Computer Science III
2024-III
WorkShop No. 2 — My First Programming Language

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1. **Designing your own programming language.**
   In this course, you will design and implement a simple programming language as your final project. The language must be simple, with a clear and small set of features. The output of any program in your language should be a graphical result (for example, drawing shapes, patterns, or simple figures), not assembly or machine code.

   (a) **Language Description:** Briefly describe (in a paragraph) the purpose of your language, its main features, and the kind of graphical output it will produce. Mention the intended users and the motivation for your design.

   (b) **Alphabet and Tokens:** List the alphabet (Σ) of your language (all symbols, including letters, digits, and special characters). Define the set of tokens (keywords, identifiers, numbers, symbols, etc.) that your language will use.

   (c) **Regular Expressions:** For each token type, write a regular expression that describes its structure. For example, define regular expressions for identifiers, numbers, keywords, and any other relevant tokens.

   (d) **Grammar:** Define a context-free grammar (CFG) for the syntax of your language. Use BNF or similar notation. The grammar should be simple but expressive enough to describe valid programs in your language (e.g., drawing commands, loops, etc.).

   (e) **Example Program:** Write a small example program in your language that produces a graphical output. Explain briefly what the program does.

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Any comment or concern related to this document could be send to Carlos A. Sierra at e-mail: *cavirguezs@udistrital.edu.co*

2. **Reflection.**
   Answer the following questions:

   (a) What challenges did you face when defining the regular expressions and grammar for your language?

   (b) How did you ensure that your grammar is unambiguous and covers all valid programs?

   (c) What graphical output do you expect from your example program?

Deadline: Wednesday, 2nd of July, 2025, 23:59 (local time).