Credit card project Report:

# Authors

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

# What is the problem you are solving?

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.
   1. 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.

# How have you tackled the problem (which algorithms, solution strategies, tools, etc.)?

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

* 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)?

* 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 where assigned to which username within the project board we created in GitHub:

Graphical user interface, application, Teams

Description automatically generated

* Within the project board you can also look at all of the issues we created individually. We started creating our issues on September 24th 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.

A screenshot of a computer

Description automatically generated

Graphical user interface

Description automatically generated

# How much time have you spent on solving the problem (an estimation is sufficient)?

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

A picture containing line chart

Description automatically generated

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

Graphical user interface, application

Description automatically generated

* 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.