**Cb**

The language for musicians.

Language Reference Manual

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4. Declarations

4.1 Declaration Syntax

Function definitions have the form:

function-definition:

type identifier(parameter-listopt) compound-statement

parameter-list:

type-specifier identifier

parameter-list, type-specifier identifier

Type is one of the following keywords: int, bool, note, chord, stanza, scale, score

Identifier is a non-reserved alpha-numeric sequence as described in section X.X

Compound-statement is any legal code that returns a value of agreeable type with the declaration.

4.2 Blocks

A block is a section of code enclosed by Meth and End keywords. Blocks can be nested within other blocks. Identifiers visible in an outer block are visible in the inner block, but identifiers declared in the inner block will not be visible in the outer block when the inner block ends.

EXAMPLE CODE MAYBE??

4.3 Scope

The scope of an identifier is the subsequent statements within the block of code where it is declared including blocks nested in that block.  Declarations can appear after certain keywords that open a block of code.   These keywords are meth, while, and foreach. When identifiers are declared in these expressions, the scope of the identifiers is the block opened by the keyword.  Scope does not extend to the execution of function calls.  At the beginning of a function’s execution, its parameters will be the only identifiers in scope.

EXAMPLE CODE MAYBE??

4.4 Identifier Naming

All identifiers within a block of code must be unique and a nested block’s identifiers must not conflict with the identifier names in its parent block.  This means that an identifier is visible over its entire scope and cannot be hidden by a subsequent re-declaration of the identifier.

EXAMPLE CODE MAAYBE??

# Statements

Except as indicated, statements are executed in sequence. Statements are executed for their effect, and do not have values. They fall into the following categories:

*statement:*

*expression;*

*return expression;*

*conditional-statement;*

*while-statement*

*foreach-statement*

## Expression statement

*expression ;*

Most statements take this form, as assignments or function calls. All side effects from the expression are completed before the next statement is executed.

## Compound statement

*statement-list:*

*statement*

*statement-list statement*

Inside methods and other structures there is the concept of multiple statements.

## Conditional statement

*if ( expr ) statement\_list END*

*if ( expr ) statement-list ELSE statement-list END*

In both cases the expression is evaluated and if it is nonzero or the bool value of true, the first substatement is executed. In the second case the second substatement is executed if the expression was 0 or the bool value false.

## While statement

*while ( expr ) statement-list END*

The while statement allows for looping over the statement-list as long as the expr evaluates down to true. This means the expr evaluates to either a nonzero integer or the bool value true.

## Foreach statement

*param-decl:*

*DATATYPE ID*

*foreach ( param-decl IN ID ) statement-list END*

The foreach statement allows for looping over all elements of the specified datatype in the specified item.

## Return statement

*return expression ;*

A function returns to its caller by means of the *return* statement, which must be of the form expressed above. In Cb a value must be returned by all methods.