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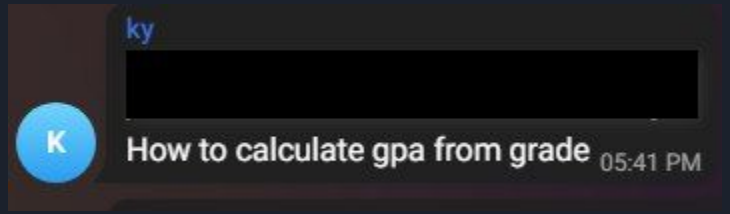
10.014 CTD 1D : Term 1 GPA Calculator
SC06 Group F

Inspiration

“How to calculate gpa from grade” was the question our classmate Kian Yew asked in the class chat, right after receiving our midterms results. The opportunity to work on a GPA Calculator to help SUTD students calculate their grades thus presented itself.

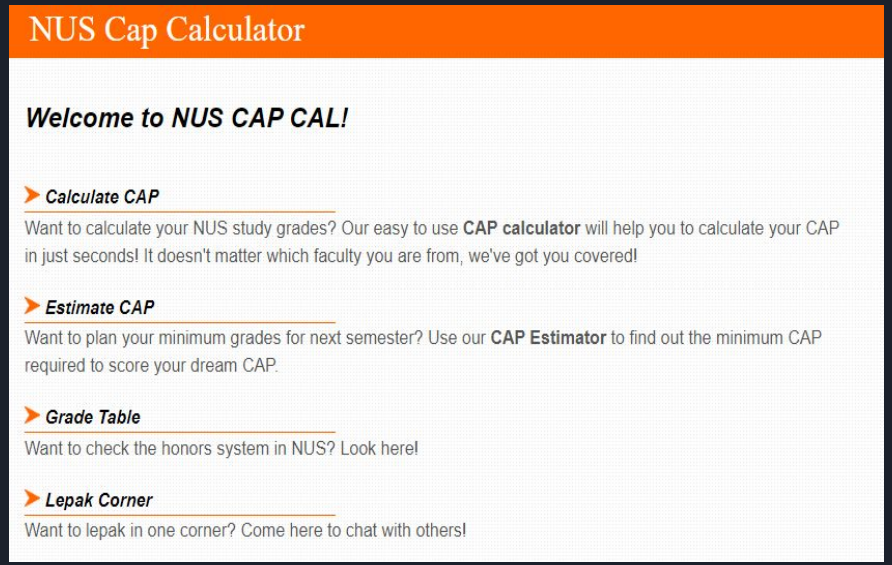
While this calculation can be done manually, it is a long and tedious process of researching individual mod components, punching in numbers on the calculator and putting our memory to the test.

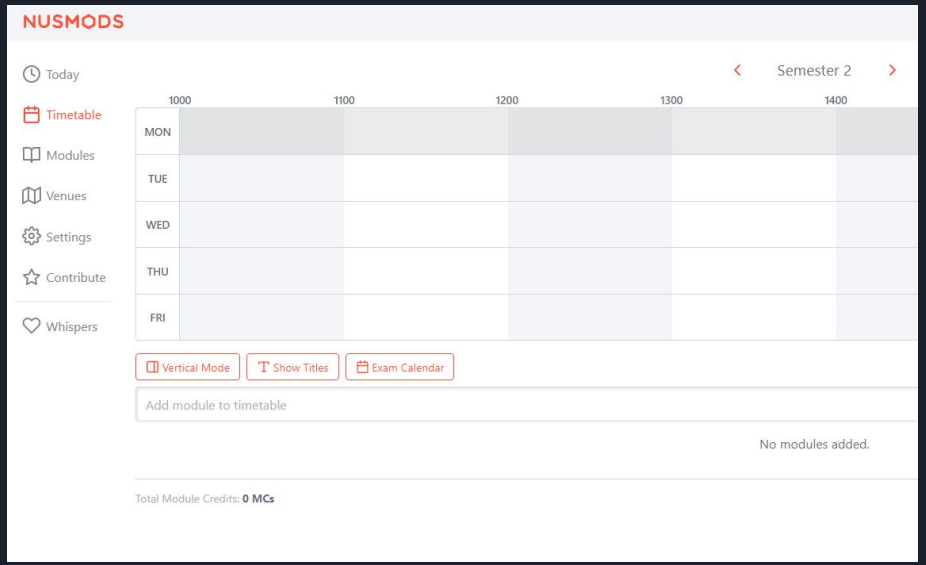
This program simplifies the process and conveniences students.



Inspiration

NUS CAP Calculators, NUS Mods (timetable) exists, so why not SUTD's very own?





Target Audience

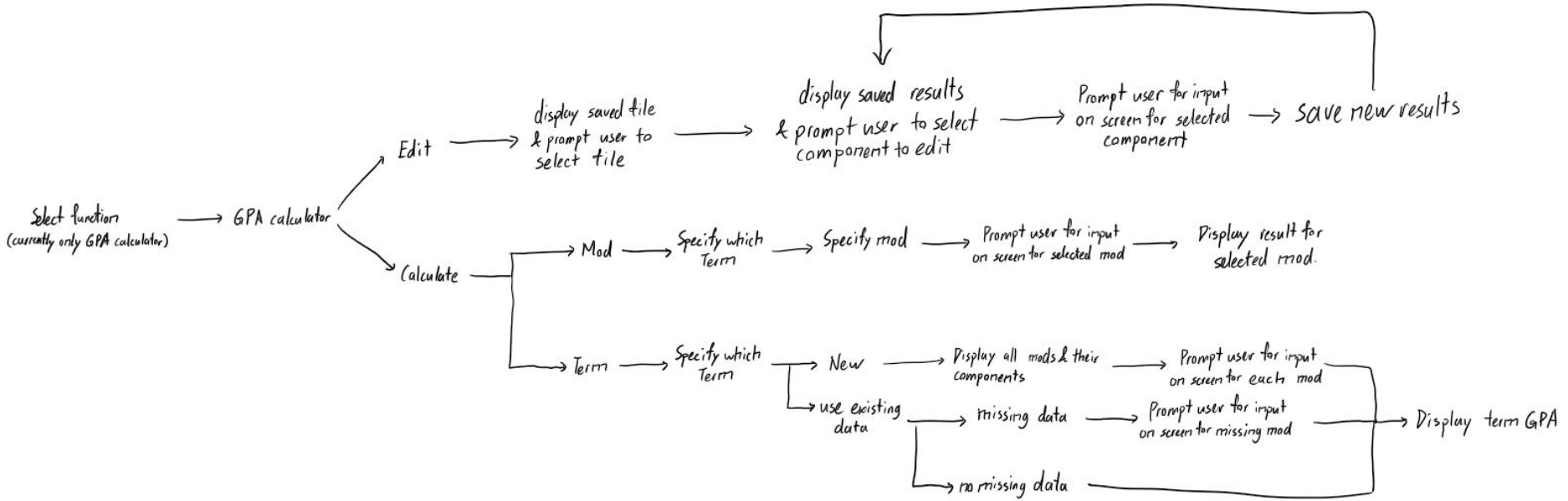
Our programme aims to help the entire student population in SUTD.

Students are busy with projects and do not want to gather the information required to calculate their GPA for each module separately and manually.

This program provides them with the required information that is stored and can be retrieved and edited at any time. They can then concentrate on studying and allocating the limited time and resources to their weaker subjects.

Eg. As a Term 1 freshmore new to the school system, Zorye is finding school hard and does not want to go for bootcamp. Currently, he is in Week 11 of the term, and has only received grades for certain components of each module. He wants to find out how much he needs to score for the remaining components for all his individual modules and overall term so he can gauge his performance and adjust his study schedule to achieve at least 60% for the term.

Guide


Select function
(currently only GPA calculator)
GPA calculator
Edit
display saved file & prompt user to select file
display saved results & prompt user to select component to edit
Prompt user for input on screen for selected componentt
save new results
Calculate
Mod
Specify which Term
Specify mod
Prompt user for input on screen for selected mod
Display result for selected mod.
Term
Specify which Term
New
Display all mods & their components
Prompt user for input on screen for each mod
use existing data
missing data
Prompt user for input on screen for missing mod
no missing data
Display term GPA

Features

Search function as opposed to an enumerated list of choices

Users can input the numerical code / a well-recognized short-form name / full module name / any other aliases

```
Term 1, input mod: 10.014

Term Mod:
10.014 | CTD | Computational Thinking Design
Components:
Class Participation: 2%
Visual Programming: 9%
Assignment 1: 15%
Assignment 2: 20%
Python Programming: 9%
1D: 10%
2D: 10%
Finals: 25%
```

```
Term 1, input mod: ctd

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Features

Program computes and displays all relevant information formatted neatly and nicely to help the user with his goals

1. components and their weightages

```
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Assignment 1: 15%
Assignment 2: 20%
Python Programming: 9%
1D: 10%
2D: 10%
Finals: 25%
```

2. required percentage, current percentage, GPA

```
Sorry, it is impossible to achieve 60.0%, try harder next time!
Current mod gpa: 0.54
```

```
To achieve 60.0%, you need to score 20.0% on average for your remaining
assignments
Current mod gpa: 2.75
```

3. User's target

```
Your current percentage is 46.0%
You did not meet your target :(
```

```
Your current percentage is 98.6%
Congratulations! You met your target :)

Current mod gpa: 4.93
```

Features

Class Participation is difficult to gauge, so user is given a survey to help estimate.

```
On a scale of 0-10, input
1. How often you attend classes: 10
2. How often you ask or answer questions in class?: 8
3. How often you submit assignments on time: 10
4. How active you are during group discussions: 8
Your class participation is 90.0%, giving you 1.8% out
of a possible 2%
```

Advice generated dynamically, based on component and user's input

```
For 10.013 | Math | Maths Modelling Analysis:

Class Participation: 2.0% out of 4%
Homework: 15.0% out of 16%
1D: 13.0% out of 15%
2D: 0% out of 15%
Midterm: 17.5% out of 25%
Finals: 0% out of 25%

Sorry, it is impossible to achieve 80.0%, try harder next time!
We've got some advice for you! Listed easy -> hard:
1. Class Participation: 50.0%, try participating more in class!
2. Homework: 93.75%, brush up on your homework!
3. Midterm: 70.0%, study harder for your finals, you can do it!
4. 1D: 86.67%, you can make up for it in your 2D!

Current mod gpa: 2.38
```

```
For 02.003 | HASS | Humanities Arts Social Science:

Class Participation: 9.0% out of 15%
Assignment 1 (700 word essay): 20.0% out of 25%
Assignment 2 (1000 word essay): 0% out of 30%
Group Oral Presentation: 18.0% out of 20%
2D: 0.0% out of 10%

Your current percentage is 47.0%
You did not meet your target :(

We've got some advice for you! Listed easy -> hard:
1. Class Participation: 60.0%, try participating more in class!

Current mod gpa: 2.35
```

```
For 10.013 | Math | Maths Modelling Analysis:

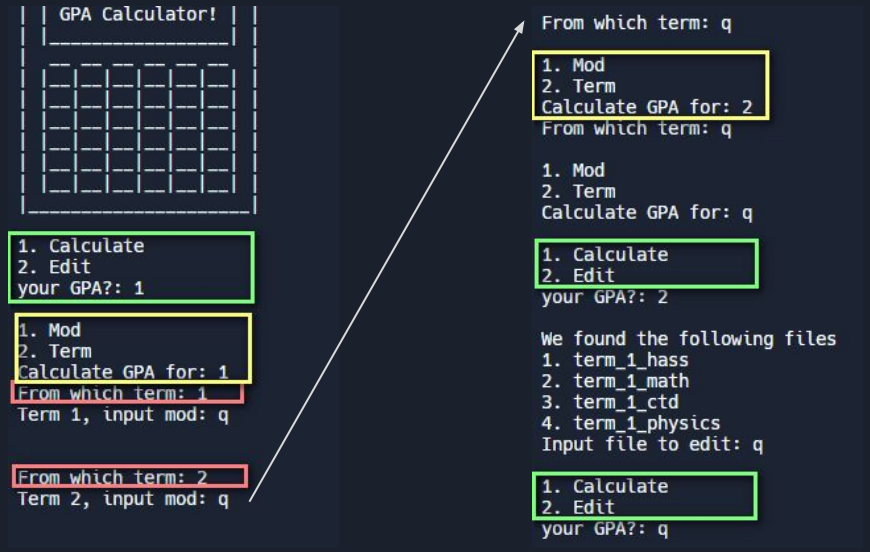
Class Participation: 4.0% out of 4%
Homework: 13.0% out of 16%
1D: 15.0% out of 15%
2D: 0% out of 15%
Midterm: 17.5% out of 25%
Finals: 0% out of 25%

Sorry, it is impossible to achieve 80.0%, try harder next time!
We've got some advice for you! Listed easy -> hard:
1. Homework: 81.25%, brush up on your homework!
2. Midterm: 70.0%, study harder for your finals, you can do it!

Current mod gpa: 2.48
```

Features

Our nested while loops and functions not always containing return statements enable user to backstep/backtrace from any point, in the event of an accidental input.



Features

Program will not crash unexpectedly and user will not experience unpleasant errors, due to our usage of try-except blocks and validation of user-inputs that are

1. More pythonic, hence good programming practice,
2. Faster when exceptions are exceptional which is expected to be the average case as clear instructions for a proper input are given when user provides undefined inputs
3. Allow program to continue running without crashing due to an unhandled exception

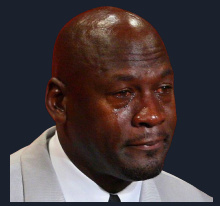
when compared to if-else

```
1. Calculate
2. Edit
your GPA?: oops

Traceback (most recent call last):
  File "main.py", line 63, in <module>
    boot_up()
  File "main.py", line 41, in boot_up
    start(choice)
  File "main.py", line 10, in start
    GPACalculator.introduce()
  File "/home/runner/CTD-1D/GPACalculator.py", line 27, in introduce
    assert int(calculate_or_edit) in [1, 2]
ValueError: invalid literal for int() with base 10: 'oops'
```

User:

After keying in all data:



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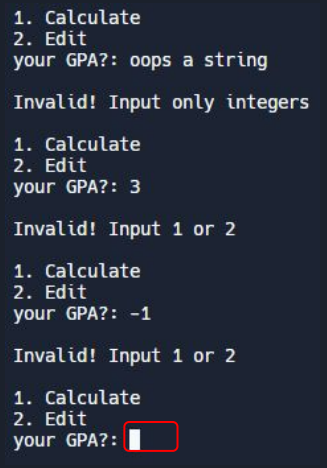
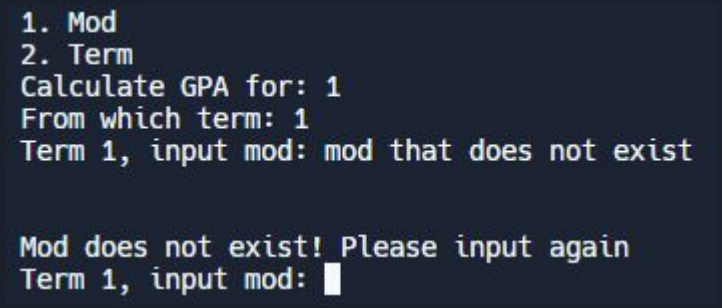
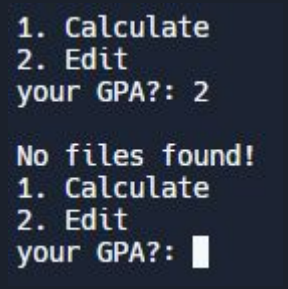






Roadmap
(Future Enhancements)

```
Welcome to the SUTDent Life Calculator!
Listed below are our programs
**At any time, input q to quit**

1: GPA Calculator
2: Grad Requirement Calculator (Not Implemented)
3: Professors (Not Implemented)
4: Best places to sleep/hobo (Not Implemented)
5: Hacks (Not Implemented)
```

For GPA Calculator:

1. Pleasant Graphical User Interface for user interaction or integration of Telegram API for widespread accessibility and ease of use on-the-go
2. Platform for people to contribute data for all terms and pillar modules (Open-sourced data)
3. Persistence of user-specific data via storage in cloud servers

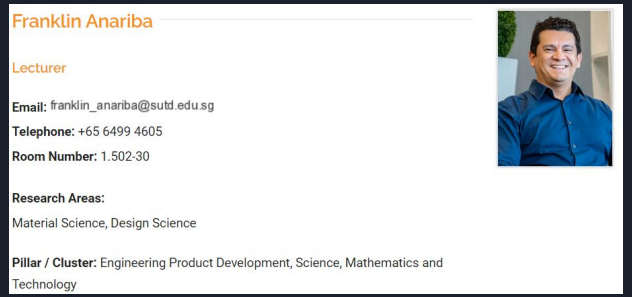
Graduation Requirement Calculator including ungraded but necessary modules like Professional Practice Program (PPP), Undergraduate Practice Opportunities Programme (UPOP), Module Credits

Professors and Faculty member information

- To easily contact for consultation or UROP, UTOP opportunities
- Automated gathering of this information by scraping SUTD sites

Fun tidbits of information Eg.

- Best places to sleep/hobo
- SUTDent Life Hacks / Tips & Tricks



Citations / References

ASCII Art - https://www.asciiart.eu/electronics/calculators

Files (io) - https://docs.python.org/3/library/io.html

fnmatch library - https://docs.python.org/3/library/fnmatch.html

os library - https://docs.python.org/3/library/os.html

BONUS: Future Enhancement (tkinter GUI)