LAB TITLE AND CODES EMBEDDED COMPUTING LAB (19 CLE243)

EXPERIMENT NUMBER: 3

DATE: 26/04/2022 (TVESDAY)

* AIM :

To configure MSP43a on-chip peripherals and establish serial communication- transmission and neception.

+ ALGORITHM: CONTINUOUS TRANSMISSION OF A CHARACTER USING VART)

1 Put in reset made and disable oversampling

O Set 8-bits data - No Parcty - 1 stop bit for Transmission (00)

3 In asynchronous made, first ISB and then mSB should be set, followed by SMCIK.

@ Enabled EVSCI. At logic is held in reset state (81).

O configure functionality of P1.2, P1.3 as UART pins.

1 Take MRT out of neset made.

1) In the main function after calling the CART transmission function, perform the following steps in an infinite loop-

(4) Wait until taansmitter buffer is empty

(iii) Send a character (iii) Delay

SOURCE CODE: CCONTINUOUS TRANSMISSION OF A CHARACTER USING WART)

include "msp.h"

void VARTO_init (void); Il Function for VART Transmission

void delayms (int n); N Delay Function

Il Main Function: int main (vaid)

VARTO - init (); Il Call VART Transmission Function

Il Infinite Loop (An embedded program does not stop): while (1) while ([(FUSCI_AO -> IFG L Ox 02)) {} I Wait until transmission buffer is empty 'Y': N Send a character while ([(EUSCI_AO -> IFG & OxOS)) {3 Wait until transmission buffer is empty EVSCI_AO → TXBVF > 'E'; If Send a character while ([(EUSCI_AO -> IFG & Oxor)) f3 I wait until transmission buffer is empty EUSCI-AO → TXBVP = 'S'; // Send a character delayme(2); Is telay by 2 ms

// Function for VART Transmission:

void vARTO- init (void)

{

EVSCI-AO -> CTLWO 1>1; // Put in reset made to configure VART

EVSCI-AO -> MCTIN = 0; // Disable eversampling

EUSCI-AO -> CTLWO -> OxOOSI; // OO - 1 stap bit for Transmission.

NO Parity, 8-bits data, Asynchronous Made, Pirst LSB Then MSB,

SMCIK, 81 - Enabled EUSCI-AO legic is held in heat state

EVSCI_ A0 → BRW = 26: 1/3000000 / 115200 = 26

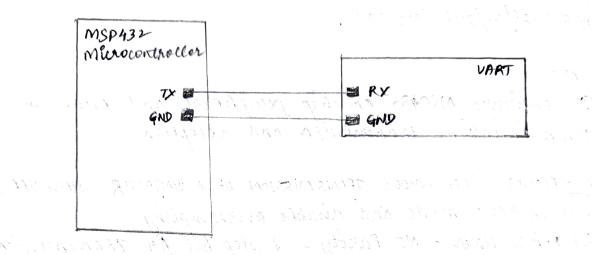
PI → SFLO I = 0x0C; 1/1 Configure functionality of PI.2, PI.3 as

VART pins

PI → 25H & = 0x0C;

ELSCI_AD -> CTLNO k= M; Il Take VART out of reset mode

OUTPUT (CONTINUOUS TRANSMISSION OF A CHARACTER USING WART):



- SERIAL SWINDOW : - ROLLY BUCK BULK BUCK TO AND THE WAY A A SECOND OF

YES YES YES YES ! BROWN AND DOWN BY SANDER ON LOVE OF THE SANDER AND itelygisis fencileration of 123, 143 as sour

firsterion the fellogicity alepa in an Englished estap -

(d) उपराय हामारी स्थार हेक्कारंस्टर रिवा किल्कुन की एक कृति

read michael is in the to

MRT EUC H REDET ANGELE

CONTRACTOR OF THE STANDARD OF SPACE TO CONTRACT when were for it is a series of the

4: 12 ins

V Delay milliseconds when system clock is at 8 MHz for Rev (MCV; void delayMs (int n)

int i, j:

for (j=0; j< n: j++)

for (i=150; i>0; i--): V Delay of 1 ms

* ALGORITHM: (RECEPTION AND TRANSMISSION OF A
CHARACTER USING UMT)

O Put in reset made and disable eversampling.
O set 8-bits data - No Parity - 1 step for transmission. In asynchronous made, first ISB and then MSB should be set, followed by SMCIK (00).

@ Enabled FUSCI-AO lagic is held in reset state (81).
@ configure functionality of P1.2, P1.3 as VART pins.

The that aut of reset mode.

O In the main function after calling the VART thansmissien function, wait until thansmitter buffer is empty and then, send the required number of characters bit-by-bit in a for loop.

O In an infinite loop, perform the fallowing steps-

(i) Wait until thansmitter buffer is empty (ii) Receive a character (iii) Wait until thansmitter buffer is empty (iv) Display the character

* SOURLE CODE: (RECEPTION AND TRANSMISSION OF A
CHARACTER USING VART)

include 'mg. h'
void VARTO. init (void): A Function for VART Fransmission
void delayMs (int n): S Delay Function

unsigned char c; unsigned char message[]: "Ready \n"; int i;

```
Il main function &
 int main (void)
  CARTO_ init (); I call UNRT THANSMISSION Function
  for (1=0; 127; i++)
    while ([[EUSCI_AO -> 1FG & exor)) {} Il wait until thansmitter
                                           buffer is empty
    EVSCI_AO -> TXBUF = message [i]; Il send a character
 A Infinite toop (an embedded program does not stop):
    while (( ( EUSCE AO - 3FG & Ox OX)) {} I wait until transmitter
                                            buffer is empty
     E = EVSCI_AO → RXBUF; MReceive a character
     while ( [ CEUSCI_AD -AFG & 0x02)) {} / Wait until transmitter
                                             buffer is empty
    EUSCI-AD -> RXBUF = C; It Display the character
Munition for CART Transmission:
void VARTO_init (void)
 EUSCI-AO -> CTLMO 1=1; 11 Put in reset made to configure WART
```

EUSCI-AO -> CTLNO 1=1; NPut in reset made to configure VART

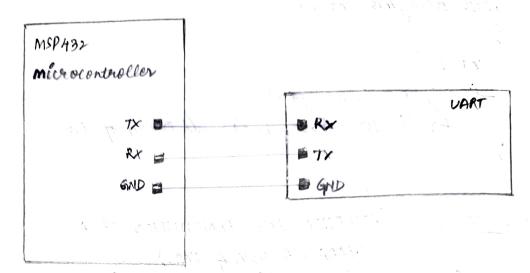
EUSCI-AO -> METEN = 0; Nousable aversampling

EUSCI-AO -> CTLNO = 0×0081; NO 00 - 1 step bit, NO Parity, 8-bits data,

Anynchronous Made, First 150 Then MSB, SMCLK (00), Enabled

EUSCI-AO lagic is held in reset state (81)

* OUTPUT: (RECEPTION AND TRANSMISSION OF A CHARACTER USING VART)



CAN LICA MICE WALREL B. M. M.

- SERIAL WINDOW :-

Receive a character : Ambita
Diplay the character: pomble

e, an descentilles buffer in ingry a no secucios

TOTAL BUT THE STATE OF THE STAT

is fixed they perform one factions in

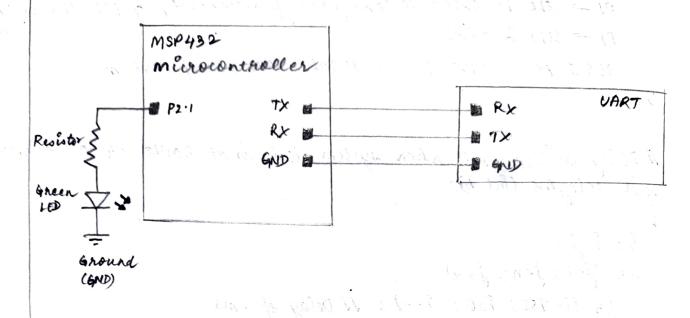
and the first that the bill of the contract of

in south a relationer makes buffer is a regard

```
EUSCI_AO -> BRW = 26 ;
                                  11 3000000 / 115200 = 26
         PI - SETO 1 = 0x0c > 11 configure functionality of Ph2, Ph3 as VART
         PI -> SELI R= « OXOC)
         EUSCI_AD → CAINO &= ~1; Il Take VART out of neset made
   Il Delay milliperounds when system clock is at 3 MHR for Rev C MCV3
   void delay Ms ( Int n);
     for (jed; jen; j+1)
      for (1=750; 100; 1-1; 11 Delay of 1 ms
* ALGORITHM: (DEVICE CONTROL USING WART)
1 Put in reset made and disable oversampling.
  set 8-bits data - NO Parity - 1 step bit for transmission. In asynchronous
  made, first LSB and then MSB should be set, followed by SMCK (00).
 anabled EVSCI-AD logic is held in next state (BI).
 configure functionality of P1.2, P1.3 as VART pins
 Take VART out of neset made.
  In the main function after calling the VART thansmission function, configure functionality of P2.1 as simple 6000 Port and configure direction of P2.1 as
 LED output
 In an infinite loop, perform the following steps -
  (3) wait until transmitter buffer is empty.
 (ii) Receive a character
 (iii) If character is A/a, turn ON P2.1 Green LED.
 (in) Else if character is B/b, surn OFF P2.1 Green HD.
```

```
* SOURCE CODE: (DENCE CONTROL USING VANT) :
  # include "msp. h"
  void VARTO_ init (void); Whention for VART TRANSMISSION
  unsigned char c;
  I Main Function:
  int main (void)
   VARTO_ init (): N call UART Transmission Function
    P2 -> SELI 1 = -2) II configure functionality of P21 as simple
 GPIO Port
     P2 → SELD b= 12)
     P2 -> DIR S= 2; 11 Configure direction of P2-1 as LED autout
     Il Infinite 200p (An embedded pragram does not stop):
     while (1)
      while (1 (tisc) - AO - 186 & OxOI)) {} II want until transmitter
 buffer is empty
       C = EUSCI_MO -> RXBUF; // Receive a character
      of cc== 'A' / c== 'a')
       PI -> OUT 1=2; Il Turn ON P2-1 Green LED
     else of Cosx'B' 11 c = 16')
       P2 -OUT to 2> 1/ Turn OFF P2-1 Green FED
```

(DEVICE CONTROL USING UNRT)



The first 1st out the wife thereth is at ifallened by source in

-> SERIAL WINDOW :-

Receive a character; ABABAB Kandangan ang mang mang mang man Kang Kanggan

of the matter following the method of the succession of the succes until humanitur buffer is empty and then send.

, हार साय मार्थ के किया है। की अंग्रेस स्टिश्न कराय कराय है।

प्रांक् भारत है है। इस स्वार्थ के सामा कुर्वा

Car Me Boath of Valle

in meta a carpy proper or the state primary allow

and the second of the second of the second of the second

The complete of the control of the control of

```
# Function for UART Transmission:

Void LARTO. init (void)

{

EUSCI. AD → CTLNO 1=1; II Aut in neset made to configure UART

ASIE. NO → MCTLN = 0; # Disable oversampling

EUSCI. AD → CTLNO = OxODSI; # OD- 1 stop bit, NO Parity, &-bit data,

Asynchronous Made, First 158 Then MSB, SMCLK; &I- Enabled

EUSCI. AD Legic held in reset state

ASII. AD → BRN = 26; # 3000000 / 115200 = 26

PI → SEID 1= DxDC; # Configure functionality of P12, P13 as

LART pins

PI → SEIJ L = ~ DXDC;

ASII. AD → CTLNO k = 1; # Take VART out of heat made
```

* RESOLE :

Configured MSP432 on-chip peripherals and established serial communications (transmission and reception). All simulation results were verified successfully.