LiveCode 9.0.2 Release Notes

Overview

LiveCode 9.0 enables access to libraries and platform APIs written in many other languages thanks to the community-funded 'Infinite LiveCode' project.

This includes a greatly improved LiveCode Builder virtual machine.

LiveCode 9.0 contains many additional improvements to support LiveCode app developers, including:

- A new "spinner" widget
- OAuth2 authentication library for use with web APIs (e.g. Facebook, Google and GitHub)
- A command argument parser library for building command-line standalones
- Updates and performance improvements for existing widgets

Known issues

- The installer will currently fail if you run it from a network share on Windows. Please copy the installer to a local disk before launching on this platform.
- The browser widget does not work on 32-bit Linux.
- 64-bit standalones for Mac OS X do not have support for audio recording.

Breaking changes

Standalone Building

The standalone builder has always needed to close the stacks it builds for reasons pretty deeply ingrained in the code. However this causes a few problems, for example:

- values in script locals become empty
- behaviors are broken when the parent script is on / in a stack which closes

As an attempt to improve this situation, the code that locks messages when closing and opening stacks for standalone builds has been removed. This means that where previously mainstacks

would not receive any of the `(pre)open*` and `close*` messages (e.g. `preOpenStack`, `openStack`, `openCard`, `closeStack` etc) during standalone build, they now do.

If this causes problems for your stack, you can exit from the handler if standalone building is in progress:

```
on closeStack
    if the environment is "development" and \
      there is a stack "revStandaloneProgress" and \
      the mode of stack "revStandaloneProgress" > 0 then
        exit closeStack
    end if
end closeStack
```

LiveCode Builder

Exponentiation operator precedence

Prior to this release, exponentiation had lower precedence that unary minus. In order to write code that operates as expected in both this release and previous releases, please use parentheses where appropriate.

Using lc-compile tool in LiveCode 9:

```
-1^2 = -1
```

Using lc-compile tool in LiveCode 8:

```
-1^2 = 1
```

Platform support

The engine supports a variety of operating systems and versions. This section describes the platforms that we ensure the engine runs on without issue (although in some cases with reduced functionality).

Windows

LiveCode supports the following versions of Windows:

- Windows 7 (both 32-bit and 64-bit)

- Windows Server 2008
- Windows 8.x (Desktop)
- Windows 10

Note: On 64-bit Windows installations, LiveCode runs as a 32-bit application through the WoW layer.

Linux

LiveCode supports the following Linux distributions, on 32-bit or 64-bit Intel/AMD or compatible processors:

- Ubuntu 14.04 and 16.04
- Fedora 23 & 24
- Debian 7 (Wheezy) and 8 (Jessie) [server]
- CentOS 7 [server]

LiveCode may also run on Linux installations which meet the following requirements:

- Required dependencies for core functionality:
    - glibc 2.13 or later
    - glib 2.0 or later
- Optional requirements for GUI functionality:
    - GTK/GDK 2.24 or later
    - Pango with Xft support
    - esd (optional, needed for audio output)
    - mplayer (optional, needed for media player functionality)
    - lcms (optional, required for color profile support in images)
    - gksu (optional, required for privilege elevation support)

Note: If the optional requirements are not present then LiveCode will still run but the specified features will be disabled.

Note: The requirements for GUI functionality are also required by Firefox and Chrome, so if your Linux distribution runs one of those, it will run LiveCode.

Note: It may be possible to compile and run LiveCode Community for Linux on other architectures but this is not officially supported.

Mac

The Mac engine supports:

- 10.9.x (Mavericks)
- 10.10.x (Yosemite)
- 10.11.x (El Capitan)
- 10.12.x (Sierra)
- 10.13.x (High Sierra)
- 10.14.x (Mojave)

iOS

iOS deployment is possible when running LiveCode IDE on a Mac, and provided Xcode is installed and has been set in LiveCode *Preferences* (in the *Mobile Support* pane).

Currently, the supported versions of Xcode are:

- Xcode 6.2 on MacOS X 10.9
- Xcode 6.2 and 7.2 on Mac OS X 10.10
- Xcode 8.2 on MacOS X 10.11
- Xcode 9.2 on MacOS 10.12 (Note: You need to upgrade to 10.12.6)
- Xcode 10.0 on MacOS 10.13 (Note: You need to upgrade to 10.13.4)

It is also possible to set other versions of Xcode, to allow testing on a wider range of iOS simulators. For instance, on MacOS 10.12 (Sierra), you can add *Xcode 6.2* in the *Mobile Support* preferences, to let you test your stack on the *iOS Simulator 8.2*.

We currently support deployment for the following versions of iOS:

- 8.2 [simulator]
- 9.2
- 10.2
- 11.2
- 12.0

Android

LiveCode allows you to save your stack as an Android application, and also to deploy it on an Android device or simulator from the IDE.

Android deployment is possible from Windows, Linux and Mac OSX.

The Android engine supports devices using ARMv7 or ARMv8 processors. It will run on the following versions of Android:

- 4.1-4.3 (Jelly Bean)
- 4.4 (KitKat)
- 5.0-5.1 (Lollipop)
- 6.0 (Marshmallow)
- 7.x (Nougat)
- 8.x (Oreo)

To enable deployment to Android devices, you need to download the Android SDK, and then use the 'Android SDK Manager' to install:

- the latest "Android SDK Tools"
- the latest "Android SDK Platform Tools"

You also need to install the Java Development Kit (JDK). On Linux, this usually packaged as "openjdk". LiveCode requires JDK version 1.6 or later.

Once you have set the path of your Android SDK in the "Mobile Support" section of the LiveCode IDE's preferences, you can deploy your stack to Android devices.

Some users have reported successful Android Watch deployment, but it is not officially supported.

HTML5

LiveCode applications can be deployed to run in a web browser, by running the LiveCode engine in JavaScript and using modern HTML5 JavaScript APIs.

HTML5 deployment does not require any additional development tools to be installed.

LiveCode HTML5 standalone applications are currently supported for running in recent versions of Mozilla Firefox, Google Chrome or Safari. For more information, please see the "HTML5 Deployment" guide in the LiveCode IDE.

Setup

Installation

Each version of LiveCode installs can be installed to its own, separate folder. This allow multiple versions of LiveCode to be installed side-by-side. On Windows (and Linux), each version of LiveCode has its own Start Menu (or application menu) entry. On Mac OS X, each version has its own app bundle.

On Mac OS X, install LiveCode by mounting the `.dmg` file and dragging the app bundle to the `Applications` folder (or any other suitable location).

For Windows and Linux, the default installation locations when installing for "All Users" are:

Platform	Path
Windows	`<x86 program files folder>/RunRev/LiveCode <version>`
Linux	`/opt/livecode/livecode-<version>`

The installations when installing for "This User" are:

Platform	Path
Windows	`<user roaming app data folder>/RunRev/Components/LiveCode <version>`
Linux	`~/.runrev/components/livecode-<version>`

Note: If installing for "All Users" on Linux, either the **gksu** tool must be available, or you must manually run the LiveCode installer executable as root (e.g. using **sudo** or **su**).

Uninstallation

On Windows, the installer hooks into the standard Windows uninstall mechanism. This is accessible from the "Add or Remove Programs" applet in the windows Control Panel.

On Mac OS X, drag the app bundle to the Trash.

On Linux, LiveCode can be removed using the `setup.x86` or `setup.x86_64` program located in LiveCode's installation directory.

Reporting installer issues

If you find that the installer fails to work for you then please report it using the LiveCode Quality Control Centre or by emailing support@livecode.com.

Please include the following information in your report:

- Your platform and operating system version
- The location of your home or user folder
- The type of user account you are using (guest, restricted, admin etc.)
- The installer log file.

The installer log file can be located as follows:

Platform	Path
Windows 2000/XP	`<documents and settings folder>/<user>/Local Settings/`
Windows Vista/7	`<users folder>/<user>/AppData/Local/RunRev/Logs`
Linux	`<home>/.runrev/logs`

Activating LiveCode Indy or Business edition

The licensing system ties your product licenses to a customer account system, meaning that you no longer have to worry about finding a license key after installing a new copy of LiveCode. Instead, you simply have to enter your email address and password that has been registered with our customer account system and your license key will be retrieved automatically.

Alternatively it is possible to activate the product via the use of a specially encrypted license file. These will be available for download from the customer center after logging into your account. This method will allow the product to be installed on machines that do not have access to the internet.

Command-line installation

It is possible to invoke the installer from the command-line on Linux and Windows. When doing command-line installation, no GUI will be displayed. The installation process is controlled by arguments passed to the installer.

Run the installer using a command in the form:

```
<installer> install noui [OPTION ...]
```

where `<installer>` should be replaced with the path of the installer executable or app (inside the DMG) that has been downloaded. The result of the installation operation will be written to the

console.

The installer understands any of the following `OPTION`s:

Option	Description
`-allusers`	Install the IDE for "All Users". If not specified, LiveCode will be installed for the current user only.
`-desktopshortcut`	Place a shortcut on the Desktop (Windows-only)
`-startmenu`	Place shortcuts in the Start Menu (Windows-only)
`-location LOCATION`	The folder to install into. If not specified, the `LOCATION` defaults to those described in the "Installation" section above.
`-log LOGFILE`	The file to which to log installation actions. If not specified, no log is generated.

Note: the command-line installer does not do any authentication. When installing for "All Users", you will need to run the installer command as an administrator.

As the installer is actually a GUI application, it needs to be run slightly differently from other command-line programs.

On Windows, the command is:

```
start /wait <installer> install noui [OPTION ...]
```

Command-line uninstallation

It is possible to uninstall LiveCode from the command-line on Windows and Linux. When doing command-line uninstallation, no GUI will be displayed.

Run the uninstaller using a command of the form:

```
<uninstaller> uninstall noui
```

Where is *.setup.exe* on Windows, and *.setup.x86* on Linux. This executable, for both of the platforms, is located in the folder where LiveCode is installed.

The result of the uninstallation operation will be written to the console.

Note: the command-line uninstaller does not do any authentication. When removing a version of LiveCode installed for "All Users", you will need to run the uninstaller command as an administrator.

Command-line activation for LiveCode Indy or Business edition

It is possible to activate an installation of LiveCode for all users by using the command-line. When performing command-line activation, no GUI is displayed. Activation is controlled by passing

command-line arguments to LiveCode.

Activate LiveCode using a command of the form:

```
<livecode> activate -file LICENSEFILE -passphrase SECRET
```

where `<livecode>` should be replaced with the path to the LiveCode executable or app that has been previously installed.

This loads license information from the manual activation file `LICENSEFILE`, decrypts it using the given `SECRET` passphrase, and installs a license file for all users of the computer. Manual activation files can be downloaded from the My Products page in the LiveCode account management site.

It is also possible to deactivate LiveCode with:

```
<livecode> deactivate
```

Since LiveCode is actually a GUI application, it needs to be run slightly differently from other command-line programs.

On Windows, the command is:

```
start /wait <livecode> activate -file LICENSE -passphrase SECRET
start /wait <livecode> deactivate
```

On Mac OS X, you need to do:

```
<livecode>/Contents/MacOS/LiveCode activate -file LICENSE -passphrase SECRET
<livecode>/Contents/MacOS/LiveCode deactivate
```

LiveCode Community engine changes

Specific engine bug fixes (9.0.2-rc-2)

21685 Redraw screen correctly when hiding the keyboard on Android
21706 Ensure location services work when the standalone is built with the iOS 12 SDK
21707 Ensure DataGrids with decimal keys can scroll

Specific engine bug fixes (9.0.2-rc-1)

9030	Clarify how pageRect works
9711	Ensure right-clicking on a grouped radio button does not change the hilite of the group
11792	Added note in the documentation for copy that copy operations that result in an object being put on the clipboard are not supported on mobile
11794	Fix crash on iOS when calling `hide this stack with visual ..` and the stack's name is `with`
15167	Allow `&` and other special characters in the android standalone label
17751	Correct the loc of option menus and pulldown menus triggered by a popup stack
18395	Fix return key event handling in fields on Android
19550	Add support for symbolic links in Mac/Linux standalone applications
19597	Add UDP into summary
19670	Fix effective working screenrect on Android when status bar is hidden
19704	Fixed bug causing minWidth & minHeight to not work on HiDPI Screens in Win32
20193	Fix import snapshot from rect causing other applications to lose focus on Windows
20283	Updated broken links in `encrypt using rsa` dictionary entry
20529	MouseEnter and MouseLeave infinite loop trap - docs update
20640	Updated orientation docs for iPhone X support
20722	Update launch URL command note for Android.
20917	Fixed broken links in "URL scheme" entry
20943	Added explicit RegEx escape character use examples
21104	Fixed typo in the print dictionary entry
21230	Fixed bug in resolveAlias on Win32
21270	Added systems requirement note to revOpenDatabase
21312	Updated Visual Effects and Unlock Screen docs
21406	Added `alphabetic` to the list of keyboard types in the mobileSetKeyboardType entry
21436	Clarified the behaviour of repeat with.
21453	Fix crash when calling 'open process path/to/app/bundle'
21458	Added "the number of elements of array" to the syntax in the entry for the number.
21468	Include .framework folders in iOS extension code folders
21469	Ensure iOS apps with embedded frameworks are correctly signed
21474	Fix unresponsive stack after drag and drop
21476	Ensure "the extents of tArray" returns empty if the keys of tArray are not integers
21488	Fix automatic architecture detection on some Linux systems
21491	Ensure pageRanges and pageHeights return correct results
21494	Correct missing text issue in the Round function dictionary entry.
21500	Fix crash when ungrouping a group before calling quit
21527	Include iPadPro splash image in plist file
21529	Fixed typo and incomplete example in Release Notes
21552	Prevent accidental deletion of a file when building a standalone
21556	Fixed missing text issue in the libraryStack dictionary entry
21572	Added list of blend modes to CanvasPropertyBlendMode and EffectPropertyBlendMode
21582	Fix crash and stack corruption when opening a stack that has a colorswatch widget
21592	Corrected several typos in the revOpenDatabase dictionary entry.

21595 Android API 26: allow opening local files with JavaScript on Android Browser
21608 Fix application lockup when invoking a handler from the browser widget on iOS 12
21612 Fix crash sending touch events to a deleted stack
21617 Fix failure to load HTML5 standalones when mainstack is greater than 1MB
21623 Ensure stack vScroll due to a menubar on Mac is handled correctly when opening a card in an existing window
21624 Fix rendering issues in Motif appearance (default for iOS, Android and HTML5) when a button is disabled and has a non-zero blendlevel
21629 Fix display update issues on iOS 12 when not using accelerated rendering
21644 Updated `beepSound` dictionary entry
21647 Dictionary error: description of exp1
21650 Fix crash on iOS when changing cards and acceleratedRendering is true
21658 Provide an example of using ODBC with a fileDSN on Windows
21662 Fix crash when setting the scrollbar to false while scrolling
21664 Clarified the behaviour of the sheet command.
21667 Fix exception thrown when calling revBrowserPrint
21669 Ensure an error is thrown if no Map API key is specified
21672 Disable iOS 11 native scroller content inset adjustment behavior
21681 Ensure start and end dates are respected on mobilePickDate on Android

LiveCode Community IDE changes

Specific IDE bug fixes (9.0.2-rc-1)

14079 Ensure subscripts and superscripts can be set more than once
17683 Ensure Start Center stays open when a Plugin opens on startup
21245 SE indent errors with inline block comments and line continuation
21418 Ensure arrays with comma in the key name are displayed correctly in the variable viewer window
21430 Ensure arrowKeys work correctly when editing a control's name in the Project Browser
21528 Ensure graphics can be reshaped more than once from the Object menu
21580 Make button "show grid" toggle
21585 Make height of sample graphics in PI-> Effects stable

LiveCode Community extension changes

Specific extension bug fixes (9.0.2-rc-1)

21428 Allow specifying the min and max version number in qrCreate

21503 Prevent accidental value removal on key addition
21567 Prevent error when hilitedElement set to empty

LiveCode Indy engine changes

Specific engine bug fixes (9.0.2-rc-1)

21648 Updated example in cameraControlCreate dictionary entry
21661 Added edition information to cameraControl* dictionary entries

LiveCode Indy extension changes

Specific extension bug fixes (9.0.2-rc-1)

21399 Improve AWSS3GetBucket documentation to clarify results when only a single object is returned
21402 Fix AWSS3PutBucket for regions other than us-east-1
21419 Remove pParameters param from AWSS3DeleteObject
21421 Fix signing of AWSS3GetService
21429 Fix signing when multiple parameters are included in a query string

LiveCode Business extension changes

Specific extension bug fixes (9.0.2-rc-1)

20942 Improve remove debugger script cache clearing between debug sessions

LiveCode builder changes

Specific builder bug fixes (9.0.2-rc-1)

21507 Fix incorrect parameter order in com.livecode.math atan2 function

Previous release notes

- LiveCode 9.0.1 Release Notes
- LiveCode 9.0.0 Release Notes
- LiveCode 8.1.9 Release Notes
- LiveCode 8.1.8 Release Notes
- LiveCode 8.1.7 Release Notes
- LiveCode 8.1.6 Release Notes
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