Good Vs Bad Coding Styles

EE337

Microcontroller Pt51

Presented by : Zeal Sheth

Assembly Language Code: Bad Coding Style

- Main program is Wall of Code
- Non Modular Code
- Poor Indentation
- Repetition of bunch of code lines
- Overwriting of register values
- No Comments

Assembly Language Code: Bad Coding Style

```
;------------------------------------------------
;TITLE: BAD CODING STYLES TO
 BLINK LEDs
;AUTHOR : ZEAL SHETH (WEL)
;------------------------------------------------
LED EQU P0

ORG 00H
LJMP MAIN
;------------------------

ORG 100H
MAIN:

MOV LED,#00H
BACK:MOV A,#55H
MOV LED,A
;------------------------------------------------
 MOV R1, #0FFH
 MOV R2, #0FFH
DELAY1:
NOP
DJNZ R1, DELAY1
DJNZ R2, DELAY1

MOV A,#0AAH
MOV LED,A

MOV R1, #0FFH
MOV R2, #0FFH
DELAY1:
NOP
DJNZ R1, DELAY1
DJNZ R2, DELAY1

SJMP BACK

FIN:        SJMP       FIN ;ALL DONE.
;------------------------------------------------------------------------
```

Main Program is
hugh wall of code .
Non modular.
Difficult to debug

Assembly Language Code: Bad Coding Style

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ORG 100H
MAIN:

MOV LED,#00H
BACK:MOV A,#55H
MOV LED,A
;------------------------------------
```

No Indentation :Each new label corresponds to loop

```
 MOV R1, #0FFH
 MOV R2, #0FFH
DELAY1:
NOP
DJNZ R1, DELAY1
DJNZ R2, DELAY1

MOV A,#0AAH
MOV LED,A

MOV R1, #0FFH
MOV R2, #0FFH
DELAY1:
NOP
DJNZ R1, DELAY1
DJNZ R2, DELAY1

SJMP BACK

FIN:        SJMP       FIN ;ALL DONE.
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MOV R1, #0FFH
MOV R2, #0FFH
DELAY1:
NOP
DJNZ R1, DELAY1
DJNZ R2, DELAY1

SJMP BACK

FIN:        SJMP        FIN ;ALL DONE.
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Repetition of bunch of code lines: Can be converted to subroutine

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MAIN:

MOV LED,#00H
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No comments

```
 MOV R1, #0FFH
 MOV R2, #0FFH
DELAY1:
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DJNZ R2, DELAY1

MOV A,#0AAH
MOV LED,A

MOV R1, #0FFH
MOV R2, #0FFH
DELAY1:
NOP
DJNZ R1, DELAY1
DJNZ R2, DELAY1

SJMP BACK

FIN:        SJMP       FIN ;ALL DONE.
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```

Assembly Language Code: Good Coding Style

- Main program is set of function (subroutine) calls
- Modular Code : Easy Debugging
- Subroutine : For Repeated bunch of code lines
- Proper Indentation
- Stack to prevent overwriting of register values
- Appropriate Comments

Assembly Language Code:Good Coding Style

```
;-----------------------------------------------------------
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;-----------------------------------------------------------


LED EQU P0
ORG 00H
LJMP MAIN
;-----------------------------------------------------------
ORG 50H
DELAY:
      PUSH PSW
      PUSH AR1; STORE R1 (BANK 0
              ; ON THE STACK
      PUSH AR2

      MOV R1, #0FFH
      MOV R2, #0FFH
```

Modular Code : Easy Debug

```
DELAY1:
      NOP
      DJNZ R1, DELAY1
      DJNZ R2, DELAY1

      POP AR2 ; POP MUST BE IN
               ;REVERSE ORDER OF PUSH
      POP AR1
      POP PSW
      RET
;-----------------------------------------------------------
ORG 100H
MAIN:
         MOV LED,#00H   ;MAKE P0 AS
                        ;OUTPUT PORT
         MOV A,#55H
         BACK:
                MOV LED,A
                LCALL DELAY
                CPL A
                 SJMP BACK

FIN:   SJMP FIN          ;ALL DONE.
;-----------------------------------------------------------
```

Assembly Language Code:Good Coding Style

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      PUSH PSW
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              ; ON THE STACK
      PUSH AR2

      MOV R1, #0FFH
      MOV R2, #0FFH
```

Subroutine DELAY for reusability

```
DELAY1:
      NOP
      DJNZ R1, DELAY1
      DJNZ R2, DELAY1

      POP AR2 ; POP MUST BE IN
              ;REVERSE ORDER OF PUSH
      POP AR1
      POP PSW
      RET
;--------------------------------------------------------
ORG 100H
MAIN:
        MOV LED,#00H   ;MAKE P0 AS
                       ;OUTPUT PORT
        MOV A,#55H
        BACK:
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```

Proper Indentation

```
DELAY1:
      NOP
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      DJNZ R2, DELAY1

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               ;REVERSE ORDER OF PUSH
      POP AR1
      POP PSW
      RET
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      PUSH PSW
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      PUSH AR2

      MOV R1, #0FFH
      MOV R2, #0FFH
```

Push and Pop to store register values so that they are not overwritten

```
DELAY1:
      NOP
      DJNZ R1, DELAY1
      DJNZ R2, DELAY1

      POP AR2 ; POP MUST BE IN
              ;REVERSE ORDER OF PUSH
      POP AR1
      POP PSW
      RET
;-----------------------------------------------------------
ORG 100H
MAIN:
       MOV LED,#00H   ;MAKE P0 AS
                      ;OUTPUT PORT
       MOV A,#55H
       BACK:
              MOV LED,A
              LCALL DELAY
              CPL A
               SJMP BACK

FIN:   SJMP FIN          ;ALL DONE.
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      PUSH PSW
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              ; ON THE STACK
      PUSH AR2

      MOV R1, #0FFH
      MOV R2, #0FFH
```

Appropriate comments

```
DELAY1:
      NOP
      DJNZ R1, DELAY1
      DJNZ R2, DELAY1

      POP AR2 ; POP MUST BE IN
              ;REVERSE ORDER OF PUSH
      POP AR1
      POP PSW
      RET
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Thank You