**Monterrey Institute of Technology and Higher Education**



**Initial proposal**

**竜語**

**Compiler Design**

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**Proposal**

Cryptography: Library for cryptography that supports Japanese-language inputs and outputs. This could be used for applications like secure messaging, file encryption, and digital signatures.

**Tokens**

|  |  |  |
| --- | --- | --- |
| **Token** | **Regular Expression** | **Example** |
| ASSIGN | r'=' | x = 5 |
| PLUS | r'+' | x + y |
| MINUS | r'-' | x - y |
| TIMES | r'\*' | x \* y |
| DIVIDE | r'/' | x / y |
| EQUALS | r'==' | x == y |
| NOTEQUAL | r'!=' | x != y |
| LESS | r'<' | x < y |
| GREATER | r'>' | x > y |
| LPAREN | r'(' | ( |
| RPAREN | r')' | ) |
| LBRACE | r'{' | { |
| RBRACE | r'}' | } |
| LBRACK | r'[' | [ |
| RBRACK | r']' | ] |
| SEMICOLON | r';' | x = 5; |
| COLON | r':' | dict: |
| COMMA | r',' | x, y |
| ID | r'[\u30A0-\u30FF\u3040-\u309F\u4E00-\u9FFF]+[a- zA-Z\_][a-zA-Z\_0-9]\*' | Juanですメキシコ⼈です |
| CTEI | r'\d+' | 123 |
| CTEF | r'([0-9]+[.])[0-9]+' | 3.14 |
| CTEB | r'\s*(true OR false)\s*' | true |
| CTES | r'".\*?"' | "Hello" |
| CTEC | r''\''' | 'c' |
| AND | r'&&' | x && y |
| OR | r'||' | x || y |

**Reserved**

|  |  |  |
| --- | --- | --- |
| **Kanji** | **Hiragana** | **English** |
| プログラム | ぷろぐらむ | PROGRAM |
| メイン | めいん | MAIN |
| 変数 | へんすう | VARIABLE |
| 関数 | かんすう | FUNCTION |
| 整数 | せいすう | INT |
| 浮動⼩数点数 | ふどうしょうすうてんすう | FLOAT |
| ⽂字列 | もじれつ | STRING |
| ⽂字 | もじ | CHAR |
| ブーリアン | ぶーりあん | BOOLEAN |
| トゥルー | とぅるー | TRUE |
| フォルス | ふぉるす | FALSE |
| もし | もし | IF |
| ならば | ならば | THEN |
| 違えば | ちがえば | ELSE |
| 繰り返す | くりかえす | WHILE |
| プリント | ぷりんと | PRINT |
| リターン | りたーん | RETURN |

**Syntax diagrams**

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

**Main semantic characteristics**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **left\_op** | **right\_op** | **+** | **-** | **\*** | **/** | **> < AND OR** | **!= ==** |
| int | int | int | int | int | float | boolean | boolean |
| int | float | float | float | float | float | boolean | boolean |
| int | char | int | int | int | int | boolean | boolean |
| int | boolean | NaN | NaN | NaN | NaN | NaN | NaN |
| int | string | string | NaN | NaN | NaN | boolean | boolean |
| int | vector | NaN | NaN | NaN | NaN | NaN | NaN |
| float | float | float | float | float | float | boolean | boolean |
| float | char | string | NaN | NaN | NaN | boolean | boolean |
| float | boolean | NaN | NaN | NaN | NaN | NaN | NaN |
| float | string | NaN | NaN | NaN | NaN | boolean | boolean |
| float | vector | NaN | NaN | NaN | NaN | NaN | NaN |
| char | char | int | int | int | int | boolean | boolean |
| char | boolean | NaN | NaN | NaN | NaN | NaN | NaN |
| char | string | string | NaN | NaN | NaN | boolean | boolean |
| boolean | boolean | NaN | NaN | NaN | NaN | boolean | boolean |
| string | string | string | NaN | NaN | NaN | NaN | boolean |
| vector | vector | vector | NaN | NaN | NaN | NaN | boolean |

**Brief description of special functionsText

Description automatically generated**

**Data types**

1. Integer: a whole number that can be positive, negative, or zero.
2. Float: a number with a decimal point that can represent a wide range of values, including numbers with fractions or decimals.
3. Character: a single symbol, letter, or digit that can be used in a program.
4. Boolean: a data type that can have one of two possible values, typically "true" or "false".
5. String: a sequence of characters, usually representing text or words.
6. Vector: a data structure that contains an ordered collection of the same data type.

**Language and OS that will be used for development.**

Windows/MacOs and python with the library ply

**Bibliography**

[PLY (Python Lex-Yacc) (dabeaz.com)](https://www.dabeaz.com/ply/ply.html)