

LSL in Second Life

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Abstract

Software agents are met not only in real life, but also in virtual reality. Second Life environment enables its users to create/ design intelligent software agents (called avatars) that may interact. To these avatars, there may be attributed certain behaviours by means of an adequate Second Life language, called LSL (Linden Script Language). In this paper, the author describes Second Life virtual life environment and illustrates LSL's use on a robot called RoLyy.

Key words: *Second Life, script language, agent*

Second Life

Second Life [2], a 3D online commercial virtual environment developed by Linden Lab (since 2003), allows registered users (residents) to fulfil various social activities and interactions, events, games, electronic commerce, collaborations, education etc. It is estimated that currently there are 600,000 frequent users from a total of approximately 7 million.

Users may generate a virtual content and dispose of a support for social networking. Within this virtual environment, Second Life economy is based on a fictitious currency (Linden dollar), and sets up economic transactions (B2C or C2C type). By means of virtual advertising [3], there are also present prestigious brands. Second Life provides valuable tools for parting and designing multimedia content, streaming included, some of the most frequent uses being e-business, e-learning, virtual events planning, simulations of different types, social games etc. There on, we mention some important services developed by Second Life: Teen Second Life, Second Life Library 2.0, New Media Consortium Campus, Exploratorium's SPLO Museum [4].

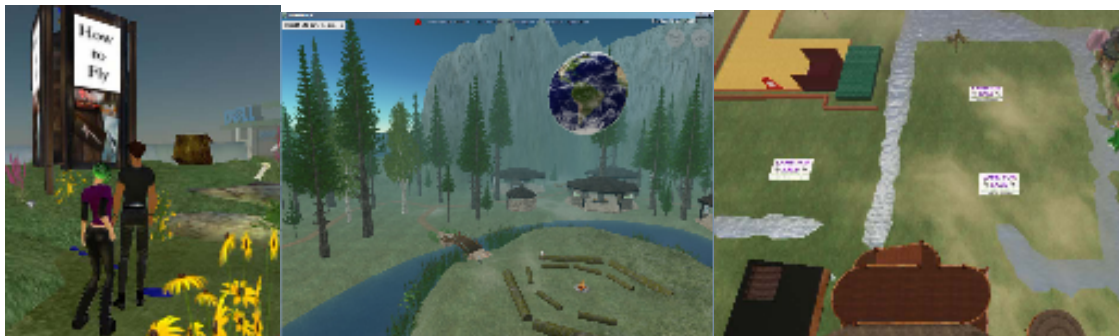


Fig. 1. Second Life Service, Island in Second Life, Piece of land in Second Life

Second Life architecture consists of three basic concepts: island, land and building. The island represents the nucleus of mainland, and virtual reality is therefore made up of groups of islands, a set of which may form a larger island.

The piece of land represents a parcel that may be sold separately to a resident.

The building is a construction that was designed and erected on a piece of land, complying with the resident's preferences and it may store certain user-generated contents.



Fig. 2. Building in Second Life

Second Life allows experimenting with new interpersonal interaction means and communication media, provides support for actual observation of the social behaviour within a heterogeneous virtual community, for constituting their own avatars communities in the virtual environment. It also supports e-learning: simulations, distance learning, collaboration, multidisciplinary experimental projects etc.

LSL - Linden Script Language

The Linden Script Language (or LSL) [1] is an internal, event-driven, C/Java-style language used to attach behaviours to the objects found in Second Life. Also, LSL allows controlling object and avatar behaviour, up to and including mini-games and other complex programs [5].

A script is an item in the inventory of an object that contains instructions that make the object do stuff. Like other inventory items, scripts can be copied to the inventories of other objects, copied to your inventory or given to other players.

Multiple scripts may also be attached to the same object, allowing a style of small, single-function scripts to evolve. This leads to scripts that perform specific functions ("hover", "follow" etc.) and allows them to be combined to form new behaviours.

The text of the script is compiled into an executable byte code, much like Java. This byte code is then run within a virtual machine on the simulator. Each script receives a time slice of the total simulator time allocated to scripts, so a simulator with many scripts would allow each individual script less time rather than degrading its own performance. In addition, each script executes within its own chunk of memory, preventing scripts from writing into protected simulator memory or into other scripts, making it much harder for scripts to crash the simulator [6].

A script is organized into states and functions. States consist of a series of events. Any object may have as many scripts on it as memory allows. Scripts have a length limit, but it is not usually a problem.

Creating a new script in LSL implies the following steps:

- selecting the object to whom a script is about to be attached;
- going to the "Content" tab of the object's "Edit" box and clicking the "New Script..." button. This will open the script editor with the example script (default script which makes the object say "Hello, Avatar!" on its state_entry event and says "Touched" when touched). The default state is the state that the script first enters. The state_entry event is the first event that is called in a state.

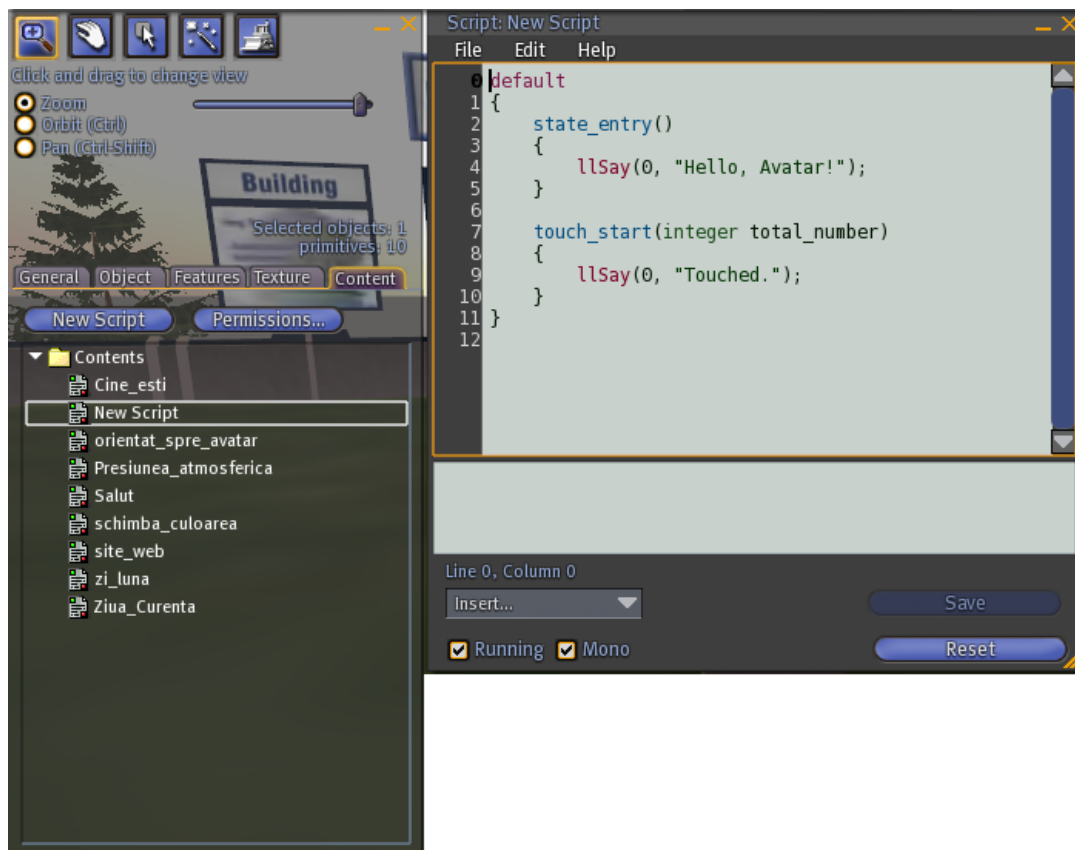


Fig. 3. Creating a script in Second Life

Considering the facilities provided by LSL, the author has implemented the following scripts attached to a robot-like object called Rolyv built on IEEE Island (Official Island of the world's leading professional association for the advancement of technology):

- „Cine_esti”– displays the name of the robot wherever in the chat window one types the text “Who are you?”;
- „Orientat_spre_avatar” – orients the object to the avatar;
- „Presiune_atmosferica” – displays the air pressure in robot’s location;
- „Salut” – displays a greeting message;
- „Schimba_culoarea” – changes the robot’s colour at every 2 seconds;
- „site_web” – displays a connection/ link to the owner’s personal page whenever in the chat window one types “RoLyv?”;
- „zi_luna” – displays the current month’s number of days;
- „Ziua_Curenta” – displays the current date’s day of the week.

An example of these scripts is presented in the picture below.



Fig. 4. Scripts

In this paper, the author presents a few examples of scripts attached to an object designed in Second Life which highlights the Linden Scripting Language (LSL), considered as the complete scripting resource for making virtual creations come to life, interacting with players, creating dazzling special effects, and adding realism to the virtual world.

References

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Rezumat

Agenții software sunt întâlniți nu numai în lumea reală, ci și în realitatea virtuală. Mediul Second Life permite utilizatorilor crearea unor agenți software inteligenți (denumiți avatar) care pot interacționa între ei. Acestor avatari li se pot atribui comportamente prin intermediul unui limbaj dedicat Second Life denumit LSL (Linden Script Language). În prezentul articol, autorul descrie mediul de realitate virtuală Second Life exemplificând utilizarea LSL pe un obiect (de tip robot) numit RoLyy.