```
; Compiled with: OshonSoft PIC Basic Compiler v7.883
; Microcontroller model: PIC16F877A
; Clock frequency: 10.0MHz
;
        R0L EQU 0x020
        R0H EQU 0x021
        R1L EQU 0x022
        R1H EQU 0x023
        R2L EQU 0x024
        R2H EQU 0x025
        R3L EQU 0x026
        R3H EQU 0x027
        R4L EQU 0x028
        R4H EQU 0x029
        R5L EQU 0x02A
        R5H EQU 0x02B
        R0HL EQU 0x020
        R1HL EQU 0x022
        R2HL EQU 0x024
        R3HL EQU 0x026
        R4HL EQU 0x028
        R5HL EQU 0x02A
        R1HL0HL EQU 0x020
        R3HL2HL EQU 0x024
        R5HL4HL EQU 0x028
        SO_PORT EQU 0x035
        SO_BIT EQU 0x036
        SO_INTL EQU 0x037
;       The address of 'pre1' (byte) (global) is 0x038
;       The address of 'pre2' (byte) (global) is 0x039
;       The address of 'bajt1' (byte) (global) is 0x03A
;       The address of 'bajt2' (byte) (global) is 0x03B
;       The address of 'bajt3' (byte) (global) is 0x03C
        ORG 0x0000
        BCF PCLATH,3
        BCF PCLATH,4
        GOTO L0003
        ORG 0x0004
        RETFIE
; User code start
L0003:
; 1: 'program cte dva bajty preambule na UART
; 2: 'pokud je pre1 a pre2 rozdilna od 254, nedela nic
; 3: 'pokud je pre1 = pre2 = 254, precte dalsi bajty, nastavi PORTy a potvrdi do
uartu odeslanim hodnot
; 4:
; 5: 'deklarace promennych
; 6: Dim pre1 As Byte  'preambule pre1
; 7: Dim pre2 As Byte  'preambule pre2
; 8:
; 9: 'bajty dat
; 10:
; 11: Dim bajt1 As Byte
; 12: Dim bajt2 As Byte
; 13: Dim bajt3 As Byte
; 14:
; 15: 'konfigurace portu
; 16:
; 17: ConfigPin RB0 = Output  'bajt indukcnost
        BSF STATUS,RP0
        BCF TRISB,0
; 18: ConfigPin RB1 = Output
        BCF TRISB,1
; 19: ConfigPin RB2 = Output
        BCF TRISB,2
; 20: ConfigPin RB3 = Output
        BCF TRISB,3
; 21: ConfigPin RB4 = Output
        BCF TRISB,4
; 22: ConfigPin RB5 = Output
        BCF TRISB,5
; 23: ConfigPin RB6 = Output
        BCF TRISB,6
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; 24: ConfigPin RB7 = Output
        BCF TRISB,7
; 25:
; 26: ConfigPin RA0 = Output  'bajt kapacita - spodni bity
        BCF TRISA,0
; 27: ConfigPin RA1 = Output
        BCF TRISA,1
; 28: ConfigPin RA2 = Output
        BCF TRISA,2
; 29: ConfigPin RA3 = Output
        BCF TRISA,3
; 30:
; 31: ConfigPin RD4 = Output  'bajt kapacita - horni bity
        BCF TRISD,4
; 32: ConfigPin RD5 = Output
        BCF TRISD,5
; 33: ConfigPin RD6 = Output
        BCF TRISD,6
; 34: ConfigPin RD7 = Output
        BCF TRISD,7
; 35:
; 36: ConfigPin RC0 = Output  'bajt konfigurace - jeden bit
        BCF TRISC,0
        BCF STATUS,RP0
; 37:
; 38: 'pocatecni podminky
; 39:
; 40: pre1 = 254
        MOVLW 0xFE
        MOVWF 0x038
; 41: pre2 = 254
        MOVLW 0xFE
        MOVWF 0x039
; 42: bajt1 = 0
        CLRF 0x03A
; 43: bajt2 = 0
        CLRF 0x03B
; 44: bajt3 = 0
        CLRF 0x03C
; 45:
; 46: 'jednorazove prikazy - znacka pristroje
; 47:
; 48: Serout PORTC.6, 9600, "*** ok1ufc ART-30 ***", CrLf
; exact baud rate achieved = 9652.51; bit period = 103.6µs; baud rate error =
.54%
        MOVLW 0x4F
        MOVWF SO_INTL
        BSF PORTC,6
        BSF STATUS,RP0
        BCF TRISC,6
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x40
        MOVWF SO_BIT
        MOVLW 0x2A
        CALL SO01
        MOVLW 0x2A
        CALL SO01
        MOVLW 0x2A
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVLW 0x6F
        CALL SO01
        MOVLW 0x6B
        CALL SO01
        MOVLW 0x31
        CALL SO01
        MOVLW 0x75
        CALL SO01
        MOVLW 0x66
        CALL SO01
```

```
        MOVLW 0x63
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVLW 0x41
        CALL SO01
        MOVLW 0x52
        CALL SO01
        MOVLW 0x54
        CALL SO01
        MOVLW 0x2D
        CALL SO01
        MOVLW 0x33
        CALL SO01
        MOVLW 0x30
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVLW 0x2A
        CALL SO01
        MOVLW 0x2A
        CALL SO01
        MOVLW 0x2A
        CALL SO01
        MOVLW 0x0D
        CALL SO01
        MOVLW 0x0A
        CALL SO01
; 49:
; 50: 'hlavni smycka programu
; 51:
; 52: loop:
L0001:
; 53:
; 54: Serout PORTC.6, 9600, "Zadej pre1 pre2 bajt:", CrLf
; exact baud rate achieved = 9652.51; bit period = 103.6µs; baud rate error =
.54%
        MOVLW 0x4F
        MOVWF SO_INTL
        BSF PORTC,6
        BSF STATUS,RP0
        BCF TRISC,6
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x40
        MOVWF SO_BIT
        MOVLW 0x5A
        CALL SO01
        MOVLW 0x61
        CALL SO01
        MOVLW 0x64
        CALL SO01
        MOVLW 0x65
        CALL SO01
        MOVLW 0x6A
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVLW 0x70
        CALL SO01
        MOVLW 0x72
        CALL SO01
        MOVLW 0x65
        CALL SO01
        MOVLW 0x31
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVLW 0x70
        CALL SO01
        MOVLW 0x72
        CALL SO01
```

```
        MOVLW 0x65
        CALL SO01
        MOVLW 0x32
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVLW 0x62
        CALL SO01
        MOVLW 0x61
        CALL SO01
        MOVLW 0x6A
        CALL SO01
        MOVLW 0x74
        CALL SO01
        MOVLW 0x3A
        CALL SO01
        MOVLW 0x0D
        CALL SO01
        MOVLW 0x0A
        CALL SO01
; 55: Serin PORTC.7, 9600, pre1  'serial ceka na preambuli pre1
; exact baud rate achieved = 9689.922; bit period = 103.2µs; baud rate error =
.93%
        MOVLW 0x50
        MOVWF SO_INTL
        BSF STATUS,RP0
        BSF TRISC,7
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x80
        MOVWF SO_BIT
        CALL SI01
        MOVWF 0x038
; 56: Serin PORTC.7, 9600, pre2  'serial ceka na preambuli pre2
; exact baud rate achieved = 9689.922; bit period = 103.2µs; baud rate error =
.93%
        MOVLW 0x50
        MOVWF SO_INTL
        BSF STATUS,RP0
        BSF TRISC,7
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x80
        MOVWF SO_BIT
        CALL SI01
        MOVWF 0x039
; 57:
; 58: 'testovani prijatych bajtu
; 59: If pre1 <> pre1 Then Goto konec
        MOVF 0x038,W
        SUBWF 0x038,W
        BTFSC STATUS,Z
        GOTO L0004
        GOTO L0002
L0004:
; 60: If pre2 <> pre2 Then Goto konec
        MOVF 0x039,W
        SUBWF 0x039,W
        BTFSC STATUS,Z
        GOTO L0005
        GOTO L0002
L0005:
; 61:
; 62:
; 63: Serin PORTC.7, 9600, bajt1  'serial ceka na bajt dat
; exact baud rate achieved = 9689.922; bit period = 103.2µs; baud rate error =
.93%
        MOVLW 0x50
        MOVWF SO_INTL
        BSF STATUS,RP0
        BSF TRISC,7
```

```
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x80
        MOVWF SO_BIT
        CALL SI01
        MOVWF 0x03A
; 64: PORTB = bajt1
        MOVF 0x03A,W
        MOVWF PORTB
; 65:
; 66: Serin PORTC.7, 9600, bajt2  'serial ceka na bajt dat
; exact baud rate achieved = 9689.922; bit period = 103.2µs; baud rate error =
.93%
        MOVLW 0x50
        MOVWF SO_INTL
        BSF STATUS,RP0
        BSF TRISC,7
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x80
        MOVWF SO_BIT
        CALL SI01
        MOVWF 0x03B
; 67: PORTA = bajt2
        MOVF 0x03B,W
        MOVWF PORTA
; 68: PORTD = bajt2
        MOVF 0x03B,W
        MOVWF PORTD
; 69:
; 70: Serin PORTC.7, 9600, bajt3  'serial ceka na bajt dat
; exact baud rate achieved = 9689.922; bit period = 103.2µs; baud rate error =
.93%
        MOVLW 0x50
        MOVWF SO_INTL
        BSF STATUS,RP0
        BSF TRISC,7
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x80
        MOVWF SO_BIT
        CALL SI01
        MOVWF 0x03C
; 71: PORTC = bajt3
        MOVF 0x03C,W
        MOVWF PORTC
; 72:
; 73:
; 74: 'a taky to odesle do serialu hodnotu bajtu
; 75: WaitMs 1
        MOVLW 0xF8
        MOVWF R4L
        MOVLW 0x00
        MOVWF R4H
        CALL DL02
; 76: Serout PORTC.6, 9600, "Data: ", #bajt1, " ", #bajt2, " ", #bajt3, CrLf
; exact baud rate achieved = 9652.51; bit period = 103.6µs; baud rate error =
.54%
        MOVLW 0x4F
        MOVWF SO_INTL
        BSF PORTC,6
        BSF STATUS,RP0
        BCF TRISC,6
        BCF STATUS,RP0
        MOVLW 0x07
        MOVWF SO_PORT
        MOVLW 0x40
        MOVWF SO_BIT
        MOVLW 0x44
        CALL SO01
```

```
        MOVLW 0x61
        CALL SO01
        MOVLW 0x74
        CALL SO01
        MOVLW 0x61
        CALL SO01
        MOVLW 0x3A
        CALL SO01
        MOVLW 0x20
        CALL SO01
        MOVF 0x03A,W
        MOVWF 0x032
        CLRF 0x033
        CALL _append_lab_0001
        BCF STATUS,IRP
        MOVLW 0x2C
        MOVWF FSR
        CALL SO21
        MOVLW 0x20
        CALL SO01
        MOVF 0x03B,W
        MOVWF 0x032
        CLRF 0x033
        CALL _append_lab_0001
        BCF STATUS,IRP
        MOVLW 0x2C
        MOVWF FSR
        CALL SO21
        MOVLW 0x20
        CALL SO01
        MOVF 0x03C,W
        MOVWF 0x032
        CLRF 0x033
        CALL _append_lab_0001
        BCF STATUS,IRP
        MOVLW 0x2C
        MOVWF FSR
        CALL SO21
        MOVLW 0x0D
        CALL SO01
        MOVLW 0x0A
        CALL SO01
; 77:
; 78: konec:
L0002:
; 79: WaitMs 1
        MOVLW 0xF8
        MOVWF R4L
        MOVLW 0x00
        MOVWF R4H
        CALL DL02
; 80:
; 81: Goto loop
        GOTO L0001
; 82: End
L0006:  GOTO L0006
; Library code
; End of user code
L0007:  GOTO L0007
; APPEND CODE BEGIN: _routine_ascii_word_
_append_lab_0001:
        BCF STATUS,IRP
        MOVLW 0x2C
        MOVWF FSR
        BCF 0x034,0
        MOVF 0x032,W
        MOVWF R2L
        MOVF 0x033,W
        MOVWF R2H
        MOVLW 0x10
        MOVWF R1L
        MOVLW 0x27
        MOVWF R1H
```

```
        CALL _append_lab_0002
        MOVLW 0xE8
        MOVWF R1L
        MOVLW 0x03
        MOVWF R1H
        CALL _append_lab_0002
        MOVLW 0x64
        MOVWF R1L
        CLRF R1H
        CALL _append_lab_0002
        MOVLW 0x0A
        MOVWF R1L
        CLRF R1H
        CALL _append_lab_0002
        MOVF R2L,W
        CALL _append_lab_0003
        CLRF INDF
        RETURN
_append_lab_0002:
        MOVF R2L,W
        MOVWF R0L
        MOVF R2H,W
        MOVWF R0H
        CALL D001
        MOVF R0L,W
        BTFSC 0x003,2
        GOTO L0008
        BSF 0x034,0
L0008:
        BTFSS 0x034,0
        GOTO L0009
_append_lab_0003:
        ADDLW 0x30
        MOVWF INDF
        INCF FSR,f
L0009:
        RETURN
; APPEND CODE END.
;
;
; Delay Routine Byte
; minimal routine execution time: 3.2µs
; routine execution time step: 1.2µs
; maximal routine execution time: 308µs
DL01:
        DECFSZ R4L,F
        GOTO DL01
        RETURN
; Delay Routine Word
; minimal routine execution time: 6µs
; routine execution time step: 4µs
; maximal routine execution time: 262146µs
DL02:
        MOVLW 0x01
        SUBWF R4L,F
        CLRW
        BTFSS STATUS,C
        ADDLW 0x01
        SUBWF R4H,F
        BTFSS STATUS,C
        RETURN
        GOTO DL02
; Waitms Routine
W001:   MOVLW 0x01
        SUBWF R0L,F
        CLRW
        BTFSS STATUS,C
        ADDLW 0x01
        SUBWF R0H,F
        BTFSS STATUS,C
        RETURN
        MOVLW 0xF7
        MOVWF R4L
```

```
        MOVLW 0x00
        MOVWF R4H
        CALL DL02
        GOTO W001
; Serout Routine
SO01:   MOVWF R5L
        BCF STATUS,IRP
        MOVLW 0xF8
        MOVWF R4L
        MOVLW 0x00
        MOVWF R4H
        CALL DL02
        MOVF SO_PORT,W
        MOVWF FSR
        MOVLW 0x09
        MOVWF R5H
        BCF STATUS,C
SO02:
        CALL SO03
        RRF R5L,F
        DECFSZ R5H,F
        GOTO SO02
        BSF STATUS,C
        CALL SO03
        RETURN
SO03:   MOVF INDF,W
        IORWF SO_BIT,W
        BTFSS STATUS,C
        XORWF SO_BIT,W
        MOVWF INDF
        BSF FSR,7
        COMF INDF,W
        BCF FSR,7
        ANDWF INDF,F
        MOVF SO_INTL,W
        MOVWF R4L
        CALL DL01
        RETURN
; Serin Routine
SI01:
        BCF STATUS,IRP
        CALL SI03
        BTFSC STATUS,C
        GOTO SI01
        MOVF SO_INTL,W
        MOVWF R4L
        RRF R4L,F
        BCF STATUS,C
        RRF R4L,F
        CALL DL01
        MOVLW 0x08
        MOVWF R5H
SI02:
        MOVF SO_INTL,W
        MOVWF R4L
        CALL DL01
        CALL SI03
        RRF R5L,F
        DECFSZ R5H,F
        GOTO SI02
        MOVF SO_INTL,W
        MOVWF R4L
        CALL DL01
        MOVF R5L,W
        RETURN
SI03:   MOVF SO_PORT,W
        MOVWF FSR
        MOVF SO_BIT,W
        ANDWF INDF,W
        ADDLW 0xFF
        RETURN
;
;
```

```
; Word Division Routine
D001:    MOVLW 0x10
         MOVWF R3L
         CLRF R2H
         CLRF R2L
D002:    RLF R0H,W
         RLF R2L,F
         RLF R2H,F
         MOVF R1L,W
         SUBWF R2L,F
         MOVF R1H,W
         BTFSS STATUS,C
         INCFSZ R1H,W
         SUBWF R2H,F
         BTFSC STATUS,C
         GOTO D003
         MOVF R1L,W
         ADDWF R2L,F
         MOVF R1H,W
         BTFSC STATUS,C
         INCFSZ R1H,W
         ADDWF R2H,F
         BCF STATUS,C
D003:    RLF R0L,F
         RLF R0H,F
         DECFSZ R3L,F
         GOTO D002
         RETURN
; Serout Decimal Conversion Routine
SO21:
         MOVWF R3H
SO22:
         BCF STATUS,IRP
         MOVF R3H,W
         MOVWF FSR
         MOVF INDF,W
         BTFSC STATUS,Z
         RETURN
         INCF R3H,F
         CALL SO01
         GOTO SO22
;
;
; End of listing
         END
```