Embedded System Lab (CS-16203) Assignment-6

Write Program in KEIL Embedded C:

1. Write a C program for the 8051 to display a pattern of AA and 55h

on port P1
with the delay of 100 ms.
Ans 1.
#include <REG51.h>

// Delay function void delay(unsigned int ms) { unsigned int i,
j; for (i = 0; i < ms; i++) for (j = 0; j < 1000; j++); // Adjust
this loop for 1 ms delay }

void main() {
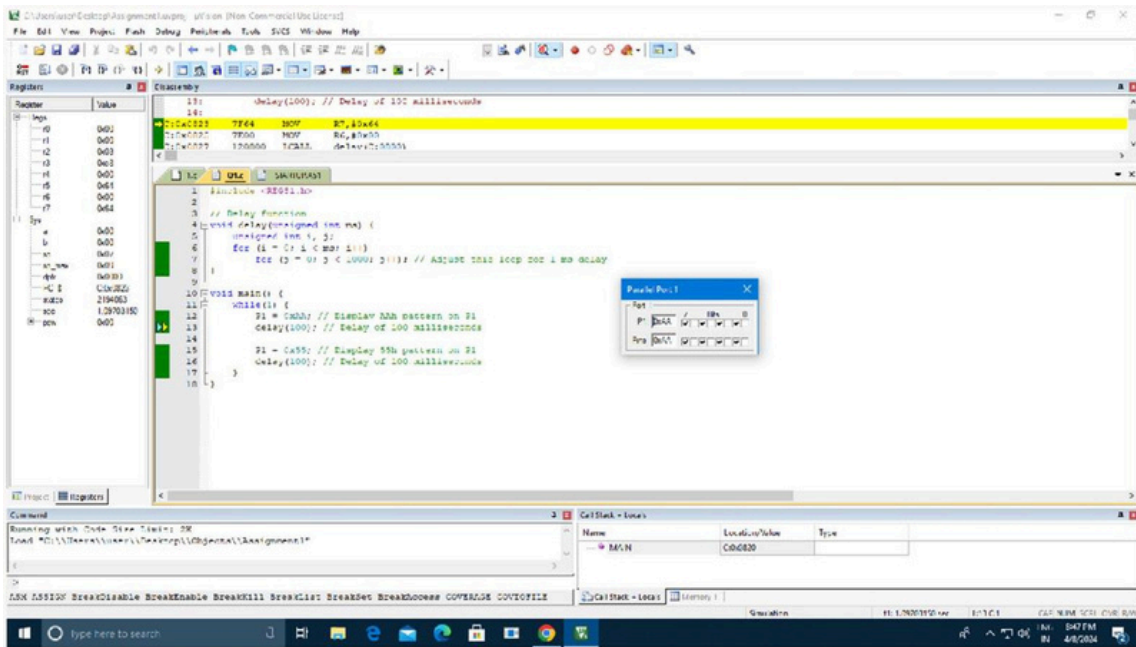while(1) {
P1 = 0xAA; // Display AAh pattern on P1
delay(100); // Delay of 100 milliseconds

P1 = 0x55; // Display 55h pattern on P1 delay(100); //
Delay of 100 milliseconds
}
}

Output –

2. Write an 8051 C program to get a byte of data from P0. If it is less than 100, send it to P1; otherwise, send it to P2.
Ans 2.

```c
#include <REG51.h>

void main() { unsigned
char dataByte;

while(1) {
// Read byte of data from P0 dataByte =
P0;

// Check if the data is less than 100
if (dataByte < 100) {
// If less than 100, send it to P1
P1 = dataByte;
} else {
// If not less than 100, send it to P2
P2 = dataByte;
}
}
```
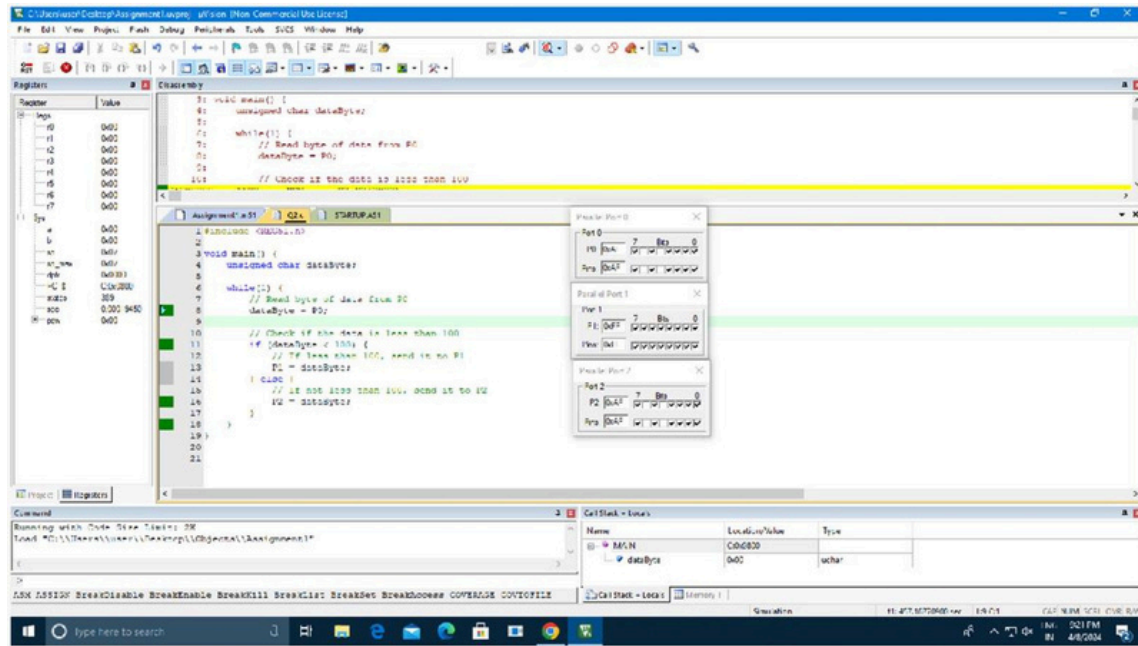
}
Output –

3. Write an 8051 C program to convert 11111101 (FD hex) to decimal and display the digits on P0, P1 and P2.
Ans 3.
#include <REG51.h>

void main() { unsigned char hexNumber = 0xFD; // Hexadecimal number FD unsigned char digitP0, digitP1, digitP2;

// Extract individual digits from the hexadecimal number
digitP0 = hexNumber % 10; // Ones place hexNumber /= 10; digitP1 = hexNumber % 10; // Tens place hexNumber /= 10; digitP2 = hexNumber % 10; // Hundreds place
// Display digits on P0, P1, and P2
P0 = digitP0;
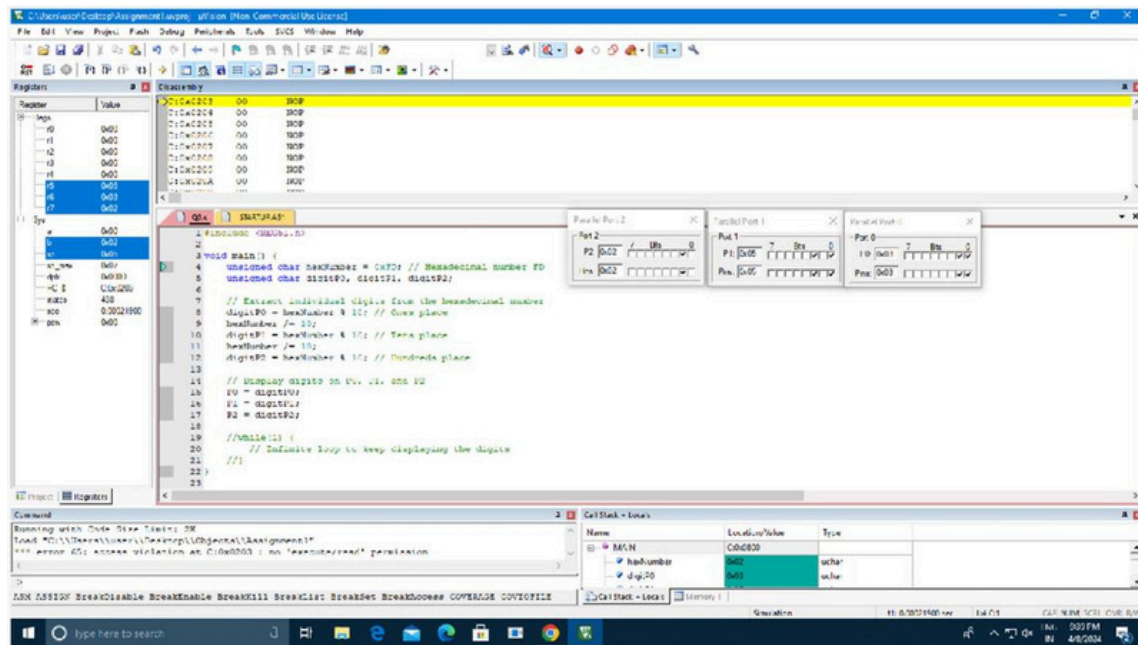P1 = digitP1;
P2 = digitP2;
}
Output –

To be done using EdSim51 simulator in 8051:

1. Write a Program to check whether a number is palindrome or not. If palindrome store FFh in Accumulator.

Ans 1.

ORG 0000H

MOV DPTR,#8000H

MOVX A,@DPTR

MOV R0, A

MOV R2, #00H

BACK: MOV B, #0AH

DIV AB

MOV B, A

MUL AB

SUBB A, R0

JNZ NOT_PALINDROME

INC R2

JMP NEXT

NOT_PALINDROME: CLR A JMP

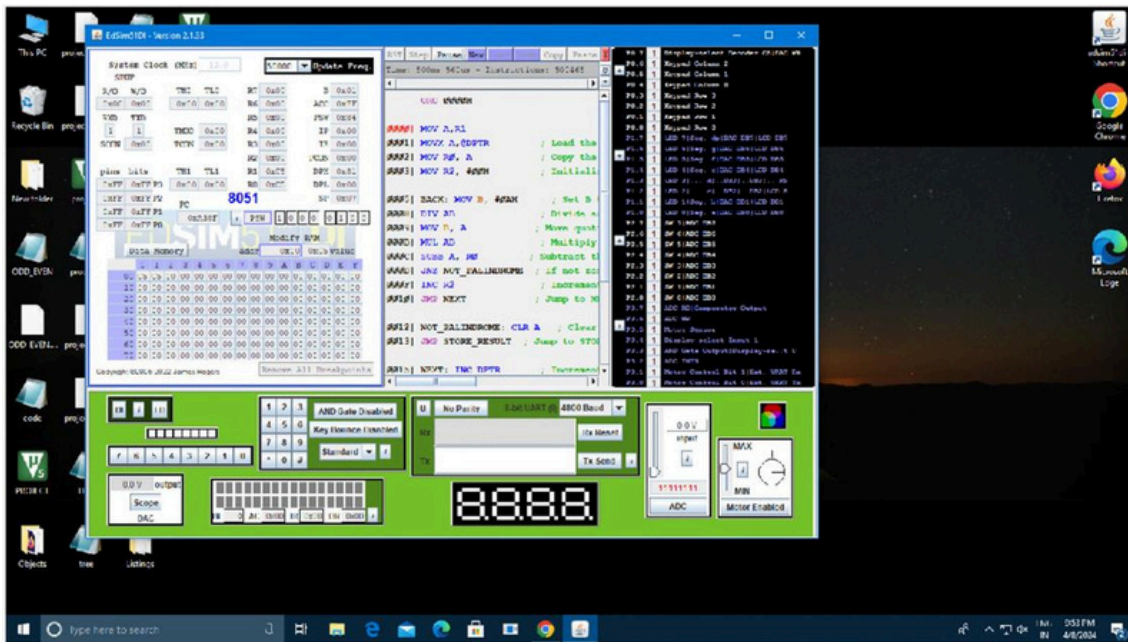STORE_RESULT

NEXT: INC DPTR
MOVX A, @DPTR
CJNE A, #0FFH, BACK JMP
STORE_RESULT

STORE_RESULT: MOV A, #0FFH
MOV DPTR, #8100H
MOVX @DPTR, A END

2. Write an assembly language program to compute prime factors of a number.

Ans 2.

```
mov
r2,#3Ch
mov
r1,#30h
mov
r0,#02h

loop1: clr a
```
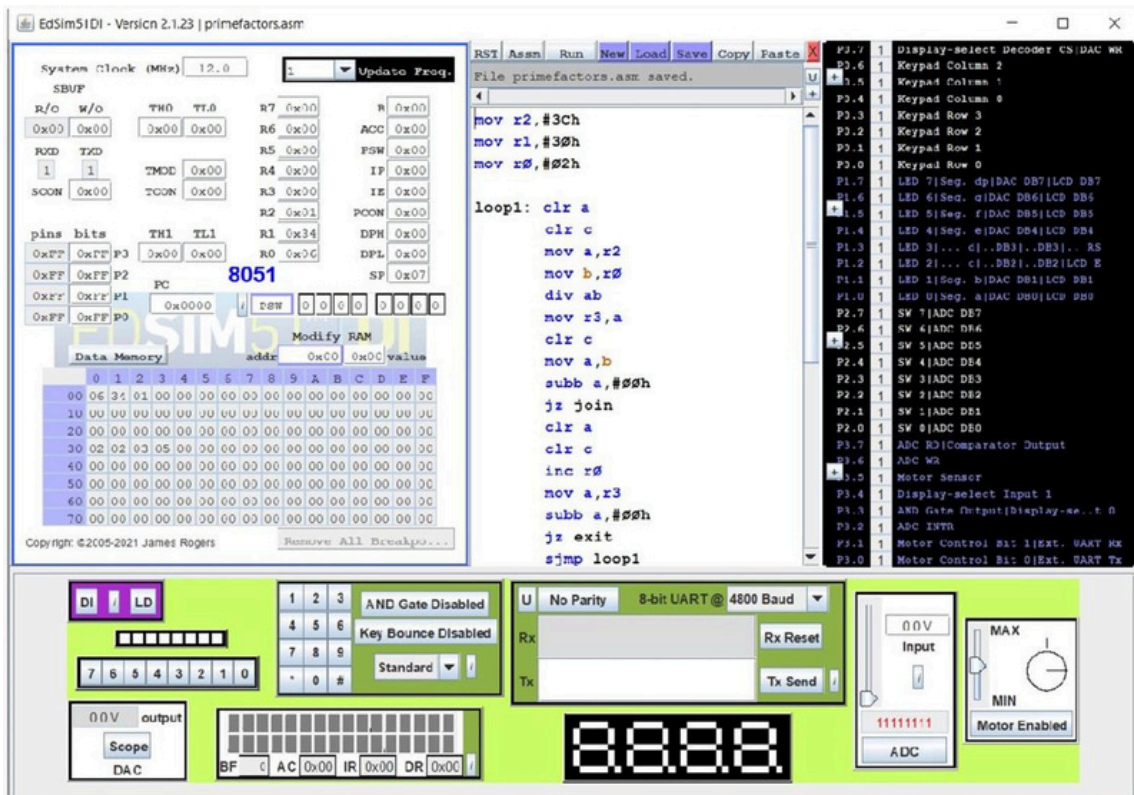
```
                clr c
                mov a,r2
b               mov b,r0
                div a
                mov r3,a
                clr c
subb a,#00h jz  mov a,b
join clr a clr c inc
r0 mov a,r3 subb
a,#00h jz exit
        sjmp loop1

join: mov a,r0
        mov @r1,a
inc r1
mov a,r3
mov r2,a
        sjmp loop1

exit: nop end
```

3. Write an assembly language program to print Binary Pattern on the Port 1

Ans 3.
ORG 0000H

START: MOV P1, #00000000B

LOOP: MOV A, P1 CPL
A
MOV P1, A
CALL DELAY
SJMP LOOP

DELAY: MOV R2, #0FFH
L1: DJNZ R2, L1 RET

END

```asm
        ORG   #####
START:  MOV P1, #########   ; In
LOOP:   MOV A, P1           ; M
        CPL A               ; C
        MOV P1, A           ; M
        CALL DELAY          ; C
        SJMP LOOP           ; J

DELAY:  MOV R2, #0FFH       ; L
L1:     DJNZ R2, L1         ; D
        RET                 ; R

        END
```

8051

Error! Function set not called!