Plymouth Documentation for Linux

Overview, Quick Start, Installing, Creating & Configuration

Document Revision History

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| 2022.07.11 | .1 | Created basic outline and added researched content. | * N/A | Jim Farrell |
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Note: Use GTK Document Standards

https://wiki.gnome.org/DocumentationProject/GtkDoc

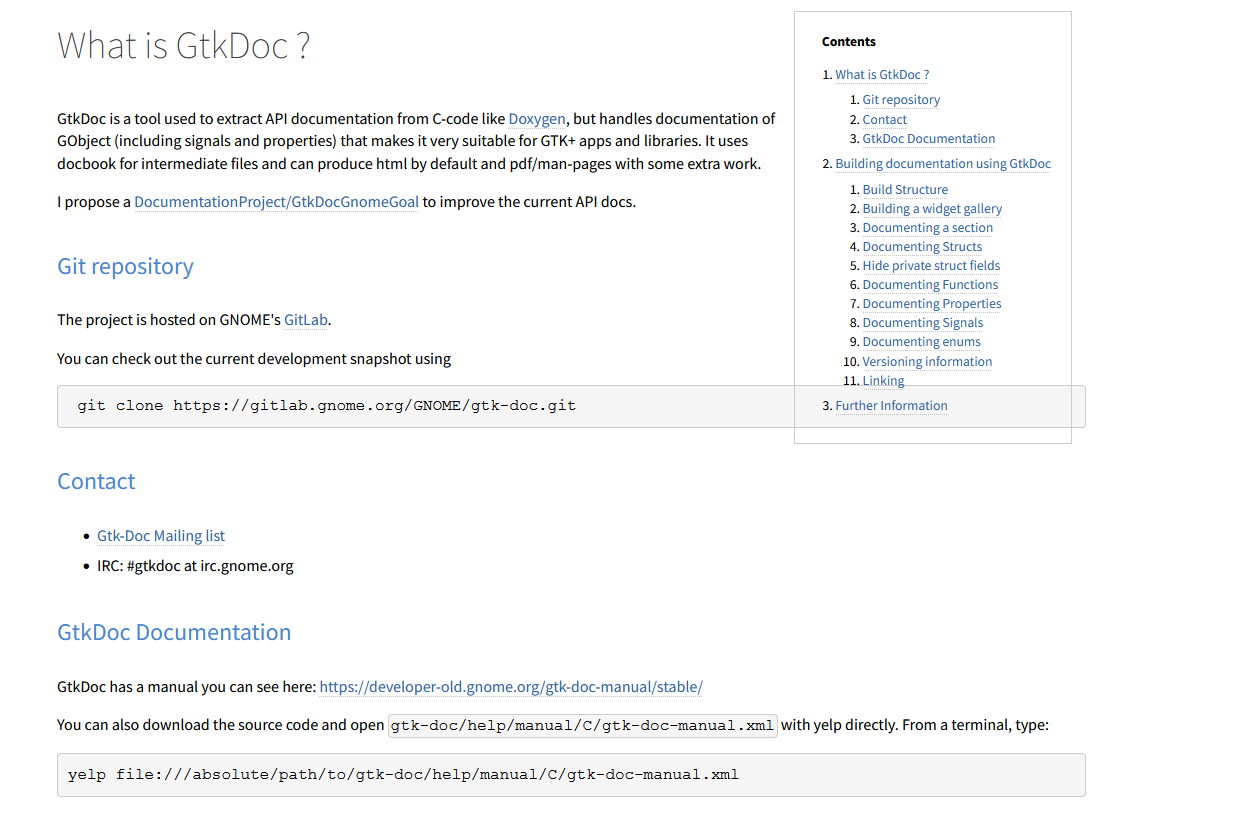


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# Introduction

Plymouth is a “graphical boot system for Linux”1 that enables an enhanced visual experience during the bootup process. In addition, Plymouth provides built-in boot logging capabilities that can be used for debugging.

Prior to Plymouth, kernel message were displayed during the boot process, resulting in “noise.” To address this issue, Plymouth allows visually appealing graphics and animations to run in the foreground, while the normal boot process runs in the background.

Plymouth’s default boot-up appearance can be changed by setting a new Plymouth “Theme.” Plymouth Themes are similar to screensavers, and include a Theme file, along with the necessary media (e.g., .png files). Alternative Plymouth Themes can accessed from a preinstalled list, downloaded from external sites and even created.

This document is designed to provide the information you need based on your unique use case:

* *Overview & QuickStart*: understand Plymouth at a high level and change your default Theme with pre-installed Themes.
* *Download & Install Themes*: Download and install single Theme files. Connect to a repository and download/install Themes.
* *Creating Plymouth Themes*: understand the files within a Plymouth theme, including the Plymouth Configuration File (\*.plymouth) and specify the presentation of static graphics and animations.
* *Plymouth Administration*: understand how the two Plymouth binaries (i.e., plymouthd & plymouth) interact, data architecture, data structures and debugging. View detailed documentation on key Plymouth functions and script.

## Authors & Sources

Kristian Høgsberg created the original prototype and the name “Plymouth.” Ray Strode produced the original solution, with significant contributions from Charlie Brej. Additional contributions has been provided by Peter Jones, Adam Jackson, Frederic Crozat and others.

1Plymouth.xml - https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouth.xml

Question: is there a simple command for showing that plymouth is installed, such as a command that shows the Plymouth version?

# QuickStart

Plymouth comes pre-installed on a number of Linux distributions, such as Fedora. On systems that come with Plymouth, the typical installation will result in a number of Plymouth Themes being installed, with one Theme being set to the Default Theme (i.e., bgrt).

This QuickStart will provide the information needed to view and change the Plymouth Themes that have been preinstalled within a Plymouth enabled operating system. Examples of the essential Linux terminal commands needed are shown first, followed by a detailed specification of the plymouth-set-default-theme command.1

## Display Current Default Plymouth Theme

You can display the default Plymouth Theme your system is running by accessing the Linux terminal and using the plymouth-set-default-theme command.

After pressing Enter on the keyboard, the current Default Plymouth Theme will be displayed. In the example below, the Default Plymouth Theme is bgrt.

# [add note here]

$ sudo plymouth-set-default-theme

bgrt

## List Available Plymouth Themes

To view a list of pre-installed Plymouth Themes on a system, use the plymouth-set-default-theme command with the list option (e.g., –-list).

In the example below, pressing Enter on the keyboard results in a list of all the preinstalled Plymouth Themes .

$ sudo plymouth-set-default-theme –list

bgrt

details

spinfinity

text

tribar

## Change the Default Plymouth Theme

To change the Default Plymouth Theme to another pre-installed Theme, select an available alternate Theme and then use the plymouth-set-default-theme command, along with the new Theme name and the -R option.

Press Enter and wait for the command prompt to re-appear, indicating the change and regeneration process is complete.

$ sudo plymouth-set-default-theme spinfinity -R

$

Caution: Since Plymouth is enabled through the boot loader, it is necessary to regenerate the initial ramdisk (initrd) using the -R option. Doing so will ensure the new default Theme can properly load during the booting process.

Use the plymouth-set-default-theme command to verify the Plymouth Default Theme has been changed. In the example below, pressing Enter reveals that the Default Plymouth Theme has been updated to spinfinity.

$ sudo plymouth-set-default-theme

spinfinity

## The Plymouth Theme Chooser (plymouth-set-default-theme)

All of the essential QuickStart transactions involve the plymouth-set-default-theme command. The specific usage and options for this command are below:

Usage: plymouth-set-default-theme { --list | --reset | <theme-name> [ --rebuild-initrd ] | --help }

|  |  |
| --- | --- |
| Option | Description |
| -h, --help | Shows a help message that includes the command usage and available options. |
| -l, --list | Show available themes |
| -r. --reset | Reset to default theme |
| -R, --rebuild-initrd | Rebuild initrd (necessary after changing theme) |
| <theme-name> | Name of new theme to use (see --list for available themes) |

You can view the usage and options information via the Linux terminal with the plymouth-set-default-theme command with the -h (i.e., help) option. As shown in the example below, type your password when prompted and then press Enter. The Linux Terminal will display the usage specification and options.

$ sudo plymouth-set-default-theme -h

[sudo] password:

Plymouth theme chooser

usage: plymouth-set-default-theme { --list | --reset | <theme-name> [ --rebuild-initrd ] | --help }

-h, --help Show this help message

-l, --list Show available themes

-r. --reset to default theme

-R, --rebuild-initrd Rebuild initrd (necessary after changing theme)

<theme-name> Name of new theme to use (see --list for available themes)

## Sources

1plymouth-set-default-theme.xml

https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouth-set-default-theme.xml

# Download & Install Plymouth Themes

In addition to the Plymouth Themes that have been pre-installed on your Plymouth enabled system, other Themes can be downloaded from the Web.

This section will provide the Linux terminal transactions needed to download and install Plymouth Themes as single files or through online repositories, including the Fedora repository.

## Download and Install Themes from Official Fedora Repositories

Official Fedora Repository has a number of themes that can be downloaded using the DNF Software Package Manager, the current default software package manager in Fedora.1,2

*To install a Theme from an Official Linux repos*itory: open the Linux Terminal, type in the command below and then press Enter.

$ sudo dnf install plymouth-theme-hot-dog

*Verify that the new Theme has been installed* with the plymouth-set-default-theme and list option (i.e., -l).

$ sudo plymouth-set-default-theme –list

bgrt

details

hot-dog

spinfinity

text

tribar

*Change the Default Plymouth Theme to the new Theme* using the plymouth-set-default-theme command, along with the new Theme name and the -R option.

Press Enter and wait for the command prompt to re-appear, indicating the change and regeneration process is complete.

$ sudo plymouth-set-default-theme hot-dog -R

$

Caution: Since Plymouth is enabled through the boot loader, it is necessary to regenerate the initial ramdisk (initrd) using the -R option. Doing so will ensure the new default Theme can properly load during the booting process.

*Verify the Default Plymouth Theme has been changed* using the plymouth-set-default-theme. In the example below, pressing Enter reveals that the Default Plymouth Theme has been updated to hot-dog.

$ sudo plymouth-set-default-theme

hot-dog

Question: Is there a way to get the list of available Plymouth Themes available from the Fedora Repository (e.g., link, terminal command)?

## Download and Install Theme Files from an External Source

# download the Plymouth Theme file

# copy “cp” the selected theme in plymouth theme dir

sudo cp -r splash /usr/share/plymouth/themes/

# check if theme exist in dir

sudo plymouth-set-default-theme -l

# now set the theme (angular, in this case) and rebuilt the initrd

sudo plymouth-set-default-theme -R angular

# optionally you can test theme by running the script given in repo (plymouth-x11 required)

sudo ./showplymouth.sh 20

Question: is there a process for downloading and installing single themes, as well as cloning a repository and then installing themes from that repository? I experimented with Themes from adi1090x, but began running into issues.

adi1090x at GitLab was using Arch, so I imagine there might be issues there (I’m using Fedora 36). After installing the Theme in the correct folder, I try to update the default Plymouth Theme, I get the error “/usr/lib64/plymouth/script.so does not exist.” I imagine that is due to the update to make things easier working with Plymouth without scripts.

Is it possible to install script.so without disrupting the current Plymouth configuration? Adi1090x’s theme files include a <theme name>.plymouth and <theme name>.script file. I wouldn’t mind documenting both methods, if they can both work. The \*.script file seemed very much aligned with Charlie Brae’s tutorial.

Note: Adi1090x recommends using the AUR helper yay for individual files.

place ScriptFile /usr/share/plymouth/themes/splash/splash.script

/usr/lib64/plymouth/script.so

## Download and Install Theme Files from a Other Repositories

# packages needed - plymouth, plymouth-x11, plymouth-plugin-script(fedora)

# clone adi1090x theme library

git clone https://github.com/adi1090x/plymouth-themes.git

# after downloading or cloning themes, copy the selected theme in plymouth theme dir

sudo cp -r angular /usr/share/plymouth/themes/

# check if theme exist in dir

sudo plymouth-set-default-theme -l

# now set the theme (angular, in this case) and rebuilt the initrd

sudo plymouth-set-default-theme -R angular

Note: xxx

Sources

1Lerch, Ryan (2018). How to change the Plymouth bootup theme. Fedora Magazine. Fedoramagazin.org.

<https://fedoramagazine.org/howto-change-the-plymouth-theme/>

2Using the DNF software package manager. Fedora Quick Docs. <https://docs.fedoraproject.org/en-US/quick-docs/dnf/>

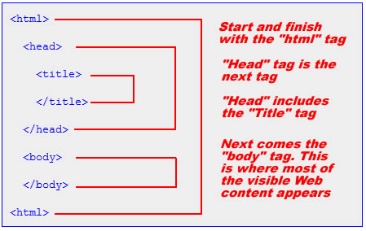
3Shakya, Aditya (2020). Plymouth Themes. GitHub (@adi1090x). Updated Jul 12, 2021.

<https://github.com/adi1090x/plymouth-themes>; https://opensourcelibs.com/lib/plymouth-themes

# Creating New Plymouth Themes

Question: This is where I got stuck, so had a some questions:

1. \*.plymouth file structure: is there documentation that explains the \*.plymouth file structure. I’d like to develop and graphic for this, similar to what you might find for an html document. Also, is there a way to insert functions, such as using the script tags in html?



bgrt.plymouth [File on next page]

[Plymouth Theme]

Name[be]=BGRT

.

.

.

Name[fi]=BGRT

Name=BGRT

Description=Jimmac's spinner theme using the ACPI BGRT graphics as background

ModuleName=two-step

[two-step]

Font=Cantarell 12

TitleFont=Cantarell Light 30

ImageDir=/usr/share/plymouth/themes/spinner

DialogHorizontalAlignment=.5

DialogVerticalAlignment=.382

TitleHorizontalAlignment=.5

TitleVerticalAlignment=.382

HorizontalAlignment=.5

VerticalAlignment=.7

WatermarkHorizontalAlignment=.5

WatermarkVerticalAlignment=.96

Transition=none

TransitionDuration=0.0

BackgroundStartColor=0x000000

BackgroundEndColor=0x000000

ProgressBarBackgroundColor=0x606060

ProgressBarForegroundColor=0xffffff

DialogClearsFirmwareBackground=true

MessageBelowAnimation=true

[boot-up]

UseEndAnimation=false

UseFirmwareBackground=true

[shutdown]

UseEndAnimation=false

UseFirmwareBackground=true

[reboot]

UseEndAnimation=false

UseFirmwareBackground=true

[updates]

SuppressMessages=true

ProgressBarShowPercentComplete=true

UseProgressBar=true

Title=Installing Updates...

SubTitle=Do not turn off your computer

[system-upgrade]

SuppressMessages=true

ProgressBarShowPercentComplete=true

UseProgressBar=true

Title=Upgrading System...

SubTitle=Do not turn off your computer

[firmware-upgrade]

SuppressMessages=true

ProgressBarShowPercentComplete=true

UseProgressBar=true

Title=Upgrading Firmware...

SubTitle=Do not turn off your computer

## Creating Plymouth Themes: <theme>.plymouth

## Creating Advanced Plymouth Themes: <theme>.plymouth, <theme>.script, script.so

Adi1090x splash.plymouth & splash.script

https://github.com/adi1090x/plymouth-themes

[Plymouth Theme]

Name=splash

Description=display a animated particle circle

Comment=created By Aditya Shakya (@adi1090x)

ModuleName=script

[script]

ImageDir=/usr/share/plymouth/themes/splash

ScriptFile=/usr/share/plymouth/themes/splash/splash.script

## Author : Aditya Shakya (adi1090x)

## Mail : adi1090x@gmail.com

## Github : @adi1090x

## Reddit : @adi1090x

// Screen size

screen.w = Window.GetWidth();

screen.h = Window.GetHeight();

screen.half.w = Window.GetWidth() / 2;

screen.half.h = Window.GetHeight() / 2;

// Question prompt

question = null;

answer = null;

// Message

message = null;

// Password prompt

bullets = null;

prompt = null;

bullet.image = Image.Text("\*", 1, 1, 1);

// Flow

state.status = "play";

state.time = 0.0;

//--------------------------------- Refresh (Logo animation) --------------------------

# cycle through all images

for (i = 0; i < 65; i++)

flyingman\_image[i] = Image("progress-" + i + ".png");

flyingman\_sprite = Sprite();

# set image position

flyingman\_sprite.SetX(Window.GetX() + (Window.GetWidth() / 2 - flyingman\_image[0].GetWidth() / 2)); # Place images in the center

flyingman\_sprite.SetY(Window.GetY() + (Window.GetHeight() / 2 - flyingman\_image[0].GetHeight() / 2));

progress = 0;

fun refresh\_callback ()

{

flyingman\_sprite.SetImage(flyingman\_image[Math.Int(progress / 2) % 65]);

progress++;

}

Plymouth.SetRefreshFunction (refresh\_callback);

//------------------------------------- Password prompt -------------------------------

fun DisplayQuestionCallback(prompt, entry) {

question = null;

answer = null;

if (entry == "")

entry = "<answer>";

question.image = Image.Text(prompt, 1, 1, 1);

question.sprite = Sprite(question.image);

question.sprite.SetX(screen.half.w - question.image.GetWidth() / 2);

question.sprite.SetY(screen.h - 4 \* question.image.GetHeight());

answer.image = Image.Text(entry, 1, 1, 1);

answer.sprite = Sprite(answer.image);

answer.sprite.SetX(screen.half.w - answer.image.GetWidth() / 2);

answer.sprite.SetY(screen.h - 2 \* answer.image.GetHeight());

}

Plymouth.SetDisplayQuestionFunction(DisplayQuestionCallback);

//------------------------------------- Password prompt -------------------------------

fun DisplayPasswordCallback(nil, bulletCount) {

state.status = "pause";

totalWidth = bulletCount \* bullet.image.GetWidth();

startPos = screen.half.w - totalWidth / 2;

prompt.image = Image.Text("Enter Password", 1, 1, 1);

prompt.sprite = Sprite(prompt.image);

prompt.sprite.SetX(screen.half.w - prompt.image.GetWidth() / 2);

prompt.sprite.SetY(screen.h - 4 \* prompt.image.GetHeight());

// Clear all bullets (user might hit backspace)

bullets = null;

for (i = 0; i < bulletCount; i++) {

bullets[i].sprite = Sprite(bullet.image);

bullets[i].sprite.SetX(startPos + i \* bullet.image.GetWidth());

bullets[i].sprite.SetY(screen.h - 2 \* bullet.image.GetHeight());

}

}

Plymouth.SetDisplayPasswordFunction(DisplayPasswordCallback);

//--------------------------- Normal display (unset all text) ----------------------

fun DisplayNormalCallback() {

state.status = "play";

bullets = null;

prompt = null;

message = null;

question = null;

answer = null;

}

Plymouth.SetDisplayNormalFunction(DisplayNormalCallback);

//----------------------------------------- Message --------------------------------

fun MessageCallback(text) {

message.image = Image.Text(text, 1, 1, 1);

message.sprite = Sprite(message.image);

message.sprite.SetPosition(screen.half.w - message.image.GetWidth() / 2, message.image.GetHeight());

}

Plymouth.SetMessageFunction(MessageCallback);

# Plymouth Administration

This section contains information regarding installation, data architecture, data structures & debugging.`

## Installation

## General Overview

### Controlling Plymouth: splash screen selection, logging, keyboard commands

### Debugging: inside X11, without X11, the booting live system

### Implementation: source file structure, communication local, communication extended

[include graphics: boot process link, plymouth-plymouthd communication, triggers]

./src

├── client # plymouth

├── libply # runtime library (utility functions)

├── libply-splash-core # splash plugin APIS

├── libply-splash-graphics # graphical splash plugin specific APIs

├── plugins # plugins as shared libraries

│ ├── controls # graphical widgets

│ │ └── label # text label for text output

│ ├── renderers # the different graphical backends

│ │ ├── drm

│ │ ├── frame-buffer

│ │ └── x11

│ └── splash # the different splash plugins

│ ├── details

│ ├── fade-throbber

│ ├── script

│ ├── space-flares

│ ├── text

│ ├── throbgress

│ └── two-step

└── upstart-bridge # code for interfacing with the upstart init system

./themes # example themes that use the various splash plugins

## Sources

development.txt

https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/development.txt

# Glossary of Terms

Sprite

Image

Script Library

Native Function

# plymouth User Commands

## Overview

The plymouth sends commands to a running plymouthd. This is used during the boot process to control the display of the graphical boot splash.

[figure here showing plymouth connecting to plymouthhd via a command]

### Options

The following options are understood. These options are supported for compatibility with the old rhgb-client interface, and have been replaced by the commands that are described in the next section.

The following options are understood:

|  |  |
| --- | --- |
| Option | Description |
| --help | Show summary of options. |
| --debug | Enable verbose debug logging. |
| --get-splash-plugin-path | Get directory where splash plugins are installed. |
| --newroot=<arg>STRING<arg> | Tell plymouthd that the new root filesystem is mounted. |
| --quit | Tell plymouthd to quit. |
| --ping | Check if plymouthd is running. |
| --has-active-vt | Check if plymouthd has an active vt. |
| --sysinit | Tell plymouthd root filesystem is mounted read-write. |
| --show-splash | Show the splash screen. |
| --hide-splash | Hide the splash screen. |
| --ask-for-password | Ask the user for a password. |
| --ignore-keystroke=<arg>STRING</arg> | Remove sensitivity to a keystroke. |
| --update=<arg>STRING</arg> | Tell plymouthd an update about boot progress. |
| --details | Tell plymouthd there were errors during boot. |
| --wait | Wait for plymouthd to quit. |

Commands

The following commands are understood:

**change-mode**

OPTION

Change the operation mode.

|  |  |
| --- | --- |
| Option | Description |
| --boot-up | Start the system up |
| --shutdown | Shutting the system up |
| --updates | Applying updates |

**system-update**

OPTION

Tell plymouthd about boot progress.

|  |  |
| --- | --- |
| Option | Description |
| --progress=INTEGER | The percentage progress of the updates |

**update**

OPTION

Tell plymouthd about boot status changes.

|  |  |
| --- | --- |
| Option | Description |
| --status=<arg>STRING</arg> | Tell plymouthd the current boot status |

**update-root-fs**

OPTION

Tell plymouthd about root filesystem changes.

|  |  |
| --- | --- |
| Option | Description |
| --new-root-dir=<arg>STRING</arg> | Root filesystem is about to change |
| --read-write | Root filesystem is no longer read-only |

**show-splash**

Tell plymouthd to show splash screen.

**hide-splash**

Tell plymouthd to hide splash screen.

**ask-for-password**

OPTION

Ask the user for a password.

|  |  |
| --- | --- |
| Option | Description |
| --command=STRING | Command to send password to via standard input |
| --prompt=STRING | Message to display when asking for password |
| --number-of-tries=INTEGER | Number of times to ask before giving up (requires –command) |
| --dont-pause-progress | Don't pause boot progress bar while asking |

**ask-question**

Ask the user a question.

|  |  |
| --- | --- |
| Option | Description |
| --command=STRING | Command to send the answer to via standard input |
| --prompt=STRING | Message to display when asking the question |
| --dont-pause-progress | Don't pause boot progress bar while asking |

**display-message**

OPTION

Display a message.

|  |  |
| --- | --- |
| Option | Description |
| --text=STRING | The message text |

**hide-message**

OPTION

Hide a message.

|  |  |
| --- | --- |
| Option | Description |
| --text=STRING | The message text |

**watch-keystroke**

OPTION

Become sensitive to a keystroke.

|  |  |
| --- | --- |
| Option | Description |
| --command=STRING | Command to send keystroke to via standard input |
| --keys=STRING | Keys to become sensitive to |

**ignore-keystroke**

OPTION

Remove sensitivity to a keystroke.

|  |  |
| --- | --- |
| Option | Description |
| --keys=STRING | Keys to remove sensitivity from |

**pause-progress**

Pause boot progress bar.

**unpause-progress**

Unpause boot progress bar.

**report-error**

Tell plymouthd there were errors during boot.

**deactivate**

Tell plymouthd to deactivate.

**reactivate**

Tell plymouthd to reactivate.

**quit**

OPTION

Tell plymouthd to quit.

|  |  |
| --- | --- |
| Option | Description |
| --retain-splash | Don't explicitly hide boot splash on exit |

## Sources

Plymouth1.xml

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouth1.xml>

# The plymouthd daemon / Splash Server

## Overview

The plymouthd daemon is usually run out of the initrd. It does the heavy lifting of the plymouth system, logging the session and showing the splash screen.

The plymouth is used to send commands to plymouthd that control its behavior.

## plymouthd / Splash server Usage

Usage: plymouth [OPTION…]

The following options are understood:

|  |  |
| --- | --- |
| Option | Description |
| --help | Show summary of options. |
| --attach-to-session | Redirect console messages from screen to log. |
| --no-daemon | Do not daemonize. |
| --debug | Output debugging information. |
| --debug-file=<string> | File to write debugging information to. |
| --mode=<string> | Set mode to either boot or shutdown. |
| --pid-file=<string> | Write the PID of the daemon to a file. |
| --kernel-command-line=<string> | Fake kernel command line to use. |
| --tty=STRING | TTY to use instead of default. |
| --no-boot-log | Do not write boot log file |
| --ignore-serial-consoles | Ignore serial consoles |

## Sources

plymouthd.xml

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouthd.xml>

# References: Core Documentation

Plymouth.xml

[High level overview]

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouth.xml>

development.txt

[Detailed overview: data architecture, data structures & debugging]

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/development.txt>

plymouth-set-default-theme.xml

[Changing the default plymouth theme]

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouth-set-default-theme.xml>

plymouthd.xml

[plymouthd binary: the plymouth daemon]

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouthd.xml>

Plymouth1.xml

[plymouth binary: user commands]

<https://gitlab.freedesktop.org/plymouth/plymouth/-/blob/main/docs/plymouth1.xml>

# References: freedesktop.org

What is Plymouth? freesktop.org

<https://www.freedesktop.org/wiki/Software/Plymouth/>

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Part 1

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Rstrode (Ray Strode).

<https://fedoraproject.org/wiki/Features/BetterStartup?rd=Releases/FeatureBetterStartup#Better_Startup_Experience_.28Graphical_Boot_Sequence.29>

Changes/FlickerFreeBoot

<https://fedoraproject.org/wiki/Changes/FlickerFreeBoot>

Artwork/F10Themes/InvinXble

<https://fedoraproject.org/wiki/Artwork/F10Themes/InvinXble>

# Appendix: Plymouth scripting

Introduction

This is a brief introduction to the Plymouth scripting language. The language has many points in common with JavaScript and C, so if you know those languages, little should be of surprise.

Basics

There are three types of supported comments:

# script style line comments

// C++ style line comments

/\* and C style block comments /\* which may be nested \*/ \*/

There are some basic objects: numbers, strings, hashes, functions and null.

Simple expression operations such as must be terminated with a semicolon, e.g.

a = b;

Multiple operations can be grouped using curly “{ }” brackets, e.g.

{

a = b;

c = a + 8;

}

Numbers can be operated with +, -, \*, / and %. Amend assignments (+=, /= etc.) are allowed, as are pre/post inc/decrement, e.g.

a \*= ++b;

Strings can be appended using + (even to numbers), e.g.

a = “A” + 7 + “B”; # gives a string “A7B”

Applying operations on incomparable operands gives a NULL, e.g.

a = “eight” / 2; # gives a NULL

Comparisons return a number 1, for true, or 0, for false, e.g.

a = (7 >= 6); # sets a to 1

b = ("Cat" == "Dog"); # sets b to 0

Conditional execution operations, “if/else”, “while” and “for” are supported, e.g.

if (a > 0)

{

a--;

b = 0;

}

else

a = 0

Conditions evaluate NULL, 0 and “” (empty string) to false, everything else is true, e.g.

while (a--)

b \*= a;

Or operations are lazily evaluated and return the first value that evaluates to true (And returns the first false value), e.g.

value = cached || (cached = do\_lookup (index)); # if cached is already set then it

is used, otherwise a lookup is executed

if (value > 0 && value < 10) valid == 1;

Hashes can be created by simply accessing their contents using a dot or [] brackets, e.g.

a.size = 1;

b = a[“size”]; # b equals 1

All hash indexing is done using strings even when using a number, e.g.

a[1] = 1;

a[“1”] = 2; # a[1] now equals 2

An auto incrementing hash can be constructed by defining a set between [] brackets, wth the indexing starting at zero, e.g.

a = [1, "c", [3, 2]]; # a[0] equals 1, a[1] equals "C", a[2][0] equals 3, a[2][1]

equals 2

To define a function use the “fun” keyword, e.g.

fun functionname (index, par1, par2)

{

if (index == 1)

return par1;

else

return par2;

}

Functions have local variables but if a global one exists, that is used instead. You can force the use of a local even though a global already exists (and vice versa) by using the "local" and "global" hashes, e.g.

val = 1; #global val = 1

fun functionname ()

{

val = 2; #global val = 2 (global exists, so is used)

local.val = 3; #local val = 3 (explicitly uses the local)

val = 4; #local val = 4 (local exists, so is used)

mval = 5; #local mval = 5 (neither global nor local exist, so a local

is created)

}

Plymouth Interaction

There are two basic Plymouth objects: Image and Sprite.

*Plymouth Images*

To create a new image you need to supply the filename of the image within the theme image directory to Image, e.g.

box\_image = Image ("box.png");

logo\_image = Image ("special://logo"); # "special://logo" is a special keyword which finds the logo image

You can also create images from text. These are useful to show text messages, e.g.

warning\_image = Image.Text ("System running FSCK. This may take some time");

The default is white text color, but you can supply additional parameters of: red, green, blue, alpha, fontname and alignment. Default font is "Sans 12" and default alignment is "left". Alignement is only useful for multi-line text, and its possible values are "left", "center", or "right".

warning\_image = Image.Text ("I feel faded", 0.8, 0.8, 0.8, 0.8, "Fixed");

The width and height of an image can be attained using GetWidth and GetHeight, e.g.

logo\_area = logo\_image.GetWidth() \* logo\_image.GetHeight();

An image can be rotated or scaled using Rotate and Scale, e.g.

upside\_down\_logo\_image = logo\_image.Rotate (3.1415); # the second paramiter is the

angle in radians

fat\_logo\_image = logo\_image.Scale (logo\_image.GetWidth() \* 2 , logo\_image.GetHeight

()) # make the image twice the width

*Plymouth Sprites*

To place an image on the screen, we use sprites.

To create a new sprite call Sprite, then set the image using SetImage, e.g.

my\_sprite = Sprite ();

my\_sprite.SetImage (fat\_logo\_image);

You can also set the image while creating the sprite by supplying it to the constructor e.g.

my\_sprite = Sprite (fat\_logo\_image);

The default placement of a new sprite is at the top left corner of the screen (at 0,0). To change the position call SetX and SetY, e.g.

my\_sprite.SetX (100);

my\_sprite.SetY (200);

If there are multiple sprites it us useful to decide which sprite should be shown above other. This is controlled using the Z component, the sprite with higher the Z is drawn on top.

background\_sprite.SetZ (-10);

foreground\_sprite.SetZ (10);

To set X, Y and Z in one call you can use SetPosition

logo\_sprite.Setposition(100, 100, 0); # place at X=100, Y=100, Z=0

SetOpacity can make sprites transparent (the default opacity is solid 1) or even invisible when set to 0 , e.g.

faded\_sprite.SetOpacity (0.5);

invisible\_sprite.SetOpacity (0);

It is also possible to get the X/Y/Z/Opcaity/Image properties of a sprite.

sprite.SetOpacity(sprite.GetOpacity()/2);

sprite.SetPosition(sprite.GetX()+1, sprite.Gety()+1, sprite.GetZ());

sprite.SetImage(sprite.GetImage().Rotate(0.1));

Knowing the size of the window can be useful to position sprites. This can be reached using Window.GetWidth and Window.GetHeight, e.g.

centred\_sprite.SetX (Window.GetWidth () / 2 - centred\_sprite.GetImage().GetWidth() / 2);

centred\_sprite.SetY (Window.GetHeight () / 2 - centred\_sprite.GetImage().GetHeight() / 2);

If the sprites do not fully cover the whole window, some of the sprite background will be exposed. To set the background colours use Window.SetBackground{Top,Bottom}Color. These take Red, Green and Blue values between 0 and 1, e.g.

Window.SetBackgroundTopColor (0, 0, 1); # Nice blue on top of the screen fading to

Window.SetBackgroundBottomColor (0.8, 0.2, 0.1); # an equally nice brown on the bottom

*Plymouth Callbacks*

Calling Plymouth.SetRefreshFunction with a function will set that function to be called up to 50 times every second, e.g.

fun refresh\_callback ()

{

time++;

}

Plymouth.SetRefreshFunction (refresh\_callback);

Other callbacks which can be hooked onto are:

* Plymouth.SetBootProgressFunction: the callback function is called with two numbers, time spent booting so far and the progress (between 0 and 1)
* Plymouth.SetRootMountedFunction: the callback function is called when a new root is mounted
* Plymouth.SetKeyboardInputFunction: the callback function is called with a string containing a new character entered on the keyboard
* Plymouth.SetUpdateStatusFunction: the callback function is called with the new boot status string
* Plymouth.SetDisplayPasswordFunction: the callback function is called when the display should display a password dialogue. First arg is prompt string, the second is the number of bullets.
* Plymouth.SetDisplayQuestionFunction: the callback function is called when the display should display a question dialogue. First arg is prompt string, the second is the entry contents.
* Plymouth.SetDisplayNormalFunction: the callback function is called when the display should return to normal
* Plymouth.SetMessageFunction: the callback function is called when new message should be displayed. First arg is message to display. e.g.

fun progress\_callback (time, progress)

{

progress\_status = "We have waited " + time + "seconds and we are "+ (progress \* 100) + "% though";

...

}

Plymouth.SetBootProgressFunction (progress\_callback);

To determine the mode of operation plymouth was started in use Plymouth.GetMode which returns a string of one of: "boot", "shutdown", "suspend", "resume" or unknown.

if (Plymouth.GetMode () == "suspend")

{

ShowSuspendBackground();

}

*Mathematics Functions*

There are some basic mathematics functions to

* Math.Abs: Absolute (positive) of a number
* Math.Min: The smaller of two numbers
* Math.Max: The greater of two numbers
* Math.Clamp: Takes 3 numbers, value, min and max. Function forces the value to be between min and max, otherwise either min or max are returned.
* Math.Pi: The value of Pi (3.14159...)
* Math.Cos: Cosine function
* Math.Sin: Sine function
* Math.Tan: Tangent function
* Math.ATan2: Arc tangent function taking 2 values (see "man atan2")
* Math.Sqrt: Square root
* Math.Int: Returns the rounded down integer.
* Math.Random: Returns a pseudo random number between 0 and 1.

Source

Plymouth Scripting Language

https://freedesktop.org/wiki/Software/Plymouth/Scripts/

# Appendix: Plymouth Version History

Source: Index of /software/plymouth/releases

https://www.freedesktop.org/software/plymouth/releases/

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Last Modified | Size | Description / Milestones |
| [plymouth-0.1.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.1.0.tar.bz2) | 5/30/2008 19:49 | 338K |  |
| [plymouth-0.1.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.1.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 25K |  |
| [plymouth-0.1.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.1.0.tar.bz2.sha1sum) | 5/30/2008 19:49 | 65 |  |
| [plymouth-0.2.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.2.0.tar.bz2) | 6/9/2008 18:18 | 352K |  |
| [plymouth-0.2.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.2.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 3.4K |  |
| [plymouth-0.2.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.2.0.tar.bz2.sha1sum) | 6/9/2008 18:18 | 65 |  |
| [plymouth-0.3.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.0.tar.bz2) | 6/12/2008 14:11 | 355K |  |
| [plymouth-0.3.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 1.8K |  |
| [plymouth-0.3.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.0.tar.bz2.sha1sum) | 6/12/2008 14:28 | 65 |  |
| [plymouth-0.3.1.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.1.tar.bz2) | 6/12/2008 16:18 | 354K |  |
| [plymouth-0.3.1.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.1.tar.bz2.NEWS) | 8/11/2009 18:58 | 166 |  |
| [plymouth-0.3.1.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.1.tar.bz2.sha1sum) | 6/12/2008 16:18 | 65 |  |
| [plymouth-0.3.2.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.2.tar.bz2) | 6/16/2008 19:07 | 356K |  |
| [plymouth-0.3.2.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.2.tar.bz2.NEWS) | 8/11/2009 18:58 | 1.4K |  |
| [plymouth-0.3.2.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.3.2.tar.bz2.sha1sum) | 6/16/2008 19:07 | 65 |  |
| [plymouth-0.4.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.4.0.tar.bz2) | 6/22/2008 5:01 | 358K |  |
| [plymouth-0.4.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.4.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 1.8K |  |
| [plymouth-0.4.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.4.0.tar.bz2.sha1sum) | 6/22/2008 5:01 | 65 |  |
| [plymouth-0.4.5.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.4.5.tar.bz2) | 6/26/2008 20:57 | 363K |  |
| [plymouth-0.4.5.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.4.5.tar.bz2.NEWS) | 8/11/2009 18:58 | 1.2K |  |
| [plymouth-0.4.5.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.4.5.tar.bz2.sha1sum) | 6/26/2008 20:58 | 65 |  |
| [plymouth-0.5.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.5.0.tar.bz2) | 7/1/2008 19:23 | 364K |  |
| [plymouth-0.5.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.5.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 654 |  |
| [plymouth-0.5.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.5.0.tar.bz2.sha1sum) | 7/1/2008 19:24 | 65 |  |
| [plymouth-0.6.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.6.0.tar.bz2) | 11/24/2008 22:57 | 751K |  |
| [plymouth-0.6.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.6.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 13K |  |
| [plymouth-0.6.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.6.0.tar.bz2.sha1sum) | 11/24/2008 22:58 | 65 |  |
| [plymouth-0.7.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.0.tar.bz2) | 8/11/2009 17:48 | 968K |  |
| [plymouth-0.7.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.0.tar.bz2.NEWS) | 8/11/2009 18:58 | 13K |  |
| [plymouth-0.7.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.0.tar.bz2.sha1sum) | 8/11/2009 17:48 | 65 |  |
| [plymouth-0.7.1.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.1.tar.bz2) | 8/25/2009 17:48 | 968K |  |
| [plymouth-0.7.1.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.1.tar.bz2.NEWS) | 8/25/2009 17:48 | 767 |  |
| [plymouth-0.7.1.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.1.tar.bz2.sha1sum) | 8/25/2009 17:48 | 65 |  |
| [plymouth-0.7.2.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.2.tar.bz2) | 9/28/2009 13:23 | 1.0M |  |
| [plymouth-0.7.2.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.2.tar.bz2.NEWS) | 9/28/2009 13:22 | 3.3K |  |
| [plymouth-0.7.2.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.7.2.tar.bz2.sha1sum) | 9/28/2009 13:23 | 65 |  |
| [plymouth-0.8.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.0.tar.bz2) | 3/24/2010 16:45 | 1.0M |  |
| [plymouth-0.8.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.0.tar.bz2.NEWS) | 3/24/2010 16:47 | 15K |  |
| [plymouth-0.8.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.0.tar.bz2.sha1sum) | 3/24/2010 16:46 | 65 |  |
| [plymouth-0.8.1.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.1.tar.bz2) | 3/24/2010 21:07 | 1.0M |  |
| [plymouth-0.8.1.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.1.tar.bz2.NEWS) | 3/24/2010 21:08 | 805 |  |
| [plymouth-0.8.1.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.1.tar.bz2.sha1sum) | 3/24/2010 21:07 | 65 |  |
| [plymouth-0.8.2.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.2.tar.bz2) | 4/12/2010 17:48 | 1.0M |  |
| [plymouth-0.8.2.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.2.tar.bz2.NEWS) | 4/12/2010 17:48 | 1.3K |  |
| [plymouth-0.8.2.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.2.tar.bz2.sha1sum) | 4/12/2010 17:48 | 65 |  |
| [plymouth-0.8.3.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.3.tar.bz2) | 5/6/2010 18:01 | 1.0M |  |
| [plymouth-0.8.3.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.3.tar.bz2.NEWS) | 5/6/2010 18:01 | 2.5K |  |
| [plymouth-0.8.3.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.3.tar.bz2.sha1sum) | 5/6/2010 18:03 | 65 |  |
| [plymouth-0.8.4.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.4.tar.bz2) | 3/21/2012 15:12 | 1.1M |  |
| [plymouth-0.8.4.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.4.tar.bz2.NEWS) | 3/21/2012 15:13 | 10K |  |
| [plymouth-0.8.4.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.4.tar.bz2.sha1sum) | 3/21/2012 15:12 | 65 |  |
| [plymouth-0.8.5.1.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.5.1.tar.bz2) | 6/6/2012 20:25 | 1.1M |  |
| [plymouth-0.8.5.1.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.5.1.tar.bz2.NEWS) | 6/6/2012 20:25 | 814 |  |
| [plymouth-0.8.5.1.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.5.1.tar.bz2.sha1sum) | 6/6/2012 20:25 | 67 |  |
| [plymouth-0.8.5.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.5.tar.bz2) | 6/6/2012 19:57 | 1.1M |  |
| [plymouth-0.8.5.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.5.tar.bz2.NEWS) | 6/6/2012 19:58 | 3.3K |  |
| [plymouth-0.8.5.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.5.tar.bz2.sha1sum) | 6/6/2012 19:58 | 65 |  |
| [plymouth-0.8.6.1.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.6.1.tar.bz2) | 7/10/2012 14:24 | 1.1M |  |
| [plymouth-0.8.6.1.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.6.1.tar.bz2.NEWS) | 7/10/2012 14:25 | 117 |  |
| [plymouth-0.8.6.1.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.6.1.tar.bz2.sha1sum) | 7/10/2012 14:25 | 67 |  |
| [plymouth-0.8.6.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.6.tar.bz2) | 7/9/2012 16:12 | 1.1M |  |
| [plymouth-0.8.6.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.6.tar.bz2.NEWS) | 7/9/2012 16:13 | 405 |  |
| [plymouth-0.8.6.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.6.tar.bz2.sha1sum) | 7/9/2012 16:13 | 65 |  |
| [plymouth-0.8.8.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.8.tar.bz2) | 10/26/2012 15:04 | 1.1M |  |
| [plymouth-0.8.8.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.8.tar.bz2.NEWS) | 10/26/2012 15:10 | 956 |  |
| [plymouth-0.8.8.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.8.8.tar.bz2.sha1sum) | 10/26/2012 15:09 | 65 |  |
| [plymouth-0.9.0.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.0.tar.bz2) | 5/20/2014 17:51 | 1.1M |  |
| [plymouth-0.9.0.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.0.tar.bz2.NEWS) | 5/20/2014 17:53 | 2.1K |  |
| [plymouth-0.9.0.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.0.tar.bz2.sha1sum) | 5/20/2014 17:52 | 65 |  |
| [plymouth-0.9.2.tar.bz2](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.2.tar.bz2) | 3/17/2015 18:58 | 1.2M |  |
| [plymouth-0.9.2.tar.bz2.NEWS](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.2.tar.bz2.NEWS) | 3/17/2015 18:59 | 1 |  |
| [plymouth-0.9.2.tar.bz2.sha1sum](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.2.tar.bz2.sha1sum) | 3/17/2015 18:59 | 65 |  |
| [plymouth-0.9.3.tar.xz](https://www.freedesktop.org/software/plymouth/releases/plymouth-0.9.3.tar.xz) | 8/9/2017 13:06 | 1.1M |  |

# Appendix: Plymouth Script Libraries & Native Functions

https://github.com/freedesktop/plymouth/search?q=script\_add\_native\_function

C Script Source Files: Libraries

|  |  |  |
| --- | --- | --- |
| Name | Description | Notes |
| script-lib-math.c |  |  |
| script-lib-plymouth.c |  |  |
| script-lib-sprite.c |  |  |
| script-lib-image.c |  |  |
| script-lib-string.c |  |  |
| script.c (not library???) |  |  |
| script.h (not library???) |  |  |

Script Library Native Functions

script-lib-math.c

|  |  |  |
| --- | --- | --- |
| Name | Native Function |  |
| script-lib-math.c | “Cos”, “value” |  |
|  | “Sin”, “value” |  |
|  | “Tan”, “value” |  |
|  | “ATan2”, “value” |  |
|  | “Sqrt”, “value” |  |
|  | “Int”, “value” |  |
|  | “Random”, “value” |  |

script-lib-plymouth.c

|  |  |  |
| --- | --- | --- |
| Name | Native Function |  |
| script-lib-plymouth.c | "SetRefreshFunction", "function" |  |
|  | "SetRefreshRate", "value" |  |
|  | "SetBootProgressFunction", "function" |  |
|  | "SetRootMountedFunction", "function" |  |
|  | "SetKeyboardInputFunction", "function" |  |
|  | "SetUpdateStatusFunction", "function" |  |
|  | "SetDisplayNormalFunction", "function" |  |
|  | "SetDisplayPasswordFunction", "function" |  |
|  | "SetDisplayQuestionFunction", "function" |  |
|  | "SetDisplayMessageFunction", "function" |  |
|  | "SetHideMessageFunction", "function" |  |
|  | "SetQuitFunction", "function" |  |
|  | "GetMode" |  |
|  | "SetSystemUpdateFunction", "function" |  |

script-lib-sprite.c

|  |  |  |
| --- | --- | --- |
| Name | Native Function |  |
| script-lib-sprite.c | "\_New" |  |
|  | "GetImage" |  |
|  | "SetImage", "image", |  |
|  | "GetX" |  |
|  | "SetX", "value" |  |
|  | "GetY" |  |
|  | "SetY", "value" |  |
|  | "GetZ" |  |
|  | "SetZ", "value" |  |
|  | "GetOpacity" |  |
|  | "SetOpacity", "value" |  |
|  | "GetWidth", "window" |  |
|  | "GetHeight", "window" |  |
|  | "GetX", "window" |  |
|  | "GetY", "window" |  |
|  | "SetX", "window" |  |
|  | "SetY", "window" |  |
|  | "SetBackgroundTopColor", "red", "green", "blue" |  |
|  | "SetBackgroundBottomColor", "red", "green", "blue" |  |

script-lib-image.c

|  |  |  |
| --- | --- | --- |
| Name | Native Functions |  |
| script-lib-image.c | "\_New"; "filename" |  |
|  | "\_Rotate"; "angle" |  |
|  | "\_Crop"; "x", "y", "width", "height" |  |
|  | "\_Scale"; "width", "height" |  |
|  | "\_Tile"; "width", "height" |  |
|  | "GetWidth" |  |
|  | "GetHeight" |  |
|  | "\_Text"; "text", "red", "green", "blue", "alpha", "font", "align" |  |
|  |  |  |
|  |  |  |

script-lib-string.c

|  |  |  |
| --- | --- | --- |
| Name | Native Functions |  |
| script-lib-string.c | "CharAt"; "index" |  |
|  | "SubString"; "start", "end", |  |

script.c

|  |  |  |
| --- | --- | --- |
| Name | Native Functions |  |
| script.c | script\_native\_function\_t; ply\_list\_t | Note: Not sure about how to document this???  Are script.c & script.h libraries whose functions are used to build “new functions” via script\_add\_native\_functions??? |

script.h

|  |  |  |
| --- | --- | --- |
| Name | Native Functions |  |
| script.h |  |  |

Sources

script-lib-math.c

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-math.c>

script-lib-plymouth.c

https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-plymouth.c

script-lib-sprite.c

https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-sprite.c

script-lib-image.c

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-image.c>

script-lib-string.c

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-string.c>

script.c

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script.c>

script.h

https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script.h

# Appendix: Script Library “Script” Files

Charlie Brej

|  |  |  |
| --- | --- | --- |
| Name | Description | Notes |
| script-lib-math.script |  |  |
| script-lib-plymouth.script |  |  |
| script-lib-sprite.script |  |  |
| script-lib-image.script |  |  |
| script-lib-string.script |  |  |

script-lib-math.script

|  |  |  |
| --- | --- | --- |
| Name | Compatibility Function |  |
| Math.Abs | MathAbs | Math.Abs = fun (value)  {  if (value < 0) return -value;  return value;  }; |
| Math.Min | MathMin | Math.Min = fun (value\_a, value\_b)  {  if (value\_a < value\_b) return value\_a;  return value\_b;  }; |
| Math.Max | MathMax | Math.Max = fun (value\_a, value\_b)  {  if (value\_a > value\_b) return value\_a;  return value\_b;  }; |
| Math.Clamp | MathClamp | Math.Clamp = fun (value, min, max)  {  if (value < min) return min;  if (value > max) return max;  return value;  }; |
| Math.Pi = 3.14159265358979323846; | MathPi |  |
| Math.Cos | MathCos |  |
| Math.Sin | MathSin |  |
| Math.Tan | MathTan |  |
| Math.ATan2 | MathATan2 |  |
| Math.Sqrt | MathSqrt |  |
| Math.Int | MathInt |  |

script-lib-plymouth.script

|  |  |  |
| --- | --- | --- |
| Name | Compatibility Function |  |
| Plymouth.SetDisplayMessageFunction | Plymouth.SetMessageFunction |  |
|  |  |  |
| Plymouth.SetRefreshFunction | PlymouthSetRefreshFunction |  |
| Plymouth.SetBootProgressFunction | PlymouthSetBootProgressFunction |  |
| Plymouth.SetRootMountedFunction | PlymouthSetRootMountedFunction |  |
| Plymouth.SetKeyboardInputFunction | PlymouthSetKeyboardInputFunction |  |
| Plymouth.SetUpdateStatusFunction | PlymouthSetUpdateStatusFunction |  |
| Plymouth.SetDisplayNormalFunction | PlymouthSetDisplayNormalFunction |  |
| Plymouth.SetDisplayPasswordFunction | PlymouthSetDisplayPasswordFunction |  |
| Plymouth.SetDisplayQuestionFunction | PlymouthSetDisplayQuestionFunction |  |
| Plymouth.SetMessageFunction | PlymouthSetMessageFunction |  |
| Plymouth.SetQuitFunction | PlymouthSetQuitFunction |  |
| Plymouth.GetMode | PlymouthGetMode |  |

script-lib-sprite.script

|  |  |  |
| --- | --- | --- |
| Name | Compatibility Function |  |
| Sprite.SetPosition |  | Sprite.SetPosition = fun (x, y, z)  {  this.SetX(x);  this.SetY(y);  this.SetZ(z);  }; |
|  |  | Sprite |= fun (image)  {  new\_sprite = Sprite.\_New() | [] | Sprite;  if (image) new\_sprite.SetImage(image);  return new\_sprite;  }; |
| Compatibility Functions (Not sure how these relate to the script file and/or other files)??? | | |
|  |  | fun SpriteNew ()  {  return Sprite ();  } |
|  |  | fun SpriteSetImage (sprite, image)  {  return sprite.SetImage (image);  } |
|  |  | fun SpriteSetX (sprite, value)  {  return sprite.SetX (value);  } |
|  |  | fun SpriteSetY (sprite, value)  {  return sprite.SetY (value);  } |
|  |  | fun SpriteSetZ (sprite, value)  {  return sprite.SetZ (value);  } |
|  |  | fun SpriteSetPosition (sprite, x, y, z)  {  sprite.SetX(x);  sprite.SetY(y);  sprite.SetZ(z);  } |
|  |  | fun SpriteSetOpacity (sprite, value)  {  return sprite.SetOpacity (value);  } |
|  |  | fun SpriteWindowGetWidth ()  {  return Window.GetWidth ();  } |
|  |  | fun SpriteWindowGetHeight ()  {  return Window.GetHeight ();  } |
|  |  | fun SpriteWindowSetBackgroundTopColor (red, green, blue)  {  return Window.SetBackgroundTopColor (red, green, blue);  } |
|  |  | fun SpriteWindowSetBackgroundBottomColor (red, green, blue)  {  return Window.SetBackgroundBottomColor (red, green, blue);  } |

script-lib-image.script

|  |  |  |
| --- | --- | --- |
| Name | Native Functions |  |
| Image.Adopt |  | Image.Adopt = fun (raw\_image)  {  if (raw\_image) return raw\_image | [] | Image;  else return NULL;  }; |
| Image.Rotate |  | Image.Rotate = fun (angle)  {  return Image.Adopt (this.\_Rotate(angle));  }; |
| Image.Crop |  | Image.Crop = fun (x, y, width, height)  {  return Image.Adopt (this.\_Crop(x, y, width, height));  }; |
| Image.Scale |  | Image.Scale = fun (width, height)  {  return Image.Adopt (this.\_Scale(width, height));  }; |
| Image.Tile |  | Image.Tile = fun (width, height)  {  return Image.Adopt (this.\_Tile(width, height));  }; |
| Image.Text |  | Image.Text = fun (text, red, green, blue, alpha, font, align)  {  return Image.Adopt (Image.\_Text (text, red, green, blue, alpha, font, align));  }; |
|  |  | Image |= fun (filename)  {  return Image.Adopt (Image.\_New(filename));  };  Note: not sure about this one. |
| Compatibility Functions (Not sure how these relate to the script file and/or other files)??? | | |
|  |  | fun ImageNew (filename)  {  return Image (filename);  } |
|  |  | fun ImageScale (image, width, height)  {  return image.Scale (width, height);  } |
|  |  | fun ImageRotate (image, angle)  {  return image.Rotate (angle);  } |
|  |  | fun ImageGetWidth (image)  {  return image.GetWidth ();  } |
|  |  | fun ImageGetHeight (image)  {  return image.GetHeight ();  } |

script-lib-string.script

|  |  |  |
| --- | --- | --- |
| Name | Native Functions |  |
|  |  | String |= fun(text)  {  return text | global.String;  }; |
|  |  |  |

Sources

https://stackoverflow.com/questions/67373453/plymouth-scripting-language-manual

script-lib-math.script

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-math.script>

/script-lib-plymouth.script

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-plymouth.script>

script-lib-sprite.script

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-sprite.script>

script-lib-image.script

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-image.script>

script-lib-string.script

<https://github.com/freedesktop/plymouth/blob/fbe2b79da56cf0a4b7ed5ca4754449ab4875b40f/src/plugins/splash/script/script-lib-string.script>

# Appendix: C for Linux & Plymouth

C File Naming Extensions

|  |  |  |
| --- | --- | --- |
| File Extension | Type of File | Example |
| .c | C source file | techonthenet.c |
| *.cc* | *C++ source file* | *techonthenet.cc* |
| *.cpp* | *C++ source file* | *techonthenet.cpp* |
| *.o* | *C/C++ object file* | techonthenet.o |
| .h | C/C++ header file | techonthenet.h |

Tech on the Net

C Lanuage: File Naming

<https://www.techonthenet.com/c_language/file_naming.php>

Tech on the Net

C Language: C Tutorial

<https://www.techonthenet.com/c_language/index.php>

C Programming Tutorial

<https://www.tutorialspoint.com/cprogramming/c_file_io.htm>

**Environment**

Two Tools:

Text Editor

C Compiler

**Installation on Linux**

**Contacts**

|  |  |  |
| --- | --- | --- |
| Hans de Goede | hdegoede@redhat.com | Plymouth documentation. Github. |
| Frédéric Pierret | @fepitre (Qubes OS forum) |  |
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