LiveCode

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The **LiveCode** programming language (formerly the "Revolution" programming language)[1] is both an open-source and proprietary cross-platform[2] rapid application development language inspired by HyperCard's programming language HyperTalk.[3][4]

The language was introduced in 2001.[5] The "Revolution" development system was based on the MetaCard engine technology which Runtime Revolution later acquired from MetaCard Corporation in 2003.[6] The platform won the Macworld Annual Editor's Choice Award for "Best Development Software" in 2004.[7] "Revolution" was renamed "LiveCode" in the fall of 2010. "LiveCode" is developed and sold by Runtime Revolution Ltd., based in Edinburgh, Scotland. In March, 2015, the company was renamed "LiveCode Ltd.", to unify the company name with the product. In April 2013 a free/open source version 'LiveCode Community Edition 6.0' was published after a successful crowdfunding campaign at Kickstarter.[8] The code base was re-licensed and made available as Free and open source software with a version in April 2013.

LiveCode

Paradigm	Object-oriented
Developer	Runtime Revolution, Ltd
First appeared	1993
OS	iOS, OS X, Mac OS 9, Windows, Linux, Solaris
License	Proprietary, GPL
Website	www.livecode.com (http://www.livecode.com/)
Influenced by	
HyperTalk	

LiveCode runs on iOS, Android, OS X, Windows 95 through Windows 10, Raspberry Pi and several variations of Unix, including Linux, Solaris, and BSD. It can be used for mobile, desktop and server/CGI applications. The iOS (iPhone and iPad) version was released in December 2010.[9][10] The first version to deploy to the Web was released in 2009.[11] It is the most widely used HyperCard/HyperTalk clone, and the only one that runs on all major operating systems.

A developer release of v.8 was announced in New York on March 12, 2015. This major enhancement to the product includes a new, separate development language, known as "LiveCode Builder", which is capable of creating new object classes called "widgets". In earlier versions, the set of object classes was fixed, and could only be enhanced via the use of ordinary procedural languages like C. The new language, which runs in its own IDE, is a departure from the transitional x-talk paradigm in that it permits typing of variables. But the two environments are fully integrated, and apart from the ability to create new objects, development in LiveCode proceeds in the normal way, within the established IDE.

A second crowdfunding campaign to Bring HTML5 to LiveCode (https://livecode.com/livecode-to-html5/) reached funding goals of nearly $400,000 USD on July 31, 2014. LiveCode developer release 8.0 DP4 (August 31, 2015) was the first to include a standalone deployment option to HTML5.

Contents

Description

The LiveCode software creates applications that run in many supported environments, using a compile-free workflow. The same computer code in LiveCode can play across multiple devices and platforms. LiveCode uses a high level, English-like programming language that is dynamically typed. The high-level programming language and compile-free workflow generates code that is self-documenting and easy for casual programmers to comprehend. For example, if the following script was executed when the system clock was at 9:00 AM:

```
repeat ten times
  put "Hello world at" && the time & return after field 1
end repeat
```

Ten lines of "Hello world at 9:00 AM" will be loaded into the first text field. (numbered as such and denoted as "field 1")

- "repeat" (and the associated "end repeat") is a control structure, illustrated here in just one of its various forms.
- "put" is a command
- "Hello World at" is a literal
- "the time" is a function that calls the system time
- "return" is a constant equal to ASCII character 10 (linefeed)
- "after" is a keyword that is involved with an extremely powerful and intuitive system known as "chunking", a hallmark of xTalk languages.
- "field 1" is an object reference, here denoted by the layer number of a text field. Almost all standard object classes are supported, and may be referred to in several, highly-intuitive ways.

LiveCode's natural English-like syntax is easy for beginners to learn. Variables are typeless, and are typed at compile time based purely on context. This makes the language simple to read and maintain, with relatively minimal loss of speed. The language contains advanced features including associative arrays,[12] regular expressions, multimedia, support for a variety of SQL databases, and TCP/IP libraries. The LiveCode engine supports several common image formats (including BMP, PNG, GIF, and JPEG,), anti-aliased vector graphics, HTML-style text hyperlinks, chained behaviors and embedded web browsers. Accessing these higher-level functions is designed to be straightforward.

Examples

- To load the source code of a web page into a variable takes one line of code:

```
put url "http://www.wikipedia.com" into MyVariable
```

- Uploading a file to an FTP server uses similar syntax:

```
put url "binfile:picture.jpg" into url "ftp://john:passwd@ftp.example.net:2121/picture.jpg"
```

Depth

LiveCode has around 1,900 built-in language terms and keywords, which may be extended by external libraries written in C and other lower level languages.[13][14]

Outcomes

LiveCode project files are binary-compatible across platforms. They inherit each platform's look-and-feel and behaviors. Buttons, scroll bars, progress bars and menus behave as expected on the target platform without any intervention on the part of the one authoring a LiveCode application.

Compiling a LiveCode "standalone" produces a single, executable file (minimum size ~1.5MB) for each platform targeted. There is no separate runtime necessary.

The Wikipedia article on HyperCard contains a more detailed discussion about the basics of a similar development environment and scripting language. Modern LiveCode is a vast superset of the former HyperCard yet retains its simplicity. LiveCode includes a number of features missing from the original HyperCard program, including multiple platform deployment, communication with external devices and many fundamental language extensions. The LiveCode toolkit, as compared to HyperCard, has the ability to access internet-based text and media resources, which allows the creation of internet-enabled desktop applications.[15]

Compatibility

Version	Macintosh	Windows	Linux
8.x[16]	10.6.x - 10.11.x Intel	XP SP2+, 2003, Vista SP1+, 7, 2008, Windows 8.x, Windows 10.x (Desktop)	32 or 64 bit, 32-bit ARMv6 (Raspberry Pi) glibc gtk lcms pango/xft gksu esd mplayer
7.x[17]	10.6.x - 10.9.x Intel	XP SP2+, 2003, Vista SP1+, 7, 2008, Windows 8.x, Windows 10.x (Desktop)	32 or 64 bit, 32-bit ARMv6 (Raspberry Pi) glibc gtk lcms pango/xft gksu esd mplayer
6.7.x[18]	10.6.x - 10.9.x Intel	XP SP2+, 2003, Vista SP1+, 7, 2008, Windows 8.x, Windows 10.x (Desktop)	2.4.x+ 32 bit X11R5 glibc 2.3.2 gtk lcms pango/xft gksu
6.6.x[19]	10.5.8 - 10.9.x Intel/PPC	XP SP2+, 2003, Vista SP1+, 7, 2008, Windows 8.x, Windows 10.x (Desktop)	2.4.x+ 32 bit X11R5 glibc 2.3.2 gtk lcms pango/xft gksu
6.0.x - 6.5.x[20]	10.4.11 - 10.9.x Intel/PPC	XP SP2+, 2003, Vista SP1+, 7, 2008, Windows 8.x, Windows 10.x (Desktop)	2.4.x+ 32 bit X11R5 glibc 2.3.2 gtk lcms pango/xft gksu
5.x[21]	10.4.11 - 10.8.x Intel/PPC	2000 SP4, XP SP2+, 2003, Vista SP1+, 7, 2008	2.4.x+ 32 bit X11R5 glibc 2.3.2 gtk lcms
4.6.x[22]	10.4.11 - 10.8.x Intel/PPC	2000 SP4, XP SP2+, 2003, Vista SP1+, 7, 2008	2.4.x+ 32 bit X11R5 glibc 2.3.2 gtk lcms
4.5.x[23]	10.3.9 - 10.8.x Intel/PPC	2000 SP4, XP SP2+, 2003, Vista SP1+, 7, 2008	2.4.x+ 32 bit X11R5 glibc 2.3.2 gtk lcms
4.0.x	?	?	?
3.x	?	?	?
2.6.x[24]	10.2.7 - 10.6.x Intel/PPC, 9.2.2 PPC	98, Me, NT, 2000, XP, Vista	2.4+ 32 bit X11R5 glibc 2.2.4 gtk lcms

iOS and Android targets are available in some versions.

Note: Complete Linux requirements for 4.5.x-6.x are the following

- 32-bit installation, or a 64-bit linux distribution that has a 32-bit compatibility layer
- 2.4.x or later kernel
- X11R5 capable Xserver running locally on a 24-bit display
- glibc 2.3.2 or later
- gtk/gdk/glib (optional – required for native theme support)
- pango/xft (optional – required for pdf printing, anti-aliased text and unicode font support)
- lcms (optional – required for color profile support in JPEGs and PNGs)

- gksu (optional – required for elevate process support)

Competition

- Xojo http://www.xojo.com
- B4X (B4A, B4j, and B4i): http://b4x.com
- APP Inventor http://appinventor.mit.edu/
- APP Inventor Tutorials http://puravidaapps.com/tutorials.php

See also

- Runtime Revolution, the former name of the company that published LiveCode.
- MetaCard, Runtime Revolution acquired the MetaCard technology on which its development system is based in 2003.
- HyperCard, Progenitor of all xTalk languages.

References

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2. PCWorld: Development Tool for Mac OS X and Vista (http://www.pcworld.com/article/129167/development_tool_for_mac_os_x_and_vista.html)
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8. https://www.kickstarter.com/projects/1755283828/open-source-edition-of-livecode
9. *Software Development Times*: Runtime Revolution Releases iOS Deployment Pack (http://www.sdtimes.com/link/35030)
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17. http://downloads.livecode.com/livecode/7_0_0/LiveCodeNotes-7_0_0.pdf
18. http://downloads.livecode.com/livecode/6_7_0/LiveCodeNotes-6_7_0.pdf
19. http://downloads.livecode.com/livecode/6_6_5/LiveCodeNotes-6_6_5.pdf
20. http://downloads.livecode.com/livecode/6_5_2/LiveCodeNotes-6_5_2.pdf
21. http://www.runrev.com/downloads/livecode/5_5_0/LiveCodeNotes-5_5_0.pdf
22. http://www.runrev.com/downloads/livecode/4_6_0/LiveCodeNotes-4_6_0.pdf
23. http://www.runrev.com/downloads/livecode/4_5_0/LiveCodeNotes-4_5_0.pdf
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- Holgate, Colin. LiveCode Mobile Development Beginner's Guide (http://www.amazon.com/LiveCode-Mobile-Development-Beginners-Guide/dp/1849692483)
- Schonewille, Mark. Programming LiveCode for the Real Beginner (http://www3.economy-x-talk.com/file.php?node=book%253A-programming-livecode-for-real-starters)
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External links

- LiveCode (http://livecode.com/)

- RunRev Ltd. (http://www.runrev.com/) Maker of LiveCode. Site includes links to documentation, tutorials, and user forums.
- Brigham Young University Programming in LiveCode course (http://livecode.byu.edu/) Notes and readings to accompany beginning and intermediate courses in developing instructional applications. Topical index included.
- Hyperactive Software (http://www.hyperactivesw.com/Resources.html) Articles on LiveCode including converting HyperCard stacks and the Scripting Conferences stacks
- Tips and Tricks (http://www.sonsothunder.com/devres/livecode/livecode.htm) List of tips and tricks for using LiveCode
- LiveCode (formerly Revolution) Programming Tutorial (http://www.robertcailliau.eu/Programming/Revolution/Tutorials/zTutorials.html) by Robert Cailliau
- M E R Goulding Software Development Blog (http://www.goulding.ws/blog) Articles about LiveCode and IDE plugins.
- FourthWorld RunRev Embassy (http://www.fourthworld.com/rev/index.html) Links, articles and blog for LiveCode developers and LiveCode Journal
- Network World Review of LiveCode (http://www.networkworld.com/community/node/45829)
- First Look: Revolution 2.9, cross-platform compiler (http://www.macnn.com/articles/08/04/07/first.look.revolution.29/) April 2008 MacNN Article
- End User Programming Packages: Revolution (http://www.osnews.com/story/16901/End_User_Programming_Packages_Revolution)

Review by Peter Alcibiades on osnews.com
- Review of Runtime Revolution (http://www.macworld.co.uk/mac/reviews/index.cfm?reviewid=1577) November 2005 Macworld UK Article by John Dixon
- LiveCode Google Group (http://groups.google.com/group/runrev/)
- GLX Framework (http://www.bluemangolearning.com/revolution/) 3rd party application framework for LiveCode
- Mirye Software Publishing (http://www.mirye.net/) Publisher of LiveCode and external libraries for LiveCode
- Franklin 3D Game Engine (http://www.franklin3d.com/products/franklin-3d) Franklin 3D Game Engine for LiveCode
- revIgniter (http://revigniter.com/) 3rd party Web Application Development Framework for LiveCode
- NativeSpeak (http://www.dam-pro.com) I18N/Localization for LiveCode
- livecoders.slack.com (https://livecoders.slack.com/) livecoders.slack.com

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