## Testlkj

## Flkjfdlkjf

## Fdlkjfsslkjs

# Circle

## Primary Classes

### Kernel Members

#### CMemorySystem

#### CActLED

#### CKernelOptions

#### CDeviceNameService

#### CScreenDevice

#### CMiniUartDevice

#### CExceptionHandler

#### CInterruptSystem

#### CTimer

#### CSerialDevice

#### CLogger

#### CScheduler

#### CDWHCIDevice

#### CTouchScreenDevice

#### CMultiCoreSupport

### Primary Used

#### CString

#### CGPIOPin

#### CGPIOClock

#### CGPIOManager

#### CI2CMaster

#### CMachineInfo

#### CSpinLock

### CDevice

#### CUSBMIDIDevice

#### CUSBBluetoothDevice

#### CUSBBulkOnlyMassStorageDevice

#### CUSBCDCEthernetDevice

#### CUSBHIDDevice

#### CUSBMouseDevice

#### CUSBKeyboardDevice

#### CMouseDevice

### Primary Available

#### Ctime

#### CCPUThrottle

#### CI2CSlave

#### CSPIMaster

#### CSPIMasterAUX

#### CSPIMasterDMA

## Low Level

### Low Level Likely/Possibly Used

#### CMouseBehaviour

#### CClassAllocator

#### CDMAChannel

#### CGPIOPinFIQ

#### CPageTable

#### CPtrArray

#### CPtrList

#### CSynchronizationEvent

#### CTask

#### CCharGenerator

#### CTranslationTable

#### CBcmFrameBuffer

#### CBcmMailBox

#### CbcmPropertyTags

### Not Used to my knowledge

#### CBcmRandomNumberGenerator

#### CNullDevice

#### CUserTimer

#### CVirtualGPIOPin

#### CTracer

#### Unused Audio System

##### CSoundBaseDevice

##### CI2SSoundBaseDevice

##### CPWMOutput

##### CPWMSoundDevice

##### CPWMSoundBaseDevice

### USB library Hidden

#### CDWHCIDevice

#### CDWHCIFrameScheduler

#### CDWHCIFrameSchedulerNonPeriodic

#### CDWHCIFrameSchedulerNoSplit

#### CDWHCIFrameSchedulerPeriodic

#### CDWHCIRegister

#### CDWHCIRootPort

#### CDWHCITransactionQueue

#### CDWHCITransferStageData

#### CLAN7800Device

#### CSMSC951xDevice

#### CMACAddress

#### CNetDevice

#### CUSBConfigurationParser

#### CUSBDevice

#### CUSBDeviceFactory

#### CUSBEndpoint

#### CUSBFunction

#### CUSBHostController

#### CUSBRequest

#### CUSBStandardHub

#### CUSBString

### USB Library not used

#### CUSBGamePadDevice

#### CUSBGamePadPS3Device

#### CUSBGamePadPS4Device

#### CUSBGamePadStandardDevice

#### CUSBGamePadSwitchProDevice

#### CUSBGamePadXbox360Device

#### CUSBGamePadXboxOneDevice

#### CUSBPrinterDevice

### Input library (probably hidden)

#### CConsole

#### CKeyboardBehaviour

#### CKeyboardBuffer

#### CKeyMap

#### CLineDiscipline

### FS library (possibly used / usable)

#### CPartition

#### CPartitionManager

### Net library

#### CARPHandler

#### CChecksumCalculator

#### CDHCPClient

#### CDNSClient

#### CHTTPClient

#### CHTTPDaemon

#### CICMPHandler

#### CIPAddress

#### CLinkLayer

#### CMQTTClient

#### CMQTTReceivePacket

#### CMQTTSendPacket

#### CNetConfig

#### CNetConnection

#### CNetDeviceLayer

#### CNetQueue

#### CNetSocket

#### CNetSubSystem

#### CNetTask

#### CNetworkLayer

#### CNTPClient

#### CNTPDaemon

#### CRetransmissionQueue

#### CRetransmissionTimeoutCalculator

#### CRouteCache

#### CSocket

#### CSysLogDaemon

#### CTCPConnection

#### CTCPRejector

#### CTFTPDaemon

#### CTransportLayer

#### CUDPConnection

## Not Used

### FAT FS library (unused)

#### CFAT

#### CFATInfo

#### CFATDirectory

#### CFATFileSystem

#### CFATCache

### Bluetooth library (unused)

#### CBTDeviceManager

#### CBTHCILayer

#### CBTInquiryResults

#### CBTLogicalLayer

#### CBTQueue

#### CBTSubSystem

#### CBTTask

#### CBTUARTTransport

# Addons

## Used

### SDCard

### fatfs

### Generic FAT file system module with LFN support (by ChaN)

### linux (parts may be used by other addons)

### vc4 (used by other addons?)

### tftpfileserver

### ugui

## Not Used

### dio

### Library providing access to the spi\_dio board by BitWizard.nl

### display

### Library providing drivers for displays (e.g. LCD dot-matrix)

### OneWire

### Support library for 1-wire devices (by Paul Stoffregen)

### Properties

### Library providing access to configuration properties saved in a file

### qemu

### Demos for using Circle with QEMU

### Linux kernel device driver emulation (used by HDMI sound and accelerated graphics)

### rtc

### Library providing drivers for real-time clocks (RTC)

### Driver for SD card access using the internal EMMC controller (by John Cronin)

### sensor

### Drivers for I2C and other sensor devices

### Spectrum

### ZX Spectrum screen emulator class (by Jose Luis Sanchez)

### TFTP file server supporting kernel image and firmware updates

### Digital oscilloscope sample using the uGUI library (by Achim Doebler)

### HDMI sound and accelerated graphics (EGL, OpenGL ES, OpenVG, Dispmanx) support

### webconsole

### Library providing remote access to the system log using a web browser

### WS28XX

### Driver for WS28XX controlled LED stripes (by Arjan van Vught)

# Audio System

## AudioControl

## AudioStream

## BCMPCM

## Wire/Arduino support/etc

## Codecs

### AudioControl

### AudioControlCS42448

### AudioControlSGTL5000

### AudioControlSGTL5000slave

### AudioControlWM8731

### AudioControlWM8731slave

## Hardware Devices

### AudioInputI2S

### AudioInputI2Sslave

### AudioOutputI2S

### AudioOutputI2Sslave

### AudioInputTDM

### AudioOutputTDM

### AudioInputTeensyQuad

### AudioOutputTeensyQuad

## Effects/Other

### AudioEffectFreeverb

### AudioEffectReverb

### AudioSynthWaveformSine

### AudioSynthWaveformSineHires

### AudioSynthWaveformSineModulated

### AudioProbe

### AudioRecorder

# UI (current)

## UGUI Addon

### CUIFramerwork (currently CUGUI c++ class)

### CWindow

### CButton

### CCheckbox

### CTextbox

## App Framework

### CApplication

### CMenu

### CTitleBar

## Widgits

### CVuMeter

### CDialogSelectDevice

### CButtonDeviceSelect

### CTrackDisplay

### CRecordTrack

## Test Application

### CWindowStatus

### CWindowRecord

### CWindowMain

# Class Hierarchy

## wsEvent

has an object type

has an object id within the type

has an event type

has an event id

has a 32 bit event data

- u32 usually

- can be float

## wsObject

has type

has id

has parent

has doubly linked list of children

### wsEventHandler …

## wsEventHandler : CObject

### wsWindow ….

### wsAudioControl …

### AudioObject ...

## wsWindowObject

has relative coordinates

has fill, outline, 3d, and other rendering characteriscs

has separate virtual and visible areas, start offsets, etc

has onDraw(), onFocus(), etc, methods for event handling

has window management sub objects inluding scrollbars (onScroll, etc)

has drawing management members like z\_order, clip\_regions, etc.

can be bound to an Audio object and control id

### wsPopupWindow

### wsTopLevelWindow

has title bar sub-window

has status bar sub-window

#### wsFrame

#### wsDialog

##### wsAlertDialog

##### wsFileDialog

##### wsProgressDialog

### wsSplitterWindow

### wsTipWindow

### wsControl

#### wsAtomicControl

##### wsStaticFill

##### wsStaticLine

##### wsStaticText

##### wsButton

inlcudes text and/or bitmap

includes toggle states

###### wsMenuButton

has a command id

can be a separator

can be part of a wsMenu

##### wsCheckBox (square or round)

includes optional text

includes toggle states

can be part of a wsCheckBoxList

##### wsNumericControl

###### wsProgressBar (display)

###### wsVUMeter (display)

###### wsRotaryControl

###### wsSlider

wsScrollbar

a slider specifically attached to a window

##### wsTextControl

###### wsNumericTextControl

an editable integer or floating point number

##### wsBitmap

###### wsImage

wsImagePNG

wsImageJPG

wsImageGIF

wsImageBMP

#### Combo Objects (wsCombObject)

##### wsCheckBoxList

A list of related checkboxes (i.e. mutually exclusive)

##### wsComboControl

A control that also includes a button an a pop wsListControl

##### wsComboBox

A wsCombObject with API optimized for strings

##### wsListControl

A list of atomic objects, probably static text, menu buttons, etc

May be horizontal or vertical

a group of objects organized into a visual group

may have an outline, all be enabled at once, etc

##### wsTextListControl

Vertial list control optimized for strings

##### wsSpinner

A control that contains buttons to increment and decrement a value

###### wsNumericSpinner

one that works with numbers

###### wsListSpinner

one that works with a list of controls (i.e. text or other objects)

##### wsTreeControl

A list of objects organized and manipulated hiearchially

##### wsMenu

A list of wsMenuButtons under a button

can be vertical or horizontal

##### wsMenuTree

A hiearchial menu tree under a single button

can be vertical or horizontal

##### wsMenuBar

A list of wsMenuTrees forming the mnu system of a program

can be vertical or horizontal

#### High Level Objects

##### wsDirCtrl

a control that allows for the selection of, and/or creation and deletion of, directories in the file system

may allow for selection of multiple devices

may be implemented as a tree and/or general file managerl

##### wsFileCtrl

a control that allows for the selection, and/or naming of new and deletion of old, files in a given directory

##### wsRichTextCtrl

#### App Specific

##### wsTitleBar

Combines a possible menu bar, title, and list of app defined controls

Can be tied to specific windows and understands window activation context

## AudioControl

## AudioObject

Can be bound to one or more

Can transmit and receive control events

Still haven’t captured the nature of the relationsihp of these codecs to the IO Devices,

### AudioI2SDevice (codecs)

i2sDevices typically inititalize the BCMPCM and present a control interface

#### AudioControlCS42448 (slave, though it generates MCLK)

requires AudioInputTDM and AudioOutputTDM

#### AudioControlSGTL5000master

requires AudioInputI2Sslave and AudioOutputI2Sslave

#### AudioControlSGTL5000 (not supported on rPi)

#### AudioControlWM8731master

requires AudioInputI2Sslave and AudioOutputI2Sslave

#### AudioControlWM8731 (rpi is not recommended as I2S master)

requires AudioInputI2S and AudioOutputI2S

### AudioStream

I2S streams typically start and stop the BCMPCM an typically have no controls, whereas all other AudioStreams typically have controls. Somehow it seems that the input and output devices should inherit the input/output controls of the codec for their half. It seems that there would be no useful controls on a codec itself, except for it’s setup (sample rate, etc).

#### AudioI2SStream

These are all related to, or are, an AudioI2SDevice

##### AudioInputI2S

##### AudioInputI2Sslave

##### AudioOutputI2S

##### AudioOutputI2Sslave

##### AudioInputTDM (slave)

##### AudioOutputTDM (slave)

##### AudioInputTeensyQuad : AudioI2SDevice

makes direct use of BCMPCM

##### AudioOutputTeensyQuad : AudioI2SDevice

makes direct use of BCMPCM

#### AudioEffectFreeverb

#### AudioEffectReverb

#### AudioSynthWaveformSine

#### AudioSynthWaveformSineHires

#### AudioSynthWaveformSineModulated

#### AudioProbe

#### AudioRecorder

# Class and EventIDs