Programming issues

CSC 236

Hint — write strings when possible

- Write DOS EOL (\r\n)

```
mov dl,13
mov ah,2
int 21h

mov dl,10
mov ah,2
int 21h
```

```
crlf  db  13,10,'$'


mov dx,offset crlf
mov ah,9
int 21h
```

Hint — build strings dynamically

- Suppose
  - Need to output
  - "Ans = <digit>"
  - On a line
- Examples
  - Ans = 7\r\n
  - Ans = 0\r\n
- Output string
  - 9 characters
  - Only 7th character differs

```
        .data
out  db   'Ans = '  ;fixed
val  db   4         ;variable
     db   13,10,'$' ;fixed

        .code
mov  [val],al       ;al ⇒ val
mov ah, 9           ;set code
mov dx, offset out  ;string ptr
int 21h             ;write string
```

Share code

```
mov  dx,offset m1
mov  ah,9
int  21h
jmp  newline

mov  dx,offset m2
mov  ah,9
int  21h
jmp  newline
```

Share code

```
mov   dx,offset m1
mov   ah,9
int   21h
jmp   newline

…

mov   dx,offset m2
mov   ah,9
int   21h
jmp   newline
```

```
mov   dx, offset m1
jmp   write

mov   dx, offset m2
jmp   write

…
write:
mov   ah,9
int   21h
jmp   newline
```

Common errors

```
mov dl, 10      ;-- 0A
cmp dx, 10      ;-- 0A  :  00 0A
je  match       ;??
```

- Does -- 0A == 00 0A?
  - Depends on the system
  - Run time
  - Assembler/compiler
  - OS
- Answer will like differ

- Arthur C. Clarke
  - "Any sufficiently advanced technology is indistinguishable from magic."

Measuring Code Complexity

- McCabe number
  - Gauges complexity of code
  - How hard to understand
  - Low is better (easier)
- Scale
  - 1-5   — okay
  - 6-10 — should simplify
  - >10 — break into subroutines

- Can be adapted to any language
- Grading system gives
  - McCabe number

Where we are in the course

Phase 1

Basics

- Number systems
- Architecture
- ASM

Phase 2

Intermediate

- Architecture
  more memory and segmentation
- ASM
  more sophisticated instructions

hw 1-4
KEY

hw 5-8
TABS (can be done with basic instructions)