Custom serialized functions:

Variable definitions:

CREATE-OBJECT "<object name>" AS ("<specific name>")

Creates an object from the given object name and the optional specific name. If no optional in-game name is given, then the default object name is used.

> Note that names must be unique, and using the same name twice will render the previous object inaccessible!

CREATE-MATRIX "<matrix name>" <matrix values>

Creates a matrix from the given values with the given matrix name. Note that matrices are stored in a separate dictionary from objects, and thus matrices can have the same names as objects, and vice-versa. Also note that matrix values are written in MATLAB format. That is:

$[A_{11}, A_{12}, \ldots, A_{1n}; A_{21}, A_{22}, \ldots, A_{2n}; \ldots; A_{m1}, A_{m2}, \ldots, A_{mn}]$ represents

$[A_{11}, A_{12}, \ldots, A_{1n}]$
$[A_{21}, A_{22}, \ldots, A_{2n}]$
$[\ldots \quad \ldots \quad \ldots]$
$[A_{m1}, A_{m2}, \ldots, A_{mn}]$

DELETE-OBJECT "<object name>"

Deletes the object with the given name.

Control flow:

WAIT <seconds>

Pauses control flow for a given amount of time.

WAIT-UNTIL "<object1-name>" [COLLIDES|GETS-CLOSE <distance>] "<object2-name>"

Pauses control flow until one object gets within a given distance to another specified object.

GOTO <line> (<value> <path if true> <path if false>)

Designate control flow to the given line.

General object properties:

ASSIGN-PROPERTY "<object name>" "[POS|ROT|SCALE]" <matrix value> (TIME)

Assigns a property of the given object, with an optional time variable to control how quickly the change happens.

PLAY SOUND "<sound name>"

Plays the sound associated with the given file name. Can be used for audio narration.

Specific object properties:

DRAW GRID "<grid name>"

Draws a built-in grid with the given name. This is treated like an object; that is, in order to move or delete the object, one can simply invoke *ASSIGN-PROPERTY* or *DELETE-OBJECT*.

DRAW POINT “<point name>” ON “<grid name>”
Draws a built-in point with the given point name on the grid with the given grid name. Like with *GRID*, this is treated like an object.

DRAW VECTOR “<vector name>” FROM “<point 1 name>” TO “<point 2 name>”
Draws a built-in vector from one point to another. Note that the two points, must be on the same grid. Like with *GRID* and *POINT*, this is treated like an object.

DRAW BUTTON “<button name>” SET “<bool name>” [TRUE|FALSE]
Draws a built-in button that, upon being pressed, sets the boolean flag with the given name either to true or false. Like before, this is treated like an object.

DRAW TEXT “<text name>” “<text>”
Draws a text-box with the given object name, and the given text content. Like before, this is treated like an object.

APPLY-MATRIX “<matrix name>” TO “<object name>”
Applies a linear transformation in the form of the given matrix to the specified object.

Example lessons:

Lesson 1:

```
DRAW GRID "defaultGrid"
ASSIGN-PROPERTY "defaultGrid" "POS" [0,0,1]
WAIT 2.0
PLAY SOUND "lesson1"
WAIT 16.0
DRAW POINT "point1" ON "defaultGrid"
DRAW POINT "point2" ON "defaultGrid"
ASSIGN-PROPERTY "point1" "POS" [0.05,0.1,1]
ASSIGN-PROPERTY "point2" "POS" [0.2,0.2,1]
WAIT 7.5
ASSIGN-PROPERTY "point1" "POS" [-0.2,0,1] 2.0
ASSIGN-PROPERTY "point2" "POS" [0.1,0.2,1] 2.0
WAIT 2.5
ASSIGN-PROPERTY "point1" "POS" [-0.05,0.2,1] 2.0
ASSIGN-PROPERTY "point2" "POS" [0.05,0.15,1] 2.0
WAIT 2.5
ASSIGN-PROPERTY "point1" "POS" [0.15,-0.1,1] 2.0
ASSIGN-PROPERTY "point2" "POS" [-0.05,0,1] 2.0
WAIT 5.5
DRAW POINT "origin" ON "defaultGrid"
ASSIGN-PROPERTY "origin" "POS" [0,0,1]
WAIT 14.5
DRAW VECTOR "difference" FROM "point1" TO "point2"
WAIT 17.0
DRAW VECTOR "vector1" FROM "origin" TO "point1"
DRAW VECTOR "vector2" FROM "origin" TO "point2"
WAIT 3.0
ASSIGN-PROPERTY "point1" "POS" [0.05,0.1,1] 5.0
ASSIGN-PROPERTY "point2" "POS" [0.2,0.2,1] 5.0
WAIT 15.0
DRAW POINT "point3" ON "defaultGrid"
ASSIGN-PROPERTY "point3" "POS" [-0.2,0.05,1]
WAIT 6.0
DRAW VECTOR "vector3" FROM "origin" TO "point3"
```

Lesson 2:

```
DRAW GRID "defaultGrid1"
ASSIGN-PROPERTY "defaultGrid1" "POS" [-0.5,0,1]
DRAW GRID "defaultGrid2"
ASSIGN-PROPERTY "defaultGrid2" "POS" [0.5,0,1]
WAIT 2.0
```

```
PLAY SOUND "lesson2"
DRAW POINT "origin1" ON "defaultGrid1"
ASSIGN-PROPERTY "origin1" "POS" [-0.5,0,1]
DRAW POINT "point1" ON "defaultGrid1"
ASSIGN-PROPERTY "point1" "POS" [-0.65,0.15,1]
DRAW POINT "point2" ON "defaultGrid1"
ASSIGN-PROPERTY "point2" "POS" [-0.4,-0.25,1]
DRAW POINT "point3" ON "defaultGrid1"
ASSIGN-PROPERTY "point3" "POS" [-0.4,0.15,1]
WAIT 10.5
DRAW VECTOR "vector1" FROM "origin1" TO "point1"
DRAW VECTOR "vector2" FROM "point2" TO "point3"
WAIT 32
ASSIGN-PROPERTY "point1" "POS" [-0.55,0.1,1]
ASSIGN-PROPERTY "point2" "POS" [-0.35,0.05,1]
ASSIGN-PROPERTY "point3" "POS" [-0.4,0.15,1]
WAIT 28
DRAW POINT "origin2" ON "defaultGrid2"
ASSIGN-PROPERTY "origin2" "POS" [0.5,0,1]
DRAW POINT "point4" ON "defaultGrid2"
ASSIGN-PROPERTY "point4" "POS" [0.45,0.1,1]
DRAW POINT "point5" ON "defaultGrid2"
ASSIGN-PROPERTY "point5" "POS" [0.65,0.05,1]
DRAW POINT "point6" ON "defaultGrid2"
ASSIGN-PROPERTY "point6" "POS" [0.6,0.15,1]
WAIT 5
DRAW VECTOR "vector3" FROM "origin2" TO "point4"
DRAW VECTOR "vector4" FROM "origin2" TO "point5"
DRAW VECTOR "vector5" FROM "origin2" TO "point6"
WAIT 23
CREATE-MATRIX "matrix1" [1,1,0;0,1,0;0,0,1]
APPLY-MATRIX "matrix1" TO "defaultGrid2"
```