Arduino Project: LCD 16x2 I2C - Hello World with Timer

Algorithm:

```
1. Start
2. Initialize Arduino & LCD:
   - Include Wire.h and LiquidCrystal_I2C.h libraries.
   - Create an LCD object with address 0x27 (or 0x3F) and size 16x2.
3. Set up LCD:
   - Call lcd.init() to initialize LCD.
   - Turn on the backlight with lcd.backlight().
4. Display static text:
   - Set cursor at row 0, col 0 → Print "Hello World".
5. Initialize timer:
   - Create a variable seconds = 0.
6. Loop forever:
   - Set cursor at row 1, col 0.
   - Print "Time: " followed by the current seconds value.
   - Wait for 1 second (1000 ms).
   - Increment the seconds variable by 1.
   - Repeat continuously.
7. End (never actually ends, since it runs in a loop).
```

Arduino Code:

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

// Try 0x27, if blank screen then use 0x3F
LiquidCrystal_I2C lcd(0x27, 16, 2);

int seconds = 0;

void setup() {
  lcd.init();          // initialize LCD
  lcd.backlight();     // turn on backlight
  lcd.setCursor(0,0);  // first row
  lcd.print("Hello World");
}

void loop() {
  lcd.setCursor(0,1);  // second row
  lcd.print("Time: ");
  lcd.print(seconds);
  lcd.print(" sec   "); // spaces to clear old text

  delay(1000);         // wait 1 second
  seconds++;           // increment timer
}
```

Circuit Connections:

```
Components Required:
- Arduino Uno
- LCD 16x2 I²C (4-pin version)
- Jumper wires

Connections:
- LCD VCC → Arduino 5V
- LCD GND → Arduino GND
- LCD SDA → Arduino A4
- LCD SCL → Arduino A5
```