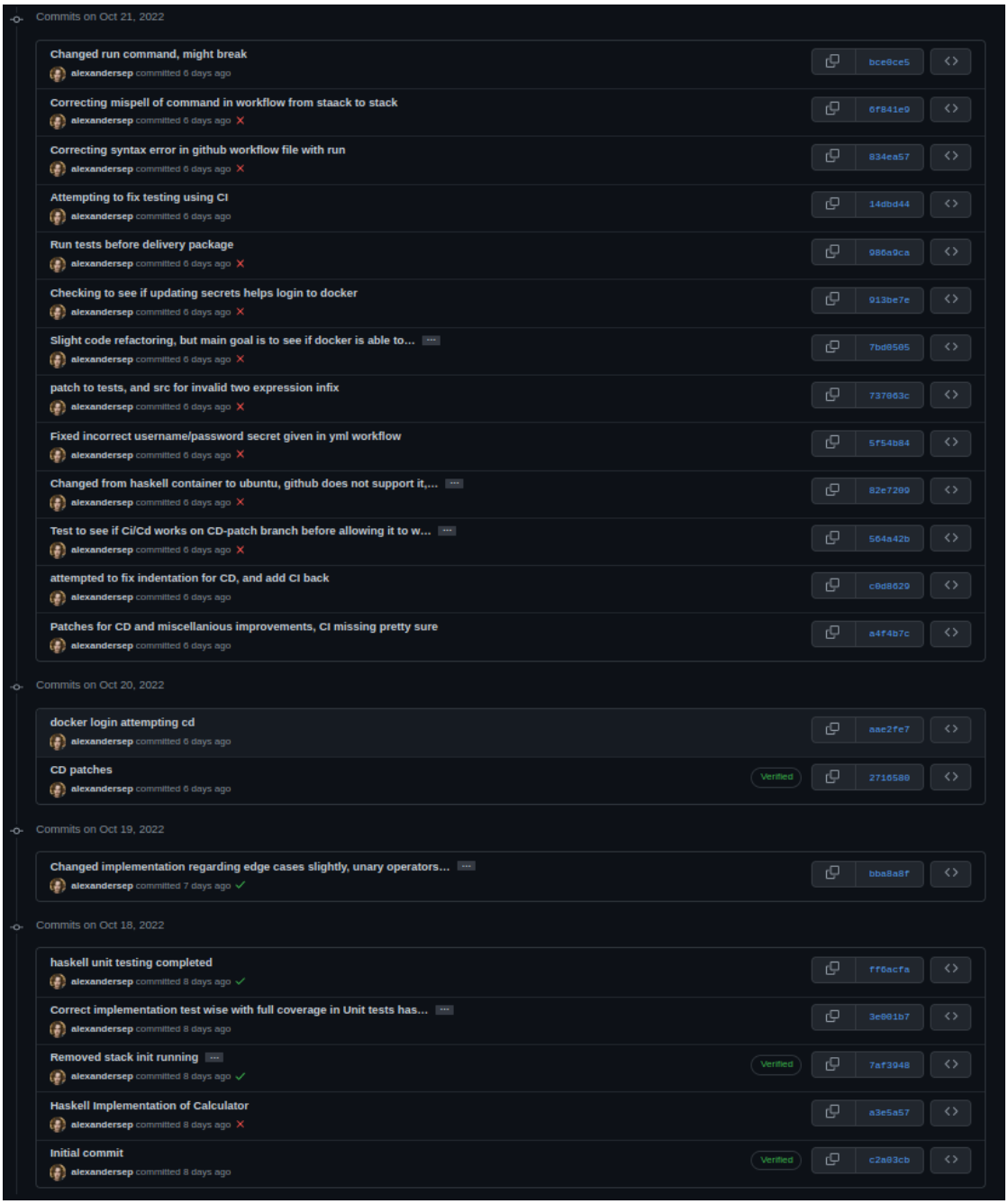
- Alexander Sepelenco
  - Acted as github lead with organising, README, pull requests, github workflow, and setting up Haskell with stack before the web app implementation. (Done in Assignment 1)
  - Set up Haskell unit testing: Hunit, and Quickcheck (Done in Assignment 1).
  - Set up github CI/CD workflow with caching and set up Dockerhub.
  - Haskell Related Contributions
    - All Haskell related contributions were taken from Assignment 1 and expanded from with Assignment 2
    - Implemented the following functions and their respective unit tests `isOperator`, `iOperand`, `operatorPrecedence`, `errorPrecedence`, `isOperatorLeftAssociative`, `errorLeftAssociativity`, `removeSpaces`, `splitToList`, `addZeroStringUnaryHeadPositiveOrNegative`, `combineUnaryOperators`, `removeUnaryHeadPositive`, `removePlusNum`, `combineNum`, `addZeroExponent`, `countDots`, `isOperand'`. All functions including the ones I wrote now take into account the changes for this assignment, these changes are log, exp. Note that these functions were mostly written in Assignment 1 with a different group but had some additions and changes throughout the functions for Assignment 2 with the help of Annelee O' Mahony.
    - Fixed Unary operators partially from Assignment 1 with edge case and parsing, `-` and `+` and ensured it worked effectively Unary operators do not work in l and e (log and exp). It does not work with brackets if at the beginning of a line. e.g. `-- (1 + 2)` does not work but `1 -- (1 + 2)` does.
- Elliot Lyons
  - Collaborated with Brian Sharkey to develop the webapp
    - Created the initial version of the app, designed initial layout and dealt with user input
  - Helped with documentation and video creation
- Brian Sharkey
  - Collaborated with Elliot Lyons to develop a webapp for the calculator
    - Implemented the calculator into the web app
  - Contributed on the creation of documentaion
  - Contributed to creating the demo video
- Annelee O' Mahony
  - Collaborated with Alexander Sepelenco on the functions
    - Edited the functions for improvement/expansion of the calculator
  - Package Management
  - Created and recorded the Demo video
  - Worked on the documentation

Graph/commit logs

- Calculator-Branch




Commits on Oct 22, 2022
Added first part of web app functionality.
elliot-lyons committed 4 days ago
c153e05
Commits on Oct 21, 2022
Potential fix for version tag number and dockerhub fix to version v*....
alexandersep committed 5 days ago
eac4263
Tag push instead of creation
alexandersep committed 5 days ago
9320224
Attempting to only push tag to docker on push github
alexandersep committed 5 days ago
f12e6d3
Few CD changes, trying to make new container
alexandersep committed 5 days ago
d27bb78
Changing certain versions of yml file
alexandersep committed 5 days ago
152c13c
CD tag pushing when creating tags, hopeful fix
alexandersep committed 5 days ago
822856f
attempting to get tags working on creation
alexandersep committed 6 days ago
3378dee
attempting to get tags working on creation
alexandersep committed 6 days ago
19be5fc
Merge pull request #1 from alexandersep/CD-patch
alexandersep committed 6 days ago
Verified
0c28dea
Updated dockerfile haskell version to 8.10.7 from 8.6.5
alexandersep committed 6 days ago
480dfce
Changed lts version once again
alexandersep committed 6 days ago
43c3a48
Changed version of lts installed, it contained bug, this hopefully do...
alexandersep committed 6 days ago
92e5777
Removed run commands
alexandersep committed 6 days ago
9346ac7
Fix indentation run command
alexandersep committed 6 days ago
f45126c
indented run command
alexandersep committed 6 days ago
1400ae8
Testing run command ci
alexandersep committed 6 days ago
d5bc6fe


Commits on Oct 21, 2022
Changed run command, might break
alexandersep committed 6 days ago
bce0ce5
Correcting mispell of command in workflow from staack to stack
alexandersep committed 6 days ago
6f841e9
Correcting syntax error in github workflow file with run
alexandersep committed 6 days ago
834ea57
Attempting to fix testing using CI
alexandersep committed 6 days ago
14dbd44
Run tests before delivery package
alexandersep committed 6 days ago
986a9ca
Checking to see if updating secrets helps login to docker
alexandersep committed 6 days ago
913be7e
Slight code refactoring, but main goal is to see if docker is able to...
alexandersep committed 6 days ago
7bd0505
patch to tests, and src for invalid two expression infix
alexandersep committed 6 days ago
737863c
Fixed incorrect username/password secret given in yml workflow
alexandersep committed 6 days ago
5f54b84
Changed from haskell container to ubuntu, github does not support it,...
alexandersep committed 6 days ago
82e7209
Test to see if Ci/Cd works on CD-patch branch before allowing it to w...
alexandersep committed 6 days ago
564a42b
attempted to fix indentation for CD, and add CI back
alexandersep committed 6 days ago
c0d8629
Patches for CD and miscellanious improvements, CI missing pretty sure
alexandersep committed 6 days ago
a4f4b7c
Commits on Oct 20, 2022
docker login attempting cd
alexandersep committed 6 days ago
aae2fe7
CD patches
alexandersep committed 6 days ago
Verified
2716580
Commits on Oct 19, 2022
Changed implementation regarding edge cases slightly, unary operators...
alexandersep committed 7 days ago
bba8a8f
Commits on Oct 18, 2022
haskell unit testing completed
alexandersep committed 8 days ago
ff6acfa
Correct implementation test wise with full coverage in Unit tests has...
alexandersep committed 8 days ago
3e001b7
Removed stack init running
alexandersep committed 8 days ago
Verified
7af3948
Haskell Implementation of Calculator
alexandersep committed 8 days ago
a3e5a57
Initial commit
alexandersep committed 8 days ago
Verified
c2a03cb

- Network graph

Link To repo

https://github.com/alexandersep/CSU33012-SWENG-ASS2