

Alphabet:

- a. Upper (A-Z) and lower case letters (a-z) of the English alphabet
- b. Underline character '_';
- c. Decimal digits (0-9);

1. Lexic:

- a. Special symbols representing:

operators: = + ++ += - -- -= * *= / /= == != < <= > >= ! & |

&= |=

separators: \n () { } [] space "

reserved words:

int, bool, string, input, print, when, otherwise, in,

while, each

- b. identifiers:

- a sequence of letters, digits and underscores, such that the identifier starts with a letter:

identifier = letter | letter{letterDigitOrUnderscore}

letterDigitOrUnderscore = lowerOrUpperLetter | digit |

" "

"_"

digit = "0" | "1" | "2" | "3" | "4" | "5" | "6" | "7" |

"8" | "9"

lowerOrUpperLetter = lowerLetter | upperLetter

lowerLetter = "a" | "b" | ... | "z"

upperLetter = "A" | "B" | ... | "Z"

- c. constants:

1. int

intConst = "0" | ["+" | "-"]digit{digitOrZero}

digitOrZero = "0" | digit

digit = "1" | "2" | "3" | "4" | "5" | "6" | "7" | "8" |

"9"

2. bool

boolConst = "false" | "true"

3. string

stringConst = ""{character}""

character = lowerOrUpperLetter | symbol

symbol = "\n" | " " | "." | "!" | "?" | "\"" | "'" | ":"

| ";" | "|" | "/" | "\" | "=" | "+" | "(" | ")" | "&" | "*" | "-" | "_" |
"=" | "+" | "[" | "]"

| "{" | "}" | "<" | ">" | "\t"

lowerOrUpperLetter = lowerLetter | upperLetter

lowerLetter = "a" | "b" | ... | "z"

upperLetter = "A" | "B" | ... | "Z"

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declaration = type identifier "=" expression "\n"
type = ("bool" | "int" | "string")["[]"]
const = intConst | boolConst | stringConst

expression = "(" expression operator expression ")" | expression operator
expression | expression operator term | "(" expression operator term ")"
| term | "input()"
term = const | identifier
operator = "+" | "-" | "*" | "/" | "==" | "!=" | "<" | "<=" | ">" | ">="
| "!" | "&" | "|"

assignment = ((identifier inplaceOperator expression) | (identifier
selfOperator) | (selfOperator identifier)) "\n"
inplaceOperator = "=" | "+=" | "-=" | "*=" | "/=" | "&=" | "|="
selfOperator = "++" | "--";

compund = {compund} simple "\n"
simple = declaration | assignment | "print(" expression ")" | block

block = when | while | for

when = "when(" expression ")" "{" compund "}" [otherwise]
otherwise = "otherwise"["(" expression ")"] "{" compund "}"
while = "while(" expression ")" "{" compund "}"
for = "(" identifier " in " identifier ")" "{" compund "}"

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=
+
++
+=
-
--
-=
*
*=
/
/=
==
!=
<
<=
>
>=
!
&
|
&=
|=
\n
space
(
)
[
]
{
}
"
int
bool
string
input
print
when
otherwise
in
while
each