**Preface:**

This document lists all of the operators and routines available to the predefined types (*string, real, integer, bool*). Any of the following routines with the keyword “operator\_” in front of it also indicates that the routine is used to overload the specified operator.

Most of the routines are non-static, so saying:

*int1 + int2*

is equivalent to

*int1.operator\_plus(int2)*

The exception is the *operator\_parenthesis* routine, which indicates the cast operator and is used as follows:

*string str = string(19)*

string

|  |  |  |
| --- | --- | --- |
| Function | Parameters | Return |
| string |  |  |
| string | java.lang.String |  |
| operator\_assignment | string |  |
| operator\_plus | string | string |
| substring | integer | integer | string |
| operator\_parenthesis | real | string |
| operator\_parenthesis | integer | string |
| operator\_parenthesis | bool | string |
| operator\_equals | string | bool |
| operator\_not\_equals | string | bool |

integer

|  |  |  |
| --- | --- | --- |
| Function | Parameters | Return |
| integer |  |  |
| integer | int |  |
| operator\_assignment | integer |  |
| operator\_plus | integer | integer |
| operator\_minus | integer | integer |
| operator\_star | integer | integer |
| operator\_slash | integer | integer |
| operator\_mod | integer | integer |
| unary\_minus | integer | integer |
| operator\_parenthesis | real | integer |
| operator\_parenthesis | bool | integer |
| operator\_parenthesis | string | integer |
| operator\_equals | integer | bool |
| operator\_not\_equals | integer | bool |
| operator\_less\_equals | integer | bool |
| operator\_greater\_equals | integer | bool |
| operator\_less\_than | integer | bool |
| operator\_greater\_than | integer | bool |

real

|  |  |  |
| --- | --- | --- |
| Function | Parameters | Return |
| real |  |  |
| real | double |  |
| operator\_assignment | real |  |
| operator\_plus | real | real |
| operator\_minus | real | real |
| operator\_star | real | real |
| operator\_slash | real | real |
| operator\_mod | real | real |
| unary\_minus | real | real |
| operator\_parenthesis | integer | real |
| operator\_parenthesis | string | real |
| operator\_parenthesis | bool | real |
| operator\_equals | real | bool |
| operator\_not\_equals | real | bool |
| operator\_less\_equals | real | bool |
| operator\_greater\_equals | real | bool |
| operator\_less\_than | real | bool |
| operator\_greater\_than | real | bool |

bool

|  |  |  |
| --- | --- | --- |
| Function | Parameters | Return |
| bool |  |  |
| bool | int |  |
| bool | boolean |  |
| operator\_assignment | bool |  |
| operator\_equals | bool | bool |
| operator\_not\_equals | bool | bool |
| operator\_parenthesis | string | bool |
| operator\_not | bool | bool |
| operator\_or | bool | bool |
| operator\_and | bool | bool |

**Predefined functions:**

The following are functions that have been predefined by 64tran. Since routines are objects, *print* and *read* are treated as any other object. In this instance, *operator\_parenthesis* is non-static and thus one application looks like:

*print(“hello world!”)*

Read (used to read a line from the console, currently doesn’t work)

|  |  |  |
| --- | --- | --- |
| Function | Parameters | Return |
| operator\_parenthesis |  | string |

Print (used to print to the console)

|  |  |  |
| --- | --- | --- |
| Function | Parameters | Return |
| operator\_parenthesis | string |  |