Treadmill Chirp Framework API Description

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Overview

The speed and incline of certain treadmills can be controlled by applying audio "chirps" to an input port on the treadmill. This iOS Universal Framework allows the creation of those audio chirps for development, debugging, testing, and release of applications that use audio chirps to control treadmills. This single Universal Framework works for iPhone, iTouch, and iPad hardware running iOS 8 or newer. It also works for all Xcode 6 or newer simulators.

The developer simply calls makeChirp() to obtain a buffer that holds an audio "chirp" commanding the treadmill to the specified speed and incline (it also returns the number of bytes of the data in the buffer). The audio in the buffer is formatted as a standard WAV file. It can be written to an actual file and used later, or the buffer can be passed directly to the audio subsystem and played immediately.

Stopping the treadmill could be accomplished by calling makeChirp() with a speed and incline of zero. However, it seems some treadmills require a special command to release operation and control back to the front panel. makeStopChirp() creates the needed special command. All workout sessions should end with the chirp created by makeStopChirp().

The user should call openChirpLibrary() prior to using makeChirp() or makeStopChirp(). openChirpLibrary() allocates a buffer (the one that holds the chirp audio). Do not attempt to free this buffer. Proper memory management is accomplished by calling closeChirpLibrary() when usage of the Framework is complete.

Note:
While this Framework is written for, and used in, iPhone Apps - it is written in standard 'C', not Objective C.

Functions In The Framework

uint32_t getChirpLibraryVersion (void)

Description

Returns the version of the Chirp API being used.

Inputs

None

Outputs

None

Returned

The version of the API you are using.

uint32_t openChirpLibrary(void)

Description

Initializes the Chirp Framework for use.

Part of this is malloc() of a buffer. This buffer is used to return the chirp audio.

Inputs

None

Outputs

None

Returned

ChirpERR_NONE	No error detected
ChirpERR_LIBOPEN	The Chirp Framework is already open
ChirpERR_MALLOCFAILURE	An error was encountered while allocating memory

uint32_t closeChirpLibrary(void)

Description

Closes the Framework and frees allocated memory.

Inputs

None

Outputs

None

Returned

ChirpERR_NONE	No error detected
ChirpERR_LIBCLOSED	The Chirp Framework is not open

uint32_t makeChirp(float speed, float incline, uint32_t* bufSize, uint8_t chirpBuffer)**

Description

Creates an audio chirp that will command the treadmill to the specified speed and incline

Inputs

speed	The speed of this segment in Miles Per Hour
incline	The incline of this segment in degrees

Outputs

bufSize	The caller provides a pointer to a 32 bit unsigned integer. If some error is returned, the 32 bit value is unspecified. If ChirpERR_NONE is returned, the 32 bit unsigned integer will contain the number of bytes of data in the returned chirpBuffer.
chirpBuffer	The caller provides a pointer to a "buffer pointer". If some error is returned, the content of the buffer pointer is unspecified. If ChirpERR_NONE is returned, the buffer pointer will be pointing to the start of the data that constitutes a "WAV" formatted audio file. Playing this audio file into a compatible treadmill will command the treadmill to the specified speed and incline. Note on memory management: Function returns a buffer that was allocated when the Chirp Framework was opened via openChirpLibrary(). The buffer will be freed by calling closeChirpLibrary().

Returned

ChirpERR_NONE	No error detected
ChirpERR_BADSPEED	An illegal speed was requested
ChirpERR_BADINCLINE	An illegal incline was requested
ChirpERR_LIBCLOSED	The Chirp Framework has not been opened

uint32_t makeStopChirp(uint32_t* bufSize, uint8_t chirpBuffer)**

Description

Creates an audio chirp commanding the treadmill to stop and return control to the front panel. Incline remains at the most recent setting.

Inputs

None

Outputs

bufSize	The caller provides a pointer to a 32 bit unsigned integer. If some error is returned, the 32 bit value is unspecified. If ChirpERR_NONE is returned, the 32 bit unsigned integer will contain the number of bytes of data in the returned chirpBuffer.
chirpBuffer	The caller provides a pointer to a "buffer pointer". If some error is returned, the content of the buffer pointer is unspecified. If ChirpERR_NONE is returned, the buffer pointer will be pointing to the start of the data that constitutes a "WAV" formatted audio file. Playing this audio file into a compatible treadmill will command the treadmill to stop and return control to the front panel. Note on memory management: Function returns a buffer that was allocated when the Chirp Framework was opened via openChirpLibrary(). The buffer will be freed by calling closeChirpLibrary().

Returned

ChirpERR_NONE	No error detected
ChirpERR_LIBCLOSED	The Chirp Framework has not been opened