Introduction

Our project will run a game of Heads Up. Heads Up is a game in which one player, the guesser, receives hints from the clue giver(s) about a word or phrase on screen. The guesser holds the device on his or her head, displaying the word/phrase to the clue giver(s). If the guesser correctly guesses the word, they flip the screen down; if the guesser wants to pass, they flip the screen up. After 90 seconds of play, the guesser's score, the amount of words guessed correctly, is displayed. The words and phrases fall under various categories (animals, music hits, etc.) and can be selected from a menu. There will also be fun sound effects (theme TBD).

Necessary Hardware

- Arduino Uno board (or similar) x1
- LCD character display shield x1
- Button x3
- Gyroscope x1
- Speaker x1

Major Software Components

- Implement LCD User interface
- Program input/output based on gyroscope readings and button clicks
- Files containing bank of words and phrases
- All code will be written in C

Anticipated Challenges

One of the largest challenges we foresee is the implementation of the gyroscope. To quote the Arduino website, "Reading raw values (from the gyroscope) is easy, the rest is not." Input from the gyroscope must be filtered and parsed to determine its actual rotation, and the rotation information must then be processed accordingly and integrated into our game.

Prototype

We will develop our system through an experimental, vertical prototype model. The vertical prototype model is preferable for our project as the design challenges associated with it are largely centred around one major feature, the gyroscope. As such, it is most practical to focus on an in-depth implementation of this complex feature before moving on to other systems. We have chosen an experimental model as the gyroscope, our most complex feature, can be developed in a general context before being translated to integrate with our project.