# 7-Segment LED Library

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# Chapter 1

# Main Page

### Copyright



### License



### Overview

This is a library designed for using a seven-segment LED with an Arduino UNO.

This library is designed for use with a seven-segment LED display, set up according to a "common ground" scheme which follows the following pin diagram (note that pin `dp` represents pin for the dot/period):

```
 - a -
|     |
f     g
|     |
 - g -
|     |
e     f    __
|     |   |dp|
 - d -     --
```

These LED display pins are then mapped to the Arduino's digital pins using the `pinOut` struct.

To get started using the library, create a `PinOut` variable and define each of its members according to the documentation for the `pinOut` struct. Then, simply call the function for the type of output you wish to display, and pass the value to be displayed along with a pointer to your pin mapping variable.

Note that, on each call to print a new value to the display, the old value will not be automatically cleared. Instead, to clear it, you must call `clearScreen(const PinOut *pinMap)`.

# Chapter 2

# CHANGELOG

### 0.2.1

- Fixed license information location in ledseven.h header file

### 0.2.0

- Added adjustable pin mappings
- Added struct `pinOut` for pin mappings and modified function arguments to accept it
- Added licensing under LGPL V3.0

### 0.1.0

- Initial release
- Basics for output are in place
- Pins to use are currently hard-coded using preprocessor statements

# Chapter 3

# Todo List

**File ledseven.h**

Convert to C++ and make the library object-oriented

# Chapter 4

# Data Structure Index

## 4.1 Data Structures

Here are the data structures with brief descriptions:

# Chapter 5

# File Index

## 5.1 File List

Here is a list of all documented files with brief descriptions:

# Chapter 6

# Data Structure Documentation

## 6.1 pinOut Struct Reference

A mapping of Arduino pins to seven-segment LED display pins.

`#include <ledseven.h>`

### Data Fields

- int ledPinA
- int ledPinB
- int ledPinC
- int ledPinD
- int ledPinE
- int ledPinF
- int ledPinG
- int ledPinDP

### 6.1.1 Detailed Description

A mapping of Arduino pins to seven-segment LED display pins.

The `pinOut` struct is designed to provide a system for mapping the Arduino UNO's digital pins to the seven-segment LED display's pins. Each member within the `pinOut` struct should be assigned an integer corresponding to the Arduino digital pin to which that member has been linked.

For example, if the LED display's pin A has been connected to the Arduino's digital pin 2, then `pinOut.ledPinA` should be assigned a value of `2`.

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0.2.1

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Definition at line 72 of file ledseven.h.

### 6.1.2 Field Documentation

#### 6.1.2.1 int pinOut::ledPinA

The Arduino digital pin corresponding to the LED display's pin A

Definition at line 75 of file ledseven.h.

#### 6.1.2.2 int pinOut::ledPinB

The Arduino digital pin corresponding to the LED display's pin B

Definition at line 78 of file ledseven.h.

#### 6.1.2.3 int pinOut::ledPinC

The Arduino digital pin corresponding to the LED display's pin C

Definition at line 81 of file ledseven.h.

#### 6.1.2.4 int pinOut::ledPinD

The Arduino digital pin corresponding to the LED display's pin D

Definition at line 84 of file ledseven.h.

#### 6.1.2.5 int pinOut::ledPinDP

The Arduino digital pin corresponding to the LED display's pin DP

Definition at line 96 of file ledseven.h.

#### 6.1.2.6 int pinOut::ledPinE

The Arduino digital pin corresponding to the LED display's pin E

Definition at line 87 of file ledseven.h.

#### 6.1.2.7 int pinOut::ledPinF

The Arduino digital pin corresponding to the LED display's pin F

Definition at line 90 of file ledseven.h.

#### 6.1.2.8 int pinOut::ledPinG

The Arduino digital pin corresponding to the LED display's pin G

Definition at line 93 of file ledseven.h.

The documentation for this struct was generated from the following file:

- ledseven.h

# Chapter 7

# File Documentation

## 7.1 ledseven.c File Reference

The main sources for the library.

```
#include "ledseven.h"
```

### Functions

- void printHex (unsigned int i, const PinOut *pinMap)

  *Prints a hexadecimal digit to the display.*
- void printDec (unsigned int i, const pinOut *pinMap)

  *Prints a decimal digit to the display.*
- void printPeriod (const PinOut *pinMap)
- void clearScreen (const PinOut *pinMap)

### 7.1.1 Detailed Description

The main sources for the library.

This file contains the source for the functions to write to the seven-segment LED.

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**Since**

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**Version**

0.2.1

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Definition in file ledseven.c.

### 7.1.2 Function Documentation

#### 7.1.2.1 void clearScreen ( const PinOut * *pinMap* )

The `clearScreen` function is designed to clear a seven-segment LED display so that it can be written to again.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| `in` | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 178 of file ledseven.c.

#### 7.1.2.2 void printDec ( unsigned int *i*, const PinOut * *pinMap* )

Prints a decimal digit to the display.

The `printDec` function is designed to print a decimal digit to a seven-segment LED display.

Note that, if the value passed as the digit to display does not match an accepted value, a dash (`-`) will be displayed instead.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *i* | The digit to display (must be between 0 and 9, inclusive) |
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 96 of file ledseven.c.

Referenced by printHex().

#### 7.1.2.3 void printHex ( unsigned int *i*, const PinOut * *pinMap* )

Prints a hexadecimal digit to the display.

The `printHex` function is designed to print a hexadecimal digit to a seven-segment LED display.

Note that, if the value passed as the digit to display does not match an accepted value, a dash (−) will be displayed instead.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *i* | The digit to display (Must be between 0x0 and 0xF, inclusive) |
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 34 of file ledseven.c.

#### 7.1.2.4 void printPeriod ( const PinOut * *pinMap* )

The `printPeriod` function will display a period on the seven- segment LED display.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 173 of file ledseven.c.

## 7.2 ledseven.h File Reference

The header file for the library.

```
#include <stdlib.h>
#include <Arduino.h>
```

### Data Structures

- struct pinOut

  *A mapping of Arduino pins to seven-segment LED display pins.*

### Typedefs

- typedef struct pinOut PinOut

  *A typedef for the mapping of pins between the Arduino and seven- segment LED display.*

### Functions

- void printHex (unsigned int i, const PinOut *pinMap)

  *Prints a hexadecimal digit to the display.*
- void printDec (unsigned int i, const PinOut *pinMap)

  *Prints a decimal digit to the display.*
- void printPeriod (const PinOut *pinMap)
- void clearScreen (const PinOut *pinMap)

### 7.2.1 Detailed Description

The header file for the library.

The `ledseven.h` file is the primary header file for this library. It contains all necessary declarations, preprocessor statements, and related code.

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**Since**

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**Version**

0.2.1

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**Todo** Convert to C++ and make the library object-oriented

Definition in file ledseven.h.

### 7.2.2 Typedef Documentation

#### 7.2.2.1 struct pinOut PinOut

A typedef for the mapping of pins between the Arduino and seven- segment LED display.

This type is to be used when creating the mapping between the pins of the Arduino and those of the seven-segment LED display. For details on creating the mapping, see the documentation for pinOut.

**Since**

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**Version**

0.2.1

### 7.2.3 Function Documentation

#### 7.2.3.1 void clearScreen ( const PinOut * *pinMap* )

The `clearScreen` function is designed to clear a seven-segment LED display so that it can be written to again.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 178 of file ledseven.c.

#### 7.2.3.2 void printDec ( unsigned int *i*, const PinOut * *pinMap* )

Prints a decimal digit to the display.

The `printDec` function is designed to print a decimal digit to a seven-segment LED display.

Note that, if the value passed as the digit to display does not match an accepted value, a dash (−) will be displayed instead.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *i* | The digit to display (must be between 0 and 9, inclusive) |
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 96 of file ledseven.c.

Referenced by printHex().

#### 7.2.3.3 void printHex ( unsigned int *i*, const PinOut * *pinMap* )

Prints a hexadecimal digit to the display.

The `printHex` function is designed to print a hexadecimal digit to a seven-segment LED display.

Note that, if the value passed as the digit to display does not match an accepted value, a dash (−) will be displayed instead.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *i* | The digit to display (Must be between 0x0 and 0xF, inclusive) |
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 34 of file ledseven.c.

#### 7.2.3.4 void printPeriod ( const PinOut * *pinMap* )

The `printPeriod` function will display a period on the seven- segment LED display.

**Since**

2014-12-25

**Version**

0.2.1

**Parameters**

| | | |
|---|---|---|
| in | *pinMap* | A pointer to the PinOut that maps the relationship between the pins of the Arduino and those of the seven-segment LED display being used |

Definition at line 173 of file ledseven.c.