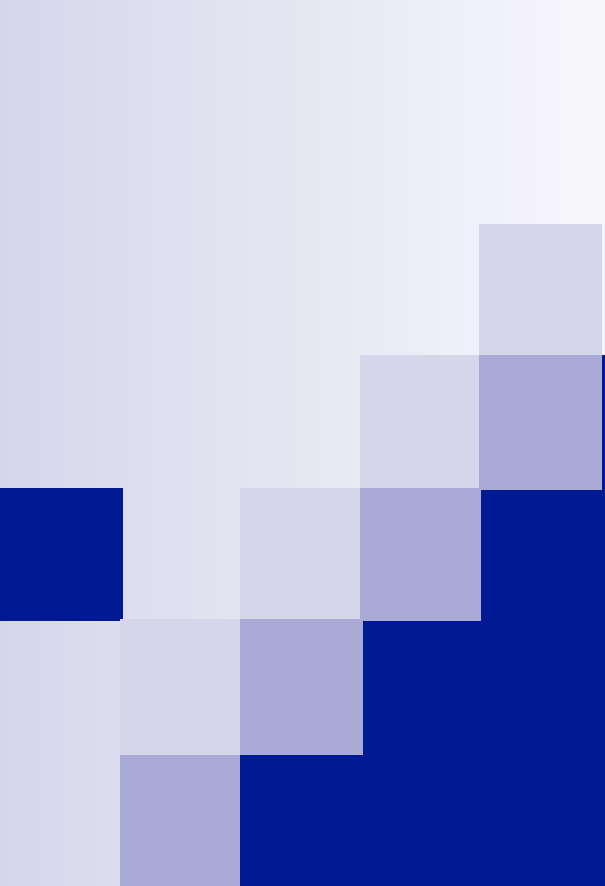




NASM Basics I

Registers and Basic Instructions (Practice)

ICS312

**Machine-Level and
Systems Programming**

Henri Casanova (henric@hawaii.edu)

(q1) Registers

- If I modify register AL, do I necessarily modify register AX?
- If I modify register CX, do I necessarily modify register CH?
- For each instruction below, is it correct or not?

```
mov al, cl  
mov eax, cx  
sub eax, al  
add dx, dx  
add ebx, dx  
mov 12, al  
add cx, 54  
add 043h, cx
```

(q1) Solutions

- If I modify register AL, do I necessarily modify register AX? **YES**
- If I modify register CX, do I necessarily modify register CH? **NO**
- For each instruction below, is it correct or not?

<code>mov al, cl</code>	<code>; CORRECT</code>
<code>mov eax, cx</code>	<code>; INCORRECT</code>
<code>sub eax, al</code>	<code>; INCORRECT</code>
<code>add dx, dx</code>	<code>; CORRECT</code>
<code>add ebx, dx</code>	<code>; INCORRECT</code>
<code>mov 12, al</code>	<code>; INCORRECT</code>
<code>add cx, 54</code>	<code>; CORRECT</code>
<code>add 043h, cx</code>	<code>; INCORRECT</code>

(q2) Registers and operations

- Does this instruction modify register AL?

```
add ax, 04300h
```

- What is the value of register CX after these instructions?

```
mov cx, -1
```

```
mov al, 043h
```

```
add cl, al
```

- What is the value of register AX after these instructions?

```
mov eax, 04311EEFFh
```

```
add ah, 011h
```

```
inc eax
```

(q2) Solutions

- Does this instruction modify register AL?

`add ax, 04300h` **NO**

- What is the value of register CX after these instructions?

`mov cx, -1` ; CX = FF FF

`mov al, 043h` ; AL = 43

`add cl, al` ; **CX = FF 42**

- What is the value of register AX after these instructions?

`mov eax, 04311EEFFh` ; eax = 43 11 EE FF

`add ah, 011h` ; eax = 43 11 FF FF

`inc eax` ; eax = 43 12 **00 00**

(q3) Registers and operations

- What is the value of register AX after these instructions?

```
mov eax, 04311EEFF
```

```
neg ax
```

```
add ah, 011h
```

```
inc eax
```

(q3) Solutions

- What is the value of register AX after these instructions?

```
mov eax, 04311EEFF ; eax = 43 11 EE FF
neg ax              ; eax = 43 11 11 01
add ah, 011h        ; eax = 43 11 22 01
inc eax             ; eax = 43 11 22 02
```