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FINAL PROJECT

Programming Languages

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# Context of the problem

It is common that many of us grow up without having a financial background or making assumptions about how it works only by what we hear or read every day.

Normally, we arrive at the university and we graduate without knowing how the finances work or how to have a good management of our money.

One of the many issues whose terms we do not know are the loans and their interests.

For example, in Mexico different surveys are carried out by public entities, which allow to know the figures regarding the financial education that is lived in the country.

Within these results, it is stated that within the percentage of the population that has a departmental or self-service credit card 6% does not know if they charge interest, of those who have a bank credit card, 3.4% do not know if they charge interest, personal credit 1.2% do not know if they charge interest, mortgage credit 5.9% do not know if they charge interest and a group loan 2.8% do not know if they charge interest. (Gómez, C., 2018).

The way in which a loan works will depend on the institution to which it goes or whether it is personal loans, for home or for car. Reducing the situation to its simplest form, a loan will allow you to access a certain amount of money that you need at that moment and then you pay back that money in installments.

The process of spreading out the loan into a series of fixed payments over time is called amortization.

Usually, these payments are made monthly and each payment stays the same each month. However, the payment is made up of two parts that change over time:

1. Interests. That is, what the borrower gets for making the loan.

2. Principal. That is, the amount that is paid from the principal loan.

However, this is where certain confusions may arise. If you have no knowledge of how to calculate these monthly payments and what percentage of them goes to interest and which to the principal payment, you could end up paying up to twice the principal loan.

# Solution

The solution for the previous problem it is a simple program that ask the user three inputs: the amount of the loan, the number of months to pay the loan and the interest rate per year.

Based on that data, the program calculates the amount of the monthly payment, the total amount of interests and the total payment for the loan (including interests).

To calculate the monthly payments, there is already a formula defined on the financial area:

Also, as it is known that graphs help to have a better understanding, the program includes a feature to show a stacked histogram

## Programming paradigm

For the development of the solution we used the programming language Racket, based on Scheme, dialect of Lisp. This language is multi-paradigm, including the functional paradigm.

The functional paradigm allows

# Results

EJEMPLO DE USO DE LA APLICACION

# Conclusions

# Setup instructions

1. Clone the repository from GitHub with the following command:

git clone https://github.com/karyrs15/programming\_lang.git

or download it from: <https://github.com/karyrs15/programming_lang>

1. Unpack the amortization.zip file
2. Open the amortization folder
3. Open the executable amortization.exe

# Evidence

# References

Hawlk, K. (2016). How Do Personal Loans Work? From Student Loan Hero website: <https://studentloanhero.com/featured/how-do-personal-loans-work/>

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Salm, M. (2014). Stacked Graph. From BetterEvaluation website: <https://www.betterevaluation.org/en/evaluation-options/stacked_graph>

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Miller, M. (2019). Learn Racket by Example: GUI Programming. From: <https://dev.to/goober99/learn-racket-by-example-gui-programming-3epm>