BeagleBone Green Project Proposal

Group Information:

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Topic Description:

The objective of the system is to simulate a music player with the BeagleBone, Zen Cape and external modules if certain features are not inherently supported. The system will have audio playback capability such as play, pause, stop, rewind, volume, etc.. Playlist functionality allowing users to switch between their desired library of audio files controlled by the BeagleBone joystick. Metadata such as the length, title, artist, album, and file size will be displayed accordingly on a third-party LED matrix panel compatible with the BeagleBone. The only additional hardware required is the LED matrix panel itself and any libraries, software, and guides required to have it fully functional, and some audio output device (speakers, headphones) to plug into the audio out port on the Zen Cape.

Project Timeline:

Milestone 1 (June 18th)

Feature	Tasks
Zen Cape Audio	1. Read audio file from BeagleBone directory. 2. Pipe the audio file contents to the Zen Cape's speaker (s). Acceptance Criteria: 1. User can play/stop music by pressing down on the joystick of the Zen Cape.
Playlist Capability Of Switching Audio Tracks	1. Scan entire music directory for list of audio files. 2. Use joystick to cycle through the audio files found and be able to play the selected audio. Acceptance Criteria: 1. User can switch between songs of a playlist by pressing left/right.

Milestone 2 (July 9th)

Feature	Tasks
LED Matrix Panel - Time remaining - Track name - Album name - Artist name	1. Read audio file content, most likely the file header containing most of the necessary information on the file itself. 2. Store the header information into an array and index it to display information on the LED Matrix Panel Acceptance Criteria: 1. Display will show Time Remaining, Track Name, Album Name, Artist Name and Mode of the current playing song
Audio Playback Features - Volume Control - Pause, Resume, Skip, Shuffle	Acceptance Criteria: 1. User can adjust volume but turning the potentiometer 2. User can pause / resume current playing song 3. User can change mode to shuffle on / off, repeat on /off by double pressing down the joystick 4. User can rewind song by pressing left (if over 2 seconds in the song) 5. User can switch between playlists by pressing up/down of joystick.

Time-consuming Tasks

Feature	Description	Reasoning
LED Matrix Panel	Used to display detailed information of the music stored on the BeagleBone.	No prior experience with programming a LED matrix panel and unsure of the time required to have it working. It could either take only a few minutes, hours, or days.