INITIAL REQUIREMENTS FOR THE FINAL PROJECT

This semester's final Programing Project requires that you design and implement a NEW programming language. This "little language" is a specific-purpose oriented language CAN be developed in pairs. The following phrases describe possible applications (specific purpose); these are just suggestions; you can define your own. It is your responsibility to work on the details of your project: basic elements (tokens), syntactic structures as well as semantic rules.

Covid19 APPLICATIONS: (*general description will be provided)*

1. *Individual Project: Simple programming language with a graphical output. Graphical language for young students in elementary or middle school that allows them to learn some programming fundamentals in a "funny" way. (similar to LOGO).*
2. *Team (2) Project: A basic Object-Oriented Language that provides mechanisms to define Classes, attributes, methods and single inheritance.*
3. *Team (2) Project: Programing Language environment to run (create, compile and execute) on mobile devices.*

Other possible APPLICATIONS: *(the complete proposal must be developed)*

1. *An imperative language that works on a specific-purpose processor (ex. Raspberry).*
2. *A language for Machine-Learning and/or Data Science that can USE some objects like data sets (vectors) to perform some meaningful statistical analysis, including some basic statistical models and the most common ML algorithms.*
3. *A functional language that provides the typical structures and elements of this paradigm.*

• If a team want to work on a project different from the ones mentioned above (ex: a language for Web-dev or to create an engine for videogames, etc), please, discuss it with the professors prior to develop the initial proposal. Please, consider that all the projects in this course must run under a Virtual Machine developed as part of the Project.

All projects are programming languages, that means, they must have the minimal elements of any programming language (no matter how little it is). If any of these elements is not part of your project (because it doesn't make sense), there must be another element (part of your specific application) with a similar complexity. The basic elements are:

- Statements: Assignment, Conditions, Cycles, Read, Write
- Math expressions: arithmetic, logical and relational.
- Modules, including parameters as well as local and global variables.
- At least ONE structured element: Arrays (one and two dim), or, Lists, or..

Your proposal upon delivery, must have the following elements:

1. First page (cover) with the name of the project, date, name and SIGNATURE of each student.
2. *Your language main objective, including category (area).*
3. *Language requirements (depending on specific purpose):*
   - 3.1. *Basic elements (Tokens) like keywords, id's, etc.*
   - 3.2. *Syntax Diagrams for all the structures in your language.*
   - 3.3. *Main Semantic characteristics.*
   - 3.4. *Brief description of every special functions as well as rarely used instructions in your language (most of them are related to the area of your language).*
   - 3.5. *Data types.*
4. *Language and OS that will be used for development.*
5. *Bibliography.*

IMPORTANT:

- You will be uploading a weekly version of your project. It's your responsibility to keep an updated copy of every program/document that you deliver to the professors. It is highly recommended, if you'll be working on a pair, to use a tool to keep track of different versions (like Git). Commitments are part of the final documentation.
- As a team, it's really important to keep at least, a weekly log that describes the progress around your project. It's an important part of your final documentation.