

# **EV Control Task**

AUTHOR  
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# Table of Contents

Table of contents



# Data Structure Index

## Data Structures

Here are the data structures with brief descriptions:

<b>GPIO (GPIO PORT Definition using struct of registers )</b>	..... pagenum
<b>Register (Register Definition using unions )</b>	..... pagenum

# File Index

## File List

Here is a list of all files with brief descriptions:

<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/GPIO.c</b>	pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/GPIO.h</b>	pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/LCD.c</b>	.. pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/LCD.h</b>	. pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/Macros.h</b>	pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/main.c</b>	.. pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/StandardTypes.h</b>	..... pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/Timer1.c</b>	pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/Timer1.h</b>	pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/UART_Tx.c</b>	pagenum
<b>C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/UART_Tx.h</b>	pagenum

# Data Structure Documentation

## GPIO Struct Reference

GPIO PORT Definition using struct of registers.

```
#include <GPIO.h>
```

### Data Fields

Register PIN

Register DDR

Register Port

---

### Detailed Description

GPIO PORT Definition using struct of registers.

---

### Field Documentation

Register DDR

Register PIN

Register Port

---

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

C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/**GPIO.h**

## Register Union Reference

**Register** Definition using unions.

```
#include <GPIO.h>
```

### Data Fields

**vu8 AllRegister**

```
struct {  
    vu8 Bit0:1  
    vu8 Bit1:1  
    vu8 Bit2:1  
    vu8 Bit3:1  
    vu8 Bit4:1  
    vu8 Bit5:1  
    vu8 Bit6:1  
    vu8 Bit7:1  
} Bits
```

---

### Detailed Description

**Register** Definition using unions.

---

### Field Documentation

**vu8 AllRegister**

**vu8 Bit0**

**vu8 Bit1**

**vu8 Bit2**

**vu8 Bit3**

**vu8 Bit4**

**vu8 Bit5**

**vu8 Bit6**

**vu8 Bit7**

**struct { ... } Bits**

---

**The documentation for this union was generated from the following file:**

C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/**GPIO.h**



# File Documentation

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/GPIO.c File Reference

```
#include "GPIO.h"  
#include "Macros.h"
```

### Functions

```
void SetDataDirection (GPIO *gpio, Mode mode, Pin_Number pin)  
void Output (GPIO *gpio, Value value, Pin_Number pin)  
void AllPortOutput (GPIO *gpio)
```

---

### Function Documentation

**void AllPortOutput (GPIO \* *gpio*)**

Making the entire port pins output

**void Output (GPIO \* *gpio*, Value *value*, Pin\_Number *pin*)**

Giving the output pins value 1 or 0

**void SetDataDirection (GPIO \* *gpio*, Mode *mode*, Pin\_Number *pin*)**

Making the pin input or output

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/GPIO.h File Reference

```
#include "StandardTypes.h"
```

### Data Structures

union **Register**

*Register Definition using unions.*

struct **GPIO**

*GPIO PORT Definition using struct of registers.*

### Macros

```
#define GPIOA ((GPIO*)0x39)
```

```
#define GPIOB ((GPIO*)0x36)
```

```
#define GPIOC ((GPIO*)0x33)
```

```
#define GPIOD ((GPIO*)0x30)
```

### Enumerations

```
enum Value { LOW, HIGH }
```

```
enum Mode { PullUp, Floating, output }
```

```
enum Pin_Number { PIN0, PIN1, PIN2, PIN3, PIN4, PIN5, PIN6, PIN7 }
```

### Functions

```
void SetDataDirection (GPIO *gpio, Mode mode, Pin_Number pin)
```

```
void Output (GPIO *gpio, Value value, Pin_Number pin)
```

```
void AllPortOutput (GPIO *gpio)
```

---

## Macro Definition Documentation

```
#define GPIOA ((GPIO*)0x39)
```

```
#define GPIOB ((GPIO*)0x36)
```

```
#define GPIOC ((GPIO*)0x33)
```

```
#define GPIOD ((GPIO*)0x30)
```

---

## Enumeration Type Documentation

enum **Mode**

Enumerator:

PullUp	
Floating	
output	

enum **Pin\_Number**

**Enumerator:**

PIN0	
PIN1	
PIN2	
PIN3	
PIN4	
PIN5	
PIN6	
PIN7	

**enum Value****Enumerator:**

LOW	
HIGH	

---

**Function Documentation****void AllPortOutput (GPIO \* *gpio*)**

Making the entire port pins output

**void Output (GPIO \* *gpio*, Value *value*, Pin\_Number *pin*)**

Giving the output pins value 1 or 0

**void SetDataDirection (GPIO \* *gpio*, Mode *mode*, Pin\_Number *pin*)**

Making the pin input or output

## GPIO.h

```
Go to the documentation of this file.1 /*
2  * GPIO.h
3  *
4  * Created: 2021-08-18 10:49:48 AM
5  * Author: Abdelaziz Mohammad
6  */
7
8
9 #ifndef GPIO_H
10 #define GPIO_H
11
12 #include "StandardTypes.h"
13
14 #define GPIOA ((GPIO*)0x39)
15 #define GPIOB ((GPIO*)0x36)
16 #define GPIOC ((GPIO*)0x33)
17 #define GPIOD ((GPIO*)0x30)
18
19 typedef union
20 {
21     vu8 AllRegister;
22     struct
23     {
24         vu8 Bit0:1 ;
25         vu8 Bit1:1 ;
26         vu8 Bit2:1 ;
27         vu8 Bit3:1 ;
28         vu8 Bit4:1 ;
29         vu8 Bit5:1 ;
30         vu8 Bit6:1 ;
31         vu8 Bit7:1 ;
32     }Bits;
33 }Register;
34
35 typedef struct
36 {
37     Register PIN;
38     Register DDR;
39     Register Port;
40 }GPIO;
41
42 typedef enum
43 {
44     LOW,
45     HIGH,
46 }Value;
47
48 typedef enum
49 {
50     PullUp,
51     Floating,
52     output,
53 }Mode;
54
55 typedef enum
56 {
57     PIN0,
58     PIN1,
59     PIN2,
60     PIN3,
61     PIN4,
62     PIN5,
63     PIN6,
64     PIN7,
65 }
```

```
76 }Pin_Number;
77
78
79
80
81
82
83 void SetDataDirection (GPIO *gpio , Mode mode , Pin Number pin );
84 void Output (GPIO *gpio , Value value , Pin Number pin);
85 void AllPortOutput(GPIO* gpio);
86
87 #endif /* GPIO_H_ */
```

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/LCD.c File Reference

```
#include "LCD.h"
#include <util/delay.h>
```

### Macros

```
#define F_CPU 8000000
```

### Functions

```
void LCD_Init ()
    LCD initialization Function Prototype.
```

```
void LCD_WriteChar (u8 Char)
    LCD WriteChar Function Prototype.
```

```
void LCD_WriteSentence (const u8 *Sentence)
    LCD WriteSentence Function Prototype.
```

```
void LCD_Clear ()
    LCD Clear Function Prototype.
```

```
void LCD_MoveCursor (u8 x, u8 y)
    LCD WriteChar Function Prototype.
```

---

## Macro Definition Documentation

```
#define F_CPU 8000000
```

---

## Function Documentation

```
void LCD_Clear (void )
```

LCD Clear Function Prototype.

```
void LCD_Init (void )
```

LCD initialization Function Prototype.

Delay said in DataSheet

Initialization of RS,RW,E

Initialization of DataPort as Output

Send Command to clear Display

Function Set part

Display Part

Entry Part

**void LCD\_MoveCursor (u8 x, u8 y)**

LCD WriteChar Function Prototype.

x represents the coloumn and y represents the row

**void LCD\_WriteChar (u8 Char)**

LCD WriteChar Function Prototype.

First For Data **Register** RS=1

Second For write RW=0

Third Set E to high

Forth PUT command in LCD\_Data\_Port

Fifth Clear E

**void LCD\_WriteSentence (const u8 \* Sentence)**

LCD WriteSentence Function Prototype.

Printing

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/LCD.h File Reference

```
#include "GPIO.h"
#include "StandardTypes.h"
```

### Macros

```
#define LCD_Control_Port GPIOA
    LCD Control PORT.
```

```
#define RS PIN5
#define RW PIN6
#define E PIN7
#define LCD_Data_Port GPIOB
    LCD DATA PORT.
```

```
#define Return_Home 0x02
    LCD Config.
```

```
#define Clear_Display 0x01
#define _8bit_2Lines_5x8Font 0x38
#define DisplayOn_CursorOff_BlinkCursorOff 0x0C
#define CursorMovesRight 0x06
#define _4bit_2Lines_5x8Font 0x28
```

### Functions

```
void LCD_Init (void)
    LCD initialization Function Prototype.
```

```
void LCD_WriteChar (u8 Char)
    LCD WriteChar Function Prototype.
```

```
void LCD_MoveCursor (u8 x, u8 y)
    LCD WriteChar Function Prototype.
```

```
void LCD_WriteSentence (const u8 *Sentence)
    LCD WriteSentence Function Prototype.
```

```
void LCD_Clear (void)
    LCD Clear Function Prototype.
```

---



## Macro Definition Documentation

**#define \_4bit\_2Lines\_5x8Font 0x28**

**#define \_8bit\_2Lines\_5x8Font 0x38**

**#define Clear\_Display 0x01**

**#define CursorMovesRight 0x06**

**#define DisplayOn\_CursorOff\_BlinkCursorOff 0x0C**

**#define E PIN7**

**#define LCD\_Control\_Port GPIOA**

LCD Control PORT.

**#define LCD\_Data\_Port GPIOB**

LCD DATA PORT.

**#define Return\_Home 0x02**

LCD Config.

**#define RS PIN5**

**#define RW PIN6**

---

## Function Documentation

**void LCD\_Clear (void )**

LCD Clear Function Prototype.

**void LCD\_Init (void )**

LCD initialization Function Prototype.

Delay said in DataSheet

Initialization of RS,RW,E

Initialization of DataPort as Output

Send Command to clear Display

Function Set part

Display Part

Entry Part

**void LCD\_MoveCursor (u8 x, u8 y)**

LCD WriteChar Function Prototype.

x represents the coloumn and y represents the row

**void LCD\_WriteChar (u8 Char)**

LCD WriteChar Function Prototype.

First For Data **Register** RS=1

Second For write RW=0

Third Set E to high

Forth PUT command in LCD\_Data\_Port

Fifth Clear E

**void LCD\_WriteSentence (const u8 \* Sentence)**

LCD WriteSentence Function Prototype.

Printing

## LCD.h

```
Go to the documentation of this file.1 /*
2  * LCD.h
3  *
4  * Created: 2021-08-22 11:49:33 AM
5  * Author: Abdelaziz Mohammad
6  */
7
8
9 #ifndef LCD_H
10 #define LCD_H
11
12
13 #include "GPIO.h"
14 #include "StandardTypes.h"
15
16
17
18
19
20
21
22 #define LCD_Control_Port GPIOA
23 #define RS PIN5
24 #define RW PIN6
25 #define E PIN7
26
27 #define LCD_Data_Port GPIOB
28
29 #define Return_Home 0x02
30 #define Clear_Display 0x01
31 #define _8bit_2Lines_5x8Font 0x38
32 #define DisplayOn_CursorOff_BlinkCursorOff 0x0C
33 #define CursorMovesRight 0x06
34 #define _4bit_2Lines_5x8Font 0x28
35
36
37 void LCD_Init(void);
38 void LCD_WriteChar(u8 Char);
39 void LCD_MoveCursor(u8 x,u8 y);
40 void LCD_WriteSentence(const u8* Sentence);
41 void LCD_Clear(void);
42
43
44
45 #endif /* LCD_H */
```

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/Macros.h File Reference

### Macros

```
#define SetBit(Reg, Bit) Reg |= (1<<Bit)  
Macros for Setting, Clearing, Toggling and Checking Bit.
```

```
#define ClearBit(Reg, Bit) Reg &= ~(1<<Bit)  
#define ToggleBit(Reg, Bit) Reg ^= (1<<Bit)  
#define CheckBit(Reg, Bit) ((Reg>>Bit) & 1)
```

---

### Macro Definition Documentation

```
#define CheckBit( Reg, Bit) ((Reg>>Bit) & 1)
```

```
#define ClearBit( Reg, Bit) Reg &= ~(1<<Bit)
```

```
#define SetBit( Reg, Bit) Reg |= (1<<Bit)
```

Macros for Setting, Clearing, Toggling and Checking Bit.

```
#define ToggleBit( Reg, Bit) Reg ^= (1<<Bit)
```

## Macros.h

```
Go to the documentation of this file.1 /*
2  * Macros.h
3  *
4  * Created: 2021-08-18 10:44:55 AM
5  * Author: sigmaa
6  */
7
8
9 #ifndef MACROS_H
10 #define MACROS_H
11
12 #define SetBit(Reg, Bit) Reg |= (1<<Bit)
13 #define ClearBit(Reg, Bit) Reg &= ~(1<<Bit)
14 #define ToggleBit(Reg, Bit) Reg ^= (1<<Bit)
15 #define CheckBit(Reg, Bit) ((Reg>>Bit) & 1)
16
17
18 #endif /* MACROS_H_ */
```

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/main.c File Reference

```
#include "StandardTypes.h"
#include "Macros.h"
#include "GPIO.h"
#include "LCD.h"
#include "UART_Tx.h"
#include "Timer1.h"
#include <avr/interrupt.h>
```

### Functions

```
int main (void)
ISR (TIMER1_COMPA_vect)
```

### Variables

```
u8 delay_Flag = 1
u8 Flag_Tx = 2
    Delay Flag for 3 seconds delay.
```

```
u8 Flag_Rx = '.'
u8 Flag_Button_Click =1
```

---

### Function Documentation

ISR (TIMER1\_COMPA\_vect )

int main (void )

Program Entry point

---

### Variable Documentation

u8 delay\_Flag = 1

u8 Flag\_Button\_Click =1

u8 Flag\_Rx = '.'

u8 Flag\_Tx = 2

Delay Flag for 3 seconds delay.

## **C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/StandardTypes.h File Reference**

### **Typedefs**

typedef unsigned char **u8**  
typedef unsigned short **u16**  
typedef unsigned long long **u64**  
typedef volatile unsigned char **vu8**  
typedef volatile unsigned short **vu16**

---

### **Typedef Documentation**

**typedef unsigned short u16**

**typedef unsigned long long u64**

**typedef unsigned char u8**

**typedef volatile unsigned short vu16**

**typedef volatile unsigned char vu8**

## StandardTypes.h

```
Go to the documentation of this file.1 /*
2  * StandardTypes.h
3  *
4  * Created: 2021-08-18 10:47:13 AM
5  * Author: sigmaa
6  */
7
8
9 #ifndef STANDARDTYPES_H
10 #define STANDARDTYPES_H
11
12 typedef unsigned char u8;
13 typedef unsigned short u16;
14 typedef unsigned long long u64;
15 typedef volatile unsigned char vu8;
16 typedef volatile unsigned short vu16;
17
18
19
20 #endif /* STANDARDTYPES_H_ */
```



## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/Timer1.c File Reference

```
#include "Timer1.h"
#include "GPIO.h"
#include "Macros.h"
#include "StandardTypes.h"
```

### Functions

```
void EnableGlobalInterrupt ()
void delay_Init ()
void timer_stop ()
void timer_start ()
void delay_3_Seconds ()
void EnableInterruptTimer1 ()
void DisableInterruptTimer1 ()
```

---

### Function Documentation

#### **void delay\_3\_Seconds ()**

Put number 23438 in OCR

#### **void delay\_Init ()**

CTC with ICU TOP

CTC Set on compare

1024 prescaler

#### **void DisableInterruptTimer1 ()**

Clearing PIN4 in TIMSK **Register**

#### **void EnableGlobalInterrupt ()**

#### **void EnableInterruptTimer1 ()**

Setting PIN4 in TIMSK **Register**

#### **void timer\_start ()**

#### **void timer\_stop ()**

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/Timer1.h File Reference

```
#include "GPIO.h"
#include "StandardTypes.h"
```

### Macros

```
#define TCCR1A ((Register*)0x4F)
#define TCCR1B ((Register*)0x4E)
#define OCR1AH ((Register*)0x4B)
#define OCR1AL (*((volatile unsigned short*)0x4A))
#define OCR1BH ((Register*)0x49)
#define OCR1BL ((Register*)0x48)
#define TIMSK ((Register*)0x59)
#define ICUH ((Register*)0x47)
#define ICUL (*((volatile unsigned short*)0x46))
#define SREG ((Register*)0x5F)
#define TCNT (*((volatile unsigned short*)0x4C))
#define WGM10 0
#define WGM11 1
#define WGM12 3
#define WGM13 4
#define COM1A0 6
#define COM1A1 7
#define COM1B0 4
#define COM1B1 5
#define CS10 0
#define CS11 1
#define CS12 2
#define TOIE1 2
```

### Functions

```
void EnableGlobalInterrupt ()
void delay_Init ()
void delay_3_Seconds ()
void EnableInterruptTimer1 ()
void DisableInterruptTimer1 ()
void timer_stop ()
void timer_start ()
```

---

## Macro Definition Documentation

**#define COM1A0 6**

**#define COM1A1 7**

**#define COM1B0 4**

**#define COM1B1 5**

**#define CS10 0**

**#define CS11 1**

**#define CS12 2**

**#define ICUH ((Register\*)0x47)**

**#define ICUL (\*((volatile unsigned short\*)0x46))**

**#define OCR1AH ((Register\*)0x4B)**

**#define OCR1AL (\*((volatile unsigned short\*)0x4A))**

**#define OCR1BH ((Register\*)0x49)**

**#define OCR1BL ((Register\*)0x48)**

**#define SREG ((Register\*)0x5F)**

**#define TCCR1A ((Register\*)0x4F)**

**#define TCCR1B ((Register\*)0x4E)**

**#define TCNT (\*((volatile unsigned short\*)0x4C))**

**#define TIMSK ((Register\*)0x59)**

**#define TOIE1 2**

**#define WGM10 0**

**#define WGM11 1**

**#define WGM12 3**

**#define WGM13 4**

## Function Documentation

**void delay\_3\_Seconds ()**

Put number 23438 in OCR

**void delay\_Init ()**

CTC with ICU TOP

CTC Set on compare

1024 prescaler

**void DisableInterruptTimer1 ()**

Clearing PIN4 in TIMSK **Register**

**void EnableGlobalInterrupt ()**

**void EnableInterruptTimer1 ()**

Setting PIN4 in TIMSK **Register**

**void timer\_start ()**

**void timer\_stop ()**

## Timer1.h

```
Go to the documentation of this file.1 /*
2  * Timer1.h
3  *
4  * Created: 2021-08-21 6:01:55 AM
5  * Author: sigmaa
6  */
7
8
9 #ifndef TIMER1_H
10 #define TIMER1_H
11
12 #include "GPIO.h"
13 #include "StandardTypes.h"
14
15 #define TCCR1A ((Register*)0x4F)
16 #define TCCR1B ((Register*)0x4E)
17 #define OCR1AH ((Register*)0x4B)
18 #define OCR1AL (*(volatile unsigned short*)0x4A)
19 #define OCR1BH ((Register*)0x49)
20 #define OCR1BL ((Register*)0x48)
21 #define TIMSK ((Register*)0x59)
22 #define ICUH ((Register*)0x47)
23 #define ICUL (*(volatile unsigned short*)0x46)
24 #define SREG ((Register*)0x5F)
25 #define TCNT (*(volatile unsigned short*)0x4C)
26
27
28 #define WGM10 0
29 #define WGM11 1
30 #define WGM12 3
31 #define WGM13 4
32 #define COM1A0 6
33 #define COM1A1 7
34 #define COM1B0 4
35 #define COM1B1 5
36 #define CS10 0
37 #define CS11 1
38 #define CS12 2
39 #define TOIE1 2
40
41 void EnableGlobalInterrupt();
42 void delay_Init();
43 void delay_3_Seconds();
44 void EnableInterruptTimer1();
45 void DisableInterruptTimer1();
46 void timer_stop();
47 void timer_start();
48 #endif /* TIMER1_H_ */
```

## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/UART\_Tx.c File Reference

```
#include "UART_Tx.h"
#include "Macros.h"
```

### Functions

**void UART\_init (UART\_Mode mode)**  
*UART initialization Function Prototype.*

**void UART\_SendChar (u8 Data)**  
*UART SendChar Function Prototype.*

**u8 UART\_ReceiveChar (void)**  
*UART ReceiveChar Function Prototype.*

---

### Function Documentation

**void UART\_init (UART\_Mode mode)**

UART initialization Function Prototype.

Input pin for Rx

Output pin for Tx

Option to activate Trasmmitter Mode

Option to Receiver Mode

No Parity

1 StopBit

8\_Bits

For 9600 Baud Rate and 8MHz Freq

**u8 UART\_ReceiveChar (void )**

UART ReceiveChar Function Prototype.

When RXC =1 that means there is data in UDR

**void UART\_SendChar (u8 Data)**

UART SendChar Function Prototype.

When UDRE = 1 that means the register is empty and data is in shift register ready to be sent.



## C:/Users/sigmaa/Desktop/Abdelaziz Mohammad - EV control task/Task/Task/UART\_Tx.h File Reference

```
#include "GPIO.h"
#include "StandardTypes.h"
```

### Macros

```
#define UDR ((Register*)0x2C)
#define UCSRA ((Register*)0x2B)
#define UCSRB ((Register*)0x2A)
#define UCSRC ((Register*)0x40)
#define UBRRL ((Register*)0x29)
#define UBRRH ((Register*)0x40)
#define RXC 7 /*Receive Complete*/
#define TXC 6 /*Transmit Complete*/
#define UDRE 5 /*Data Register Empty*/
#define RXEN 4 /*Receive Enable*/
#define TXEN 3 /*Transmit Enable*/
#define UMP0 4
#define UMP1 5
#define UCSZ0 1
#define UCSZ1 2
#define UCSZ2 2
#define USBS 3
```

### Enumerations

```
enum UART_Mode { Transmitter, Receiver }
```

### Functions

```
void UART_init (UART_Mode mode)
    UART initialization Function Prototype.
```

```
void UART_SendChar (u8 Data)
    UART SendChar Function Prototype.
```

```
u8 UART_ReceiveChar (void)
    UART ReceiveChar Function Prototype.
```

---



## Macro Definition Documentation

```
#define RXC 7 /*Receive Complete*/

#define RXEN 4 /*Receive Enable*/

#define TXC 6 /*Transmit Complete*/

#define TXEN 3 /*Transmit Enable*/

#define UBRRH ((Register*)0x40)

#define UBRRL ((Register*)0x29)

#define UCSRA ((Register*)0x2B)

#define UCSRB ((Register*)0x2A)

#define UCSRC ((Register*)0x40)

#define UCSZ0 1

#define UCSZ1 2

#define UCSZ2 2

#define UDR ((Register*)0x2C)

#define UDRE 5 /*Data Register Empty*/

#define UMP0 4

#define UMP1 5

#define USBS 3
```

---

## Enumeration Type Documentation

enum UART\_Mode

Enumerator:

Transmitter	
Receiver	

---

## Function Documentation

void UART\_init (UART\_Mode *mode*)

UART initialization Function Prototype.

Input pin for Rx  
Output pin for Tx  
Option to activate Trasmmitter Mode  
Option to Receiver Mode  
No Parity  
1 StopBit  
8\_Bits  
For 9600 Baud Rate and 8MHz Freq

#### **u8 UART\_ReceiveChar (void )**

UART ReceiveChar Function Prototype.

When RXC =1 that means there is data in UDR

#### **void UART\_SendChar (u8 *Data*)**

UART SendChar Function Prototype.

When UDRE = 1 that means the register is empty and data is in shift register ready to be sent.

## UART\_Tx.h

```
Go to the documentation of this file.1 /*
2  * UART_Tx.h
3  *
4  * Created: 2021-08-20 4:21:46 AM
5  * Author: sigmaa
6  */
7
8
9 #ifndef UART_TX_H
10 #define UART_TX_H
11
12
13 #include "GPIO.h"
14 #include "StandardTypes.h"
15
16 #define UDR ((Register*)0x2C)
17 #define UCSRA ((Register*)0x2B)
18 #define UCSRB ((Register*)0x2A)
19 #define UCSRC ((Register*)0x40)
20 #define UBRRL ((Register*)0x29)
21 #define UBRRH ((Register*)0x40)
22
23
24 /* Special Bits */
25
26 #define RXC 7 /*Receive Complete*/
27 #define TXC 6 /*Transmit Complete*/
28 #define UDRE 5 /*Data Register Empty*/
29 #define RXEN 4 /*Receive Enable*/
30 #define TXEN 3 /*Transmit Enable*/
31 #define UMP0 4
32 #define UMP1 5
33 #define UCSZ0 1
34 #define UCSZ1 2
35 #define UCSZ2 2
36 #define USBS 3
37
38
39 typedef enum
40 {
41     Transmitter,
42     Receiver,
43 }UART_Mode;
44
45
46 void UART_init(UART_Mode mode);
47 void UART_SendChar(u8 Data);
48 u8 UART_ReceiveChar(void);
49
50
51
52
53
54
55
56 #endif /* UART_TX_H */
```

# **Index**

INDEX