



T. Y. B. Tech (Electrical and Computer Engineering)

Trimester: V Subject: Microcontroller and Applications

Name: Shreerang Mhatre Class: TY
Roll No: 52 Batch: A3

Experiment No: 08

Name of the Experiment: Implement UART with C8051F340

. .

Submitted on: 7/12/2023

Performed on: 5/12/2023

Mark	Teacher's	Signature with date
S		

Aim: Write a C program for serial communication using C8051F340 to transfer data from C8051F340 to PC

C8031F340 t0 FC

Apparatus: EPBF340 Board, Connectors

Theory: Serial Communication is of two types Synchronous and Asynchronous. The asynchronous mode is used to connect the C8051F340 to PC serial port for the purpose of full duplex serial data transfer.C8051F340 has inbuilt UART (Universal Asynchronous Receiver Transmitter). Baud rate is a significant factor for serial communication of microcontroller with other devices. For communication with PC the baud rate of 9600 is selected.

baud rate generation:

Timer-1 is used to generate baud rate for mode-1 serial communication by using overflow flag of the timer to determine the baud frequency. Timer-1 is used in timer mode-2 as an auto-reload 8-bit timer. The data rate is generated by timer-1 using the following formula.

TH1 = 256-(SYSCLK/Desired baud rate/2)

Interfacing Diagram:





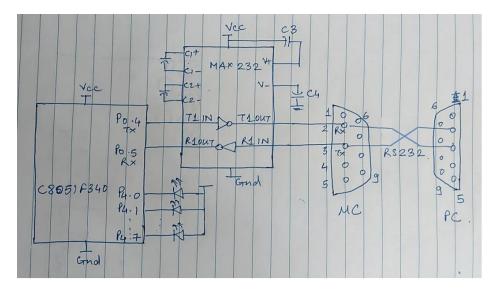


Figure 4.1 Interfacing Diagram for UART

Program:

Expected Result:

The string should be displayed on HyperTerminal.

Conclusion:

Study Question:

- 1. Explain the need of MAX232 in serial communication.
- 2. Write the Port Properties for setting Hyper Terminal connection.
- 3. Explain UART registers.



	PAGE NO.
	Exp8 UART,
*	Interfacing diagram.
of	TADA CIVELYDOYO VO DI CALLO CA
	100 W9 C3010101010
	relation AN edilbitiat at
	9/3V) V/ 50 10 10 10 10 10 10 10 10 10 10 10 10 10
	Olabom Add Strains
ь	C2- 1-
	1088
	TXT TOUT 200
9	NOV9 por 50 0 Blout 10 RILLY D
	8 8× 10 90 900
	040 HT - 61ND MC 00-5
-	: voneupovil
	P4.7. A R5252
0 .	PCA COUNTRY (2 16 PCA Mode)
+	High Byte x 256
(alver)	oup alubam AJ9
	of py Cyde
e-t-o	soly evile = per module o High Byle
+2 JYCLYNO	X 256+ P CA Modale (1)
	>



Tranmission program for Uart with C8051F340

```
// Exp - 8 Implement UART with C8051F340
Name: Shreerang Mhatre
Rollno: 52
Batch: A3
Class: TY
Tranmission program:
#include"c8051f340.h"
#define sysclk 12000000
#define BR UART0 9600
void main()
    char ch[]=("SHREERANG");
    int i;
    OSCICN = 0X80;
    XBR0=0X01;
    XBR1=0X40;
    P0MDOUT=0X10;
    SCON0=0X00;
    CKCON=0X01;
    TH1=256-(sysclk/BR_UART0/2/4);
    TH1=TL1;
    TMOD=0 \times 20;
    TR1=1;
    while(1)
        for(i=0;ch[i]!='\0';i++)
            SBUF0=ch[i];
            while(TI0==0);
```



Reciving program for Uart with C8051F340

```
// Exp - 8 Implement UART with C8051F340
Name: Shreerang Mhatre
Rollno: 52
Batch: A3
Class: TY
Reciving Program:
#include"c8051f340.h"
#define sysclk 12000000
#define BR UART0 9600
sbit BUZZER=P3^3;
void main()
    OSCICN = 0X83;
    XBR0=0X01;
    XBR1=0X40;
    P3MDOUT=0X08;
    BUZZER=1;
    P0MDIN=0X20;
    P4MDOUT=0xFF;
    SCON0=0X10;
    CKCON=0X01;
    TH1=256-(sysclk/BR_UART0/2/4);
    TH1=TL1;
    TMOD=0 \times 20;
    TR1=1;
    while(RI0==0)
        P4=~SBUF0;
        RI0=0;
```



Transmission Output:



Receiving Output:





Dr. Vishwanath Karad

MIT WORLD PEACE
UNIVERSITY | PUNE

TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

<u>(S)</u>	study Question 1900 (1900)
(OI)	Explain the need of MAX232 in senal communication. The MAX332 is a crucial component in senial communication systems, serving as a bridge between devices operating at different voltage levels and signal polarities. In older RS-282 communication, signals are represented by voltage levels ranging from -15V to +15V with inverted logic, while modern microcontobs typically operate at lower voltage levels and use non-inverted logic. The MAX232 addresses this discrepency by performing voltage level conversion and
7)	Signal inversion, ensuring scamless Commonication botheon devices. white the Port Properties for setting typer Terminal connection. Port Properties for setting typer Terminal connection are— Baud Rate Data Bits Parity stop Bits Flow Control.



Dr. Vishwanath Karad

MIT WORLD PEACE
UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

	PAGE No. DATE
<u>@</u>	Explain UART registers:
>	UART Coniversal Asynchronus Received
	Transmitter) registers are hardware registers in a microcontroller or
tions	communication module responsible for
Parity	controlling and managing control
Iprydia	configuration setting such as band rates data bits, parity and stop bits
a him	additionally, there are status registers
	that provide information about the
Sprain	flags for transmit and receive bofforg
7	errors and interrupts.
Va.	MAXDED addividence this discovered
boo	performing voltage level conversion
L a	GIGNA) INVERSIONS CHOSUNDA SCRUPPES
	Compranication however devices.
- NA.	cas mile the part properties for early
	Hyper Terming! connection
lovin	-> Part Properties for aething thyper Term
	competion ave -
	- A Band Rate
	etia sta a
	- B Parity
	Aid goto Bits,
	(E) Flow Control.