**AM and FM Radio**

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The AM and FM radio will allow its users to listen to local radio stations so that they may stay informed on local news and enjoy music. It is meant to be compact so that users can bring it with them anywhere. The radio functions using a radio receiver module that is communicated with by an Arduino UNO, which then sends the audio to a speaker so that users can hear it. If time permits, the radio will also be designed to support preset stations and radio station scanning, and possibly Bluetooth playback. The goal of this project is to gain an understanding of radio waves, audio processing, and speakers, in addition to having a functional radio that can be used anytime.

**Hardware:**

* Arduino Uno
* Sensors and Modules:
  + AM/FM radio receiver module (e.g. Si4732) for receiving radio signals and tuning to specific frequencies
  + Amplifier (e.g. maybe the TDA7297?)
  + Switch for on/off functionality
  + Potentiometer knob for volume control
  + Rotary encoder knob with button for frequency tuning and for toggling between AM and FM
* Other Components:
  + Jumper wires and breadboard
  + Speaker
  + LCD display to show current radio station and other information
  + Battery or power supply
  + Telescopic antenna
* Future Expansion:
  + Rotary switch (knob that snaps to specific positions) to change between radio station presets
  + Button to set new radio station presets
  + Bluetooth module to play music from one’s phone through the radio speaker
  + Perhaps an analog VU meter to show how loud the audio is at any given time, as a nice visual