Materials:

- Arduino Uno
- LCD
- Tilt Ball Switch
- 10kΩ Resistor
- Potentiometer for LCD set-up

Background & Set-Up:

You will need to set-up the tilt ball switch with a pull-up or pull-down resistor as a digital input in your circuit.

The LCD screen uses a special form of parallel communications. You will need to use the LiquidCrystal library. For more info and a tutorial:
https://learn.adafruit.com/adafruit-arduino-lesson-11-lcd-displays-1
https://learn.adafruit.com/adafruit-arduino-lesson-12-lcd-displays-part-2

I would first get your LCD set up properly and display, "Hello, world!" Once you have done that, you know the screen works properly and you can move on to implementing the Magic 8-Ball functionality.

Goal:

We want to create a new version of our Magic 8-Ball program with an LCD and a tilt ball switch. Instead of using the serial port, we can use it more like an actual Magic 8-Ball. When you flip over the device (screen facing away from you), the tilt ball switch should trigger the Arduino to update the LCD screen with a new Magic 8-Ball style response. When you turn the screen back towards you, there should now be a new response.

Additional Info:

I wrote a function to scroll a single line of text on the LCD for you to use. Just pass it the line number you want it to print on (0 or 1) and the entire string that you want printed. It will automatically print the text and scroll all the way to the end of the text. Function defined below:

```
/* if string is too large to print, scroll on single line */
void oneLineScroll (int line, String str1) {
  int i;

  // set cursor on intended line and print first 16 chars
  lcd.setCursor(0, line);
  lcd.print(str1.substring(0,15));
  delay(700);
  // for every additional letter, shift in from right
  if (str1.length()>16) {
    for (i = 0; i <= (str1.length()-16); i++) {
      lcd.setCursor(0, line);
      lcd.print(str1.substring(i,i+16));
      delay(300);
    }
  }
}
```