

# 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 `+-*/^e1` 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 `1` are prefix expressions. So a workaround was created which converted a single prefix argument of `1 5` to `0 1 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 `1` 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 `\r` and `\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

The screenshot displays the commit history for the 'Calculator-Branch' on GitHub, organized by date. The top section, dated October 26, 2022, contains 12 commits. The bottom section, dated October 24, 2022, contains 7 commits. Each commit entry includes the commit message, the author's name and profile picture, the time since the commit, a 'Verified' badge, a copy icon, the commit hash, and a compare icon.

**Commits on Oct 26, 2022**

- Merge pull request #2 from alexandersep/Web-app (Verified) e034b51
- alexandersep committed 15 minutes ago ✓
- Fixed bug added with concat splitToList fb0b644
- alexandersep committed 3 hours ago
- Uploaded video of our implementation 5148b76
- annelee123 committed 3 hours ago
- Merge branch 'Web-app' of https://github.com/alexandersep/CSU33012-SW... 3a4f5a4
- annelee123 committed 3 hours ago
- Uploaded video of our implementation de07c6a
- annelee123 committed 4 hours ago
- Bug fixed in web app b0b1c54
- alexandersep committed 5 hours ago
- Fixed bug with page crashing if entering Return too much and calculat... aa84483
- alexandersep committed 5 hours ago
- Quick fix to Web App 109b7e8
- Brian-school committed 6 hours ago
- Quick fix to Web App 88d3bdf
- Brian-school committed 6 hours ago
- Added to Contribution.md 2f19527
- Brian-school committed 8 hours ago
- Continuation of web app: Implemented calculator into webapp cbabc85
- Brian-school committed 8 hours ago

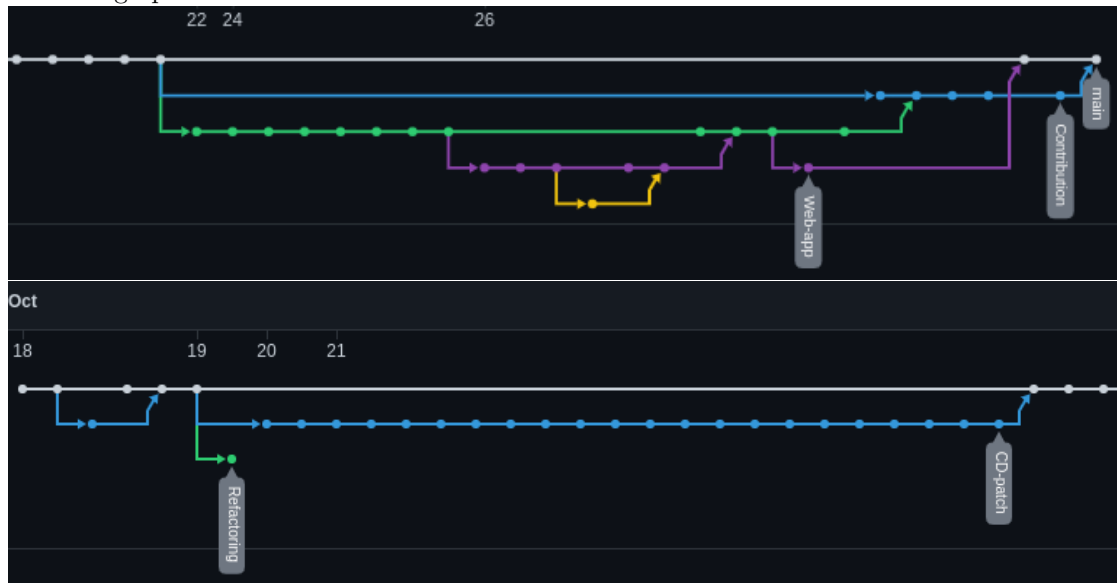
**Commits on Oct 24, 2022**

- Updated CSU33012-SWENG-ASS2.cabal file f94bf92
- annelee123 committed 2 days ago
- Updated LICENSE 106917f
- annelee123 committed 2 days ago
- Update run.sh 36de833
- annelee123 committed 2 days ago
- Updated LibSpec.hs 7fed129
- annelee123 committed 2 days ago
- Updated Lib.hs in src f04b557
- annelee123 committed 2 days ago
- Updated stack.yaml d973b14
- annelee123 committed 2 days ago
- Updated contributors section (Verified) 05388ee
- annelee123 committed 2 days ago

Commits on Oct 22, 2022		
Added first part of web app functionality.	elliott-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	10be5fc
Merge pull request #1 from alexandersep/CD-patch	alexandersep committed 6 days ago ✓	0c28dea
Updated dockerfile haskell version to 8.10.7 from 8.6.5	alexandersep committed 6 days ago ✓	488dfce
Changed its version once again	alexandersep committed 6 days ago ✗	43c3a48
Changed version of its installed, it contained bug, this hopefully do...	alexandersep committed 6 days ago ✗	02e5777
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	1460ae8
Testing run command ci	alexandersep committed 6 days ago	d5bc0fe

Commits on Oct 21, 2022		
Changed run command, might break alexandersep committed 6 days ago		bce9ce5 <>
Correcting misspell of command in workflow from staack to stack alexandersep committed 6 days ago ❌		0f841e9 <>
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... <small>new</small> alexandersep committed 6 days ago ❌		7bd9505 <>
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,... <small>new</small> alexandersep committed 6 days ago ❌		82e7209 <>
Test to see if Ci/Cd works on CD-patch branch before allowing it to w... <small>new</small> alexandersep committed 6 days ago ❌		564a42b <>
attempted to fix indentation for CD, and add CI back alexandersep committed 6 days ago		c8d8629 <>
Patches for CD and miscellaneous 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		aac2fe7 <>
CD patches alexandersep committed 6 days ago	Verified	2716589 <>
Commits on Oct 19, 2022		
Changed implementation regarding edge cases slightly, unary operators... <small>new</small> 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... <small>new</small> alexandersep committed 8 days ago		3e001b7 <>
Removed stack init running <small>new</small> 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	c2a83cb <>

- Network graph



**Link To repo**

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