



VIT[®]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE ENGINEERING

WINTER SEMESTER 2022-2023

LAB ASSIGNMENT - 4

Slot: L11 – L12

Class: VL2022230504038

Programme Name & Branch: B. Tech CSE

Course code & Title: BECE204P – Microprocessors and Microcontrollers Lab

Faculty Name: Venu Allapakam

EXPERIMENT – 4: Serial Communication

Program 1:

Aim: To write an Assembly Level Program to serially transmit the data string “VIT UNIVERSITY” from ROM at 9600 baud rates.

Software Requirement: Keil Software

Program:

```

1  ORG 0000H
2  XX: MOV DPTR, #MYDATA
3  MOV TMOD, #20H
4  MOV TH1, #-3
5  MOV SCON, #50H
6  SETB TR1
7  MOV R1, #14
8  AGAIN: CLR A
9  MOVC A, @A+DPTR
10 MOV SBUF, A
11 HERE: JNB TI, HERE
12 CLR TI
13 INC DPTR
14 DJNZ R1, AGAIN
15 SJMP XX
16 MYDATA: DB "VIT UNIVERSITY "
17 END

```

Output:

Before and After Execution:

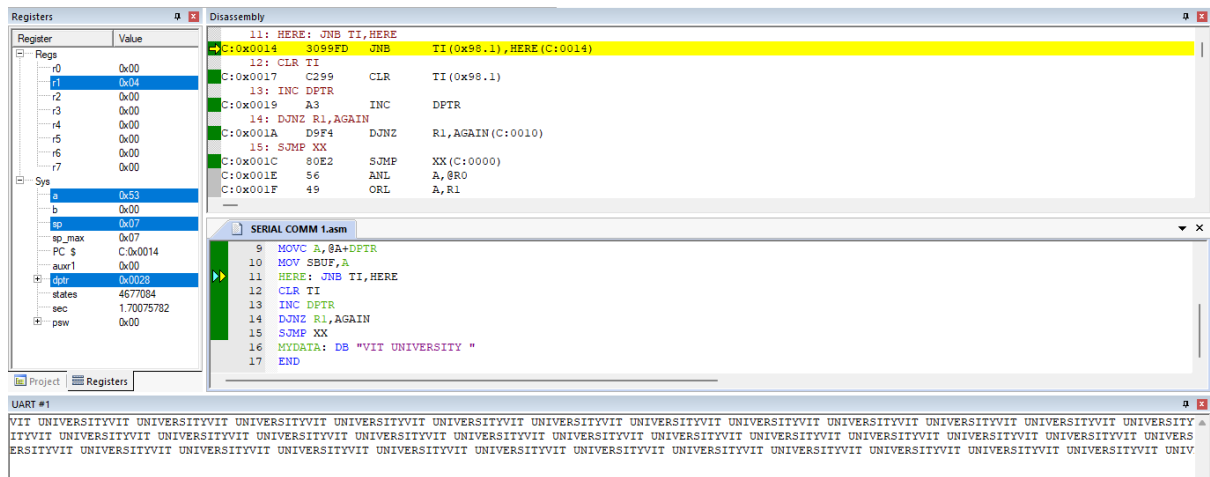
The screenshot displays the Keil uVision IDE interface during program execution. The left pane shows the 'Registers' window with the following values:

Register	Value
r0	0x00
r1	0x00
r2	0x00
r3	0x00
r4	0x00
r5	0x00
r6	0x00
r7	0x00
a	0x00
b	0x00
sp	0x00
sp_max	0x07
PC	0x0000
auxr1	0x00
dptr	0x0000
states	0
sec	0.00000000
psw	0x00

The right pane shows the 'Disassembly' window with the following instructions:

Address	Hex	Assembly	Comment
C:0x0000	90001E	MOV	DPTR, #0x001E
3:		MOV	TMOD, #20H
C:0x0003	758920	MOV	TMOD(0x89), #0x20
4:		MOV	TH1, #-3
C:0x0006	758DFD	MOV	TH1(0x8D), #0xFD
5:		MOV	SCON, #50H
C:0x0009	759850	MOV	SCON(0x98), #0x50
6:		SETB	TR1
C:0x000C	D28E	SETB	TR1(0x88.6)
7:		MOV	R1, #14
C:0x000E	790E	MOV	R1, #0x0E
8:		AGAIN:	CLR A

The bottom pane shows the 'Project' window with the file 'SERIAL COMM 1.asm' selected. The 'Registers' window is also visible at the bottom, showing the 'UART #1' status.



Result:

Hence the data from ROM is being successfully transmitted continuously (as visible in the UART window) serially at 9600 baud rate.

Program 2:

Aim: To write an ALP that takes input from keyboard and transmit the data serially to P1 continuously. (4800 baud rate)

Software Requirement: Keil Software

Program:

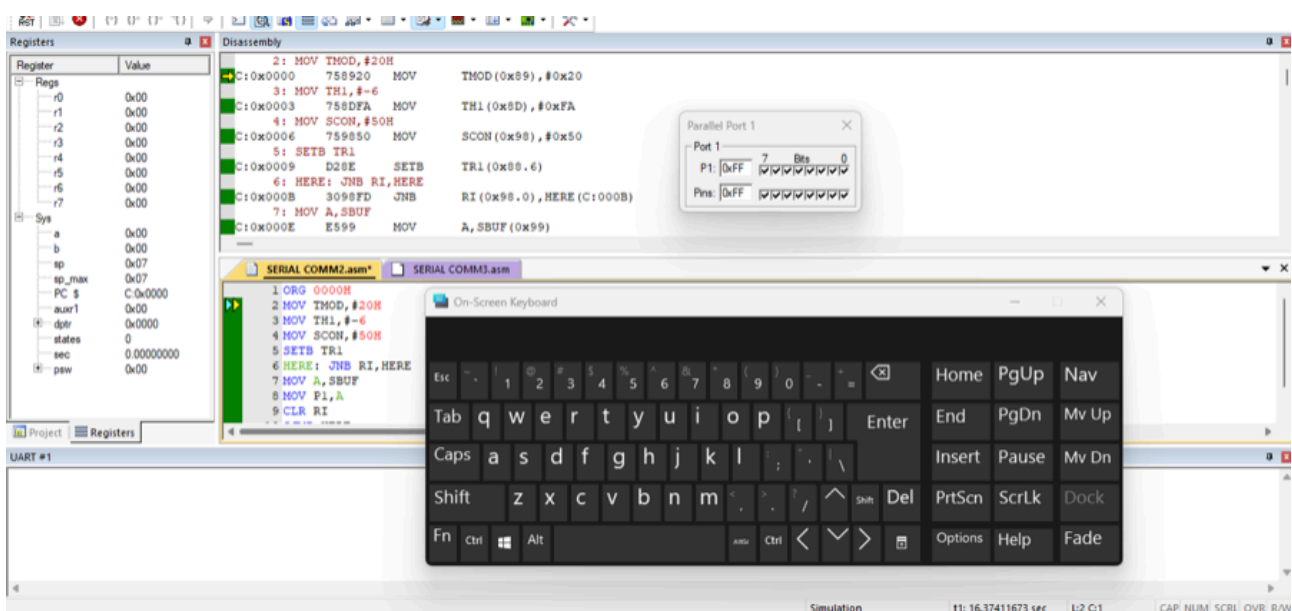
```

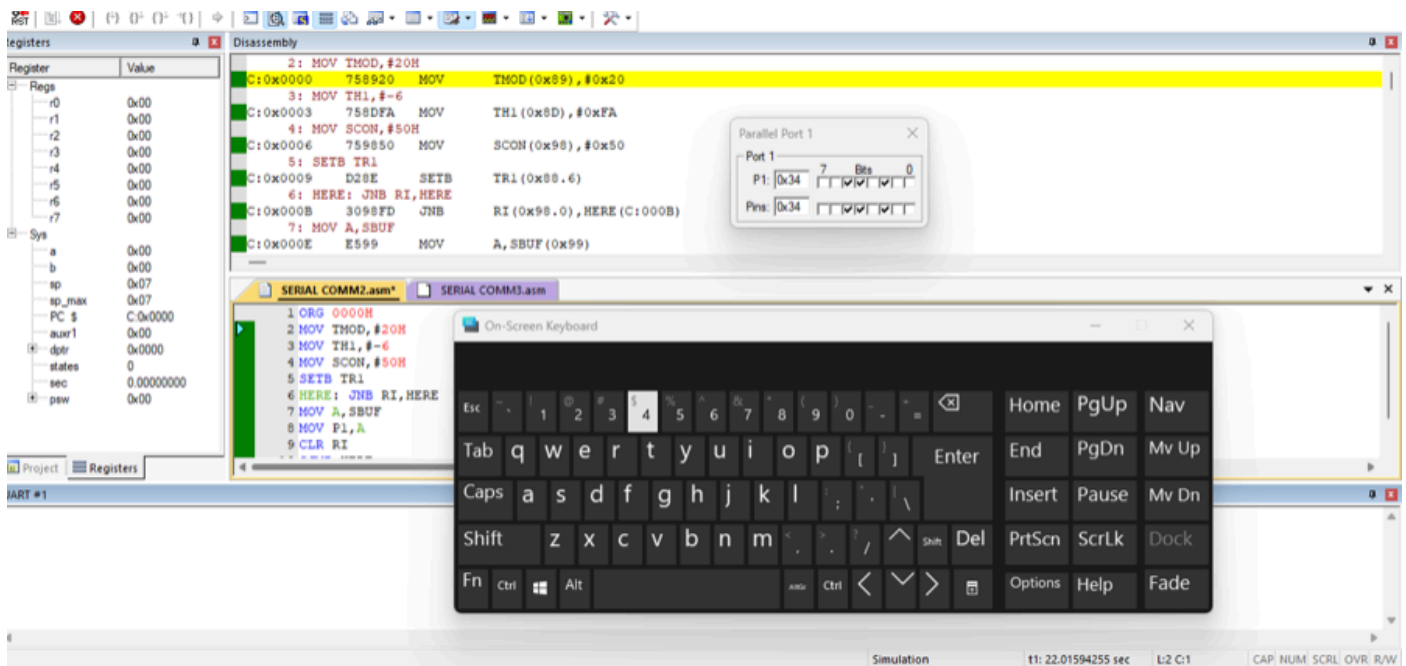
1  ORG 0000H
2  MOV TMOD, #20H
3  MOV TH1, #-6
4  MOV SCON, #50H
5  SETB TR1
6  HERE: JNB RI, HERE
7  MOV A, SBUF
8  MOV P1, A
9  CLR RI
10 SJMP HERE
11 END

```

Output:

Before Execution:



After Execution:**Result:**

Hence the input taken from keyboard is being transmitted successfully to P1 continuously at 4800 baud rate.

Program 3:

Aim: To write an ALP to transfer the message "YES" serially at 9600 baud rate continuously.

Software Requirement: Keil software

Program:

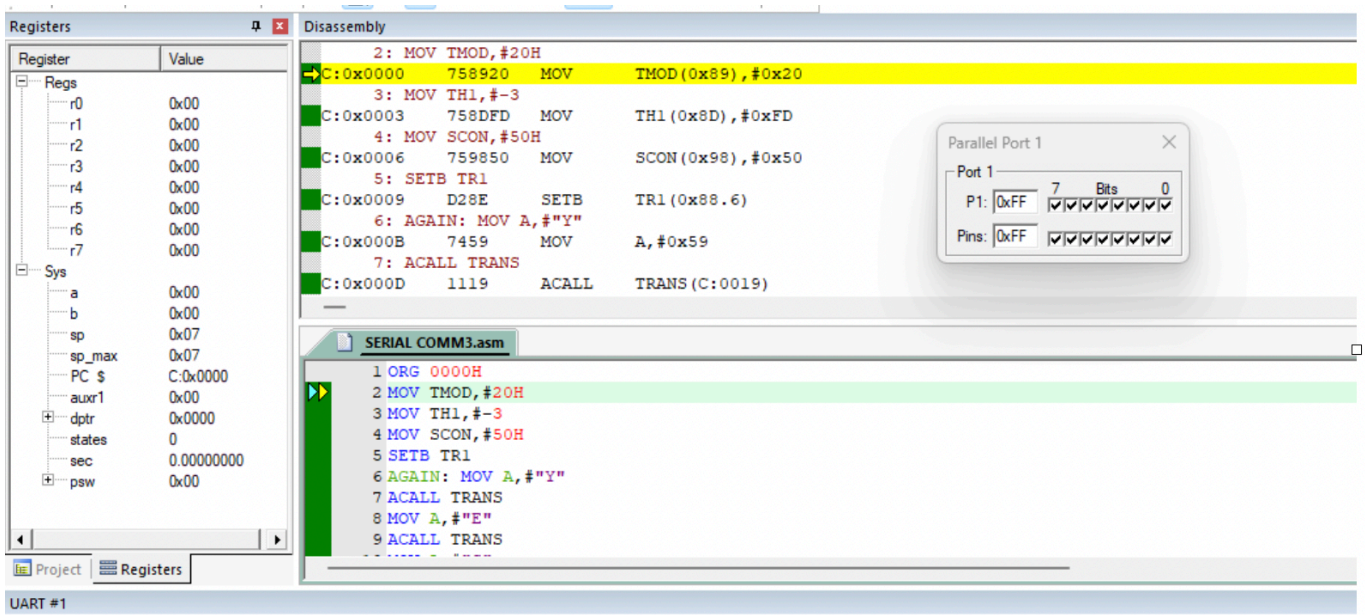
```

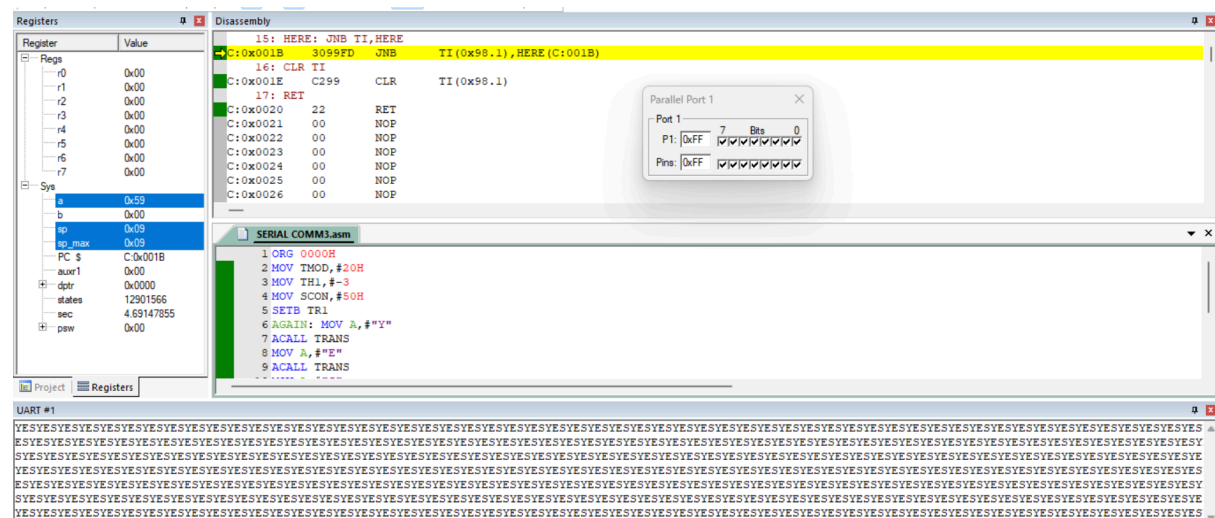
1  ORG 0000H
2  MOV TMOD, #20H
3  MOV TH1, #-3
4  MOV SCON, #50H
5  SETB TR1
6  AGAIN: MOV A, #"Y"
7  ACALL TRANS
8  MOV A, #"E"
9  ACALL TRANS
10 MOV A, #"S"
11 ACALL TRANS
12 SJMP AGAIN
13 ;-----
14 TRANS: MOV SBUF, A
15 HERE: JNB TI, HERE
16 CLR TI
17 RET
18 END

```

Output:

Before Execution:



After Execution:**Result:**

Hence, the data string “YES” has been successfully transmitted serially at 9600 baud rate continuously.