21BDS0340

Abhinav Dinesh Srivatsa

Microprocessors and Microcontrollers Lab

Task – IV

Question 1

Aim:

Write an 8051-assembly language program to transfer data serially at baud rate 4800 with 8-bit data (Your Reg. Number and Name) and 1 stop bit. Observe the transmitted data in the serial window of the simulator.
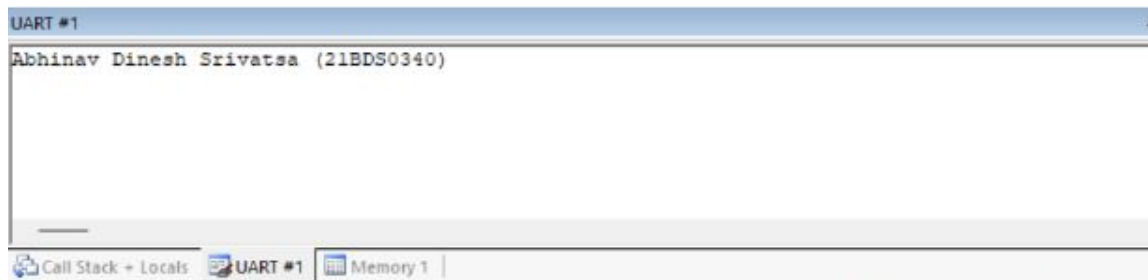
Tools Required:

8051 microcontroller

Keil microcontroller software

Program

Memory Locations	Label	Mnemonics	Comments
		ORG 0200H	
		DB "Abhinav Dinesh Srivatsa (21BDS0340)"	Moving my name and registration number to space 200H
		ORG 0000H	
0000H		MOV DPTR, #0200H	Move 200H to DPTR
0003H		MOV TMOD, #20H	Timer 1 mode 2
0006H		MOV TH1, #−6	Set baud rate = 4800
0009H		MOV SCON, #50H	
000CH		SETB TR1	Start timer 1
000EH	AGAIN:	MOVC A, @A+DPTR	Move data from location 200H to A
000FH		MOV SBUF, A	Move data from A to SBUF
0011H		CLR A	Clear A
0012H		INC DPTR	Increment DPTR
0013H	HERE:	JNB TI, HERE	Stay here till all bits transmitted
0016H		CLR TI	Clear transmission interrupt flag
0018H		SJMP AGAIN	Jump to AGAIN to restart
		END	

Output:

Result:

This program displays my name and registration number through serial communication transmission

Question 2

Aim:

Write an 8051-assembly language program to receive bytes of data serially and put them in P2. Set the baud rate at 9600, 8-bit data, and 1 stop bit.

Tools Required:

8051 microcontroller

Keil microcontroller software

Program

Memory Locations	Label	Mnemonics	Comments
		ORG 0000H	
0000H		MOV TMOD, #20H	Timer 1 mode 2
0003H		MOV TH1, #−3	Set baud rate 9600
0006H		MOV SCON, #50H	
0009H		SETB TR1	Start timer 1
000BH	HERE:	JNB RI, HERE	Stay here till reception complete
000EH		MOV A, SBUF	Move SBUF to A
0010H		MOV P2, A	Move A to P2
0012H		CLR RI	Clear reception interrupt
0014H		SJMP HERE	Jump to HERE to start again
		END	

Question 3

Aim:

Assume that a switch is connected to pin P1.0. Write a program to monitor the switch and perform the following:

a. If SW = 0 send the message "VIT" to the Serial #0 port
b. If SW = 1 send the message "University" to the Serial #1 port.

Tools Required:

8051 microcontroller

Keil microcontroller software

Program

| Memory Locations	Label	Mnemonics	Comments
		ORG 0000H	
		SW1 EQU P1.0	Assign switch 1 to P1.0
0000H	MAIN:	MOV TMOD, #20H	Timer 1 mode 2
0003H		MOV TH1, #−3	Set baud rate to 9600
0006H		MOV SCON, #50H	
0009H		SETB TR1	Start timer 1
000BH		SETB SW1	Set bit switch 1 as input
000DH	S1:	JB SW1, NEXT	Jump to NEXT if switch 1 is high
0010H		MOV DPTR, #STR1	Move STR1's start index to DPTR
0013H	FN:	CLR A	Clear A
0014H		MOVC A, @A+DPTR	Move byte from DPTR to A
0015H		JZ S1	Jump to S1 if A = 0
0017H		ACALL SENDCOM	Call SENDCOM to transmit data
0019H		INC DPTR	Increment DPTR
001AH		SJMP FN	Jump to FN when completed transmission
001CH	NEXT:	MOV DPTR, #STR2	Move STR2's start index to DPTR
001FH	LN:	CLR A	Clear A
0020H		MOVC A, @A+DPTR	Move byte from DPTR to A
0021H		JZ S1	Jump to S1 if A = 0
0023H		ACALL SENDCOM	Call SENDCOM to transmit data
0025H		INC DPTR	Increment DPTR
0026H		SJMP LN	Jump to LN when completed transmission
0028H	SENDCOM:	MOV SBUF, A	Move data from A to SBUF
002AH	HERE:	JNB TI, HERE	Stay here till all bits transmitted
002DH		CLR TI	Clear transmission interrupt flag
002FH		RET	Return to origin of call
	STR1:	DB "VIT"	
	STR2:	DB "University"	
		END	

Output:

When P1.0 is high:
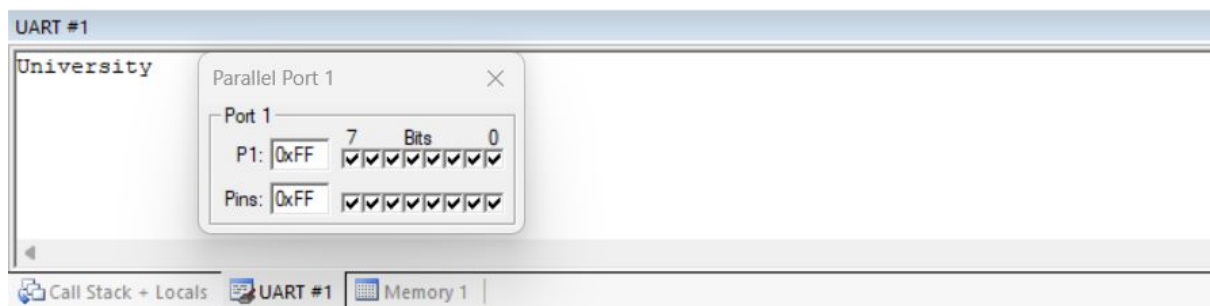
When P1.0 is low:
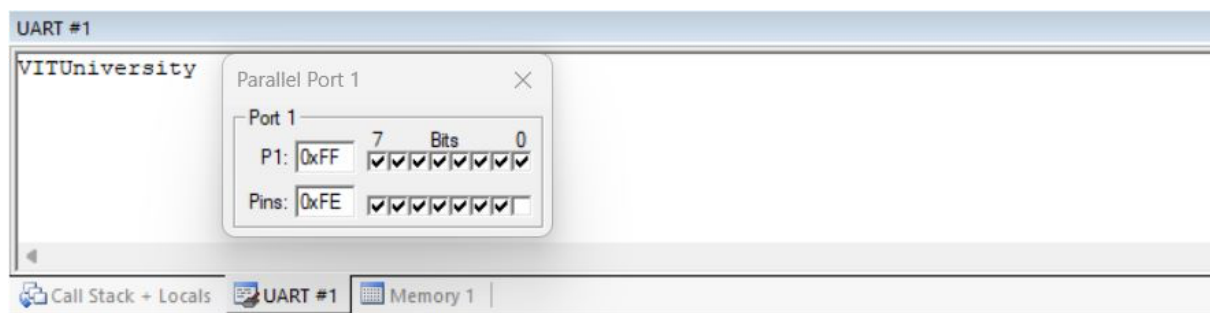
Result:

This program sends the string 'VITUniversity' to the serial port when the switch connected to P1.0 is low and sends the string 'University' when the switch P1.0 is high