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# CREDIT CARD PROJECT REPORT:

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## AUTHORS

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Group 47: Ramy Ktlama, Duco van Den Bos, Amandine Aabdaoui, Mylène Brown-Coleman

## WHAT IS THE PROBLEM YOU ARE SOLVING?

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We have to create a program and algorithm that can detect whether a provided credit card number is valid with the following rules:

1. Double every second digit from right to left.
  - a. If doubling of a digit results in a two-digit number add up the two digits to get a single-digit number.
2. Add all single-digit numbers from Step 1.
3. Add all digits in the odd places from right to left in the card number.
4. Sum the results from Step 2 and Step 3.
5. If the result in Step 4 is divisible by 10, the card number is correct. Otherwise, the number is invalid.

We are allowed to make our own assumptions of what is permitted, but we have to assume that the computer will generate numbers randomly or that a user will be entering a number of a few digits. If the provided input is not permitted, how will our algorithm handle such cases? We specify this in a second, more sophisticated version of our algorithm.

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## HOW HAVE YOU TACKLED THE PROBLEM (WHICH ALGORITHMS, SOLUTION STRATEGIES, TOOLS, ETC.)?

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We started off by making pseudocodes individually. We then compared our pseudocodes, so we could decide which one was the optimal solution.

- divide into several subproblems
- back chaining
- exclusion
- GitHub
- clarify tasks
- track stages of progress
- python
- lucid chart
- screen recording zoom

## WHICH PROBLEMS HAVE YOU ENCOUNTERED IN SOLVING THE PROBLEM

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- setting up GitHub
- helping team members installing python
- GitHub workflow
- data type converting issue
- python

## HOW HAVE YOU SOLVED THOSE PROBLEMS (WHICH SOLUTION STRATEGIES/ALGORITHMS)?

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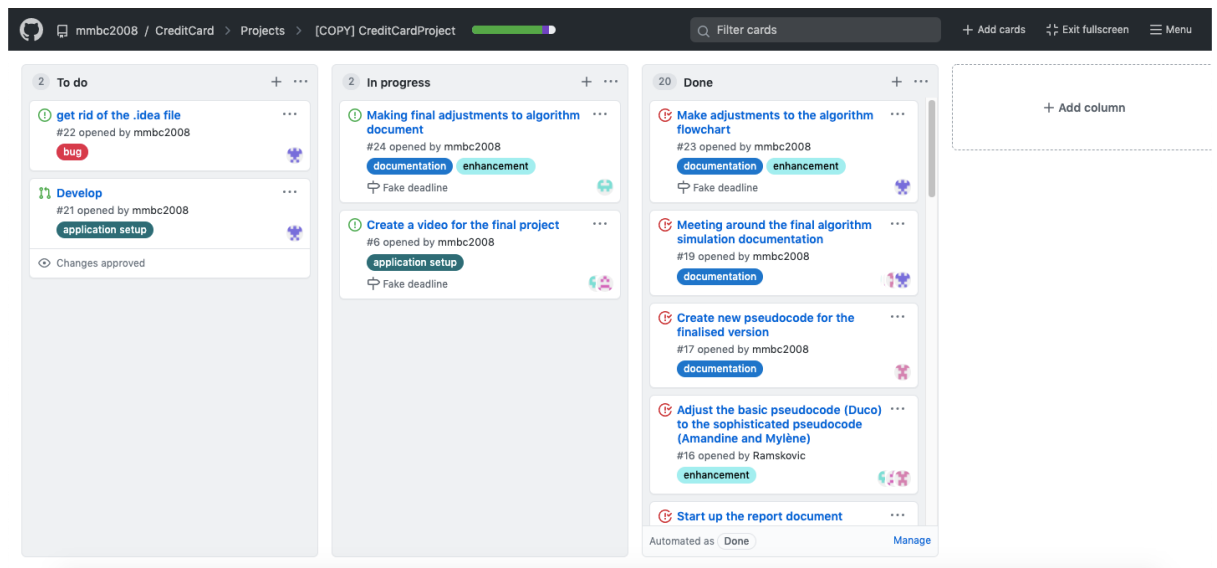
- Sliced integer list: because the list was a list of strings and not a list of integers.
- The input conversion: before you could only input numbers with space.
- Zoom call for installing GitHub: This is when Mylène helped everyone install git on their computers and clone the GitHub repository for the project.
- Video links YouTube tutorials and GitHub site: This was sent to everyone by Mylène to help them learn the GitHub workflow and the commands to use.

## HOW DID YOU SPLIT THE TASKS?

- We assigned issues to each other on GitHub and created milestone within each issue so that they can get done by specific deadlines.
- We created a project board on GitHub where we've created issues each issue, we gave a description and eventually a label and assign those to everyone.

## SPECIFY WHO DID WHAT.

- So, to assign issue we used a project board within GitHub. Mylène gave everyone who had an account viewing rights to everything. Then we allocated everyone issues within the project board.
- Mmbc2008 is Mylène's username, Amandine's username is ama1998, Duco's is bosduco and Ramy's is Raskovic.
- Here you can see that within the issue board which tasks were assigned to which username within the project board we created in GitHub:



- Within the project board you can also look at all of the issues we created individually. We started creating our issues on September 24<sup>th</sup> and carried on from that date creating more.
- All of the issues in the screenshot images below show all of the allocated issues according to username, label and milestone.
- The labels that we used were the following:
  - Documentation: This would be for pdf files and diagrams to explain the algorithm and report.
  - Enhancement: This was for the improvement of certain parts of the documents and code by other team members
  - Application setup: All downloading of applications and software would come under this category
  - Bug: This is for programming errors
  - Question: This is for questions about other people's code and different requirements that we didn't understand.

✕ Clear current search query, filters, and sorts

<input type="checkbox"/>	🔔 4 Open ✓ 20 Closed	Author ▾	Label ▾	Projects ▾	Milestones ▾	Assignee ▾	Sort ▾
<input type="checkbox"/>	🔔 <b>Making final adjustments to algorithm document</b> <span>documentation</span> <span>enhancement</span> #24 opened 10 hours ago by mmbc2008 🗓 Fake deadline						
<input type="checkbox"/>	🔔 <b>Make adjustments to the algorithm flowchart</b> <span>documentation</span> <span>enhancement</span> #23 by mmbc2008 was closed 6 minutes ago 🗓 Fake deadline						
<input type="checkbox"/>	🔔 <b>get rid of the .idea file</b> <span>bug</span> #22 opened 20 hours ago by mmbc2008						
<input type="checkbox"/>	🚀 <b>Develop</b> <span>application setup</span> #21 opened 21 hours ago by mmbc2008 • Approved						🗨 1
<input type="checkbox"/>	🔔 <b>Merging all branches into develop</b> <span>application setup</span> #20 by mmbc2008 was closed 21 hours ago						
<input type="checkbox"/>	🔔 <b>Meeting around the final algorithm simulation documentation</b> <span>documentation</span> #19 by mmbc2008 was closed 10 hours ago						
<input type="checkbox"/>	🔔 <b>Restore other files on the branch</b> <span>bug</span> #18 by mmbc2008 was closed 2 days ago						🗨 1
<input type="checkbox"/>	🔔 <b>Create new pseudocode for the finalised version</b> <span>documentation</span> #17 by mmbc2008 was closed 10 hours ago						
<input type="checkbox"/>	🔔 <b>Adjust the basic pseudocode (Duco) to the sophisticated pseudocode (Amandine and Mylène)</b> <span>enhancement</span> #16 by Ramskovic was closed 10 hours ago						
<input type="checkbox"/>	🔔 <b>Apply solution strategies to algorithm</b> <span>documentation</span> #15 by Ramskovic was closed 3 days ago						🗨 1
<input type="checkbox"/>	🔔 <b>Create an algorithm</b> <span>documentation</span> #14 by Ramskovic was closed 6 days ago						
<input type="checkbox"/>	🔔 <b>Create psuedocode</b> <span>documentation</span> #13 by bosduco was closed 6 days ago						
<input type="checkbox"/>	🔔 <b>Create basic code</b> <span>enhancement</span> #12 by bosduco was closed 6 days ago						
<input type="checkbox"/>	🚀 <b>Add files via upload</b> #11 by ama1998 was closed 9 days ago						
<input type="checkbox"/>	🔔 <b>Odd and Even number evaluation does not work</b> <span>bug</span> <span>question</span> #10 by ama1998 was closed 4 days ago						🗨 3
<input type="checkbox"/>	🔔 <b>Perfect the psuedocode and python code for the basic part</b> <span>documentation</span> #9 by mmbc2008 was closed 6 days ago						

	#15 by Ramskovic was closed 3 days ago	
<input type="checkbox"/>	🔔 <b>Create an algorithm</b> <span>documentation</span> #14 by Ramskovic was closed 6 days ago	👤👤
<input type="checkbox"/>	🔔 <b>Create psuedocode</b> <span>documentation</span> #13 by bosduco was closed 6 days ago	👤
<input type="checkbox"/>	🔔 <b>Create basic code</b> <span>enhancement</span> #12 by bosduco was closed 6 days ago	👤
<input type="checkbox"/>	🚀 <b>Add files via upload</b> #11 by ama1998 was closed 9 days ago	
<input type="checkbox"/>	🔔 <b>Odd and Even number evaluation does not work</b> <span>bug</span> <span>question</span> #10 by ama1998 was closed 4 days ago	👤👤 🗨 3
<input type="checkbox"/>	🔔 <b>Perfect the psuedocode and python code for the basic part</b> <span>documentation</span> #9 by mmbc2008 was closed 6 days ago	👤👤
<input type="checkbox"/>	🔔 <b>Meeting on group coding coding style</b> <span>enhancement</span> #8 by mmbc2008 was closed 3 days ago	👤👤
<input type="checkbox"/>	🔔 <b>Create a flowchart</b> <span>documentation</span> #7 by mmbc2008 was closed 22 hours ago	👤 🗨 1
<input type="checkbox"/>	🔔 <b>Create a video for the final project</b> <span>application setup</span> #6 opened 20 days ago by mmbc2008 🗓 Fake deadline	👤👤
<input type="checkbox"/>	🔔 <b>Learn github workflow and commands</b> <span>application setup</span> #5 by mmbc2008 was closed 7 days ago	👤👤 🗨 1
<input type="checkbox"/>	🔔 <b>Download a bash shell on your windows machine so that you can push code to github.</b> <span>application setup</span> #4 by mmbc2008 was closed 7 days ago	👤👤 🗨 2
<input type="checkbox"/>	🔔 <b>Download pycharm and look into how to add github version control to it</b> <span>application setup</span> #3 by mmbc2008 was closed 7 days ago	👤👤
<input type="checkbox"/>	🔔 <b>Start up the report document</b> <span>documentation</span> #2 by mmbc2008 was closed 10 hours ago 🗓 Fake deadline	👤
<input type="checkbox"/>	🔔 <b>Start writing psuedocode for the algorithm</b> <span>enhancement</span> #1 by mmbc2008 was closed 6 days ago	👤

🔔 ProTip! Follow long discussions with [comments](#) >50.

## HOW MUCH TIME HAVE YOU SPENT ON SOLVING THE PROBLEM (AN ESTIMATION IS SUFFICIENT)?

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- As previously stated, we started allocating issues on GitHub to one another at around the 24<sup>th</sup> of September.
- This graph shows the trend of our contributions to our master branch over time:



- As shown above we have mainly finished everything by around the 4<sup>th</sup> of October which is a prompt time frame as the whole project is due on the 19<sup>th</sup> of October.



- As shown in the four graphs above we can see how each team member has contributed to the project over time. All group members have managed to finish completing their tasks before the fake deadline that was created by me in GitHub.