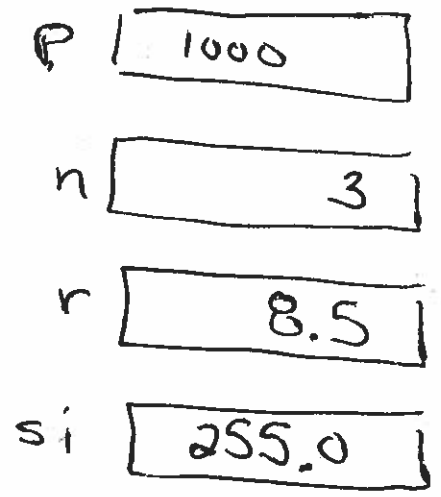


```
// comments
// P.H. VALL
// 2018-09-17
// Example program for ECL 160
#include <stdio.h> ← #define -CRT_SECURE
                        -NO_WARNINGS
```

```
void main()
{
    int P, n; // P-principle, n-number years
    float si, r; // si-simple interest, r-rate
    P = 1000;
    n = 3;
    r = 8.5;
    si = P * n * r / 100;
    printf("%f", si);
}
```



↑  
specification

- %f - float
- small L → %lf - double
- %d - decimal int
- %X, %x - Hex int
- %o - octal

Some systems:  
(not PC's)

%b - binary

# EXPRESSIONS



uses +, -, \*, /

" &, |, ^, ~

" >> <<

" ( ) nested as deep as you want

" other operators to be covered

expression	result
$6 + 3 * 4$	18
$(6 + 3) * 4$	36
$(6 + 3) * (2 + 7) * 4$	324
$\underbrace{\underbrace{(6+3)}_9 + \underbrace{(2+3)}_5}_{14} * 2$	28

# ASSIGNMENT STATEMENTS

variable = expression

- ① evaluate the expression
- ② store result in variable

$X = 3 + 2 * 12;$  // x becomes 27

$m = 4$

$n = m + 1;$  // n becomes 5

say a has value of 24

$a = a + 1$  // now a becomes 25

~~o~~

$i++$

same as  $i = i + 1$

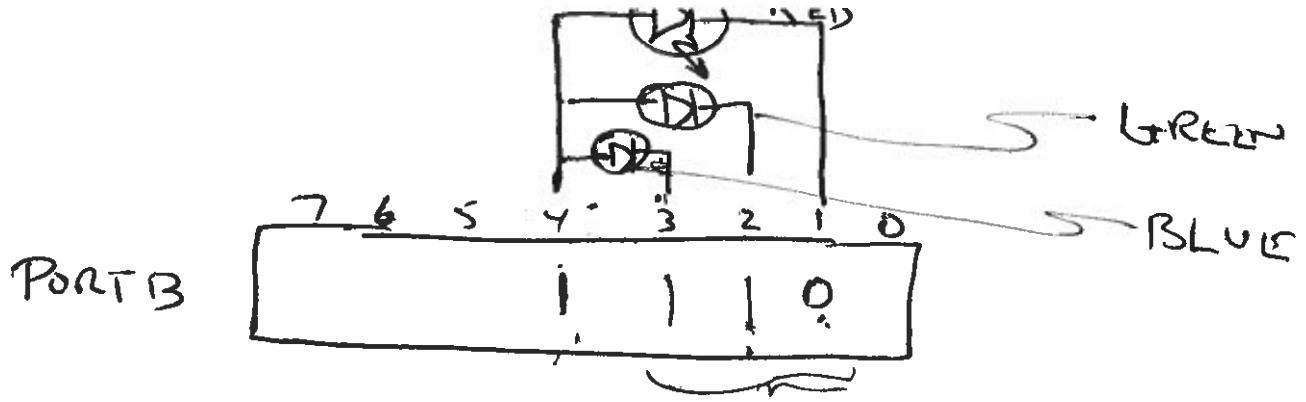
$q--$

same as  $q = q - 1$

>> shift right

<< shift left

expression	result
14 >> 2	1110. >> 2 <sup>← binary</sup> 11. = 3 <sup>← dec</sup>
5 << 3	0101. << 3 101000 = 40
5 << 300	0



```

PORTB = 0x10;           // 00010000
                        //   ↑   ↑
OR
PORTB = 0b00010000;    // 00010000
                        // on arduinos
                        // not on PC
                        // Turns on RED
                        // BLUE
                        // GREEN
  
```

```

PORTB = 0b00011100
  
```

Turn off Green LED - Don't change others (6)

A	B	A/B
00	0	
01	1	
10	1	
11	1	

// Turn off GREEN

PORTB = PORTB | 0b000000<sup>10</sup>00

// ANOTHER WAY

PORTB = PORTB | 1 << 2 <sup>← shift by 2 bit</sup>

Turn Green ON

PORTB = PORTB & 0b11111011

PORTB & ~~0~~ ~ (1 << 2)