EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

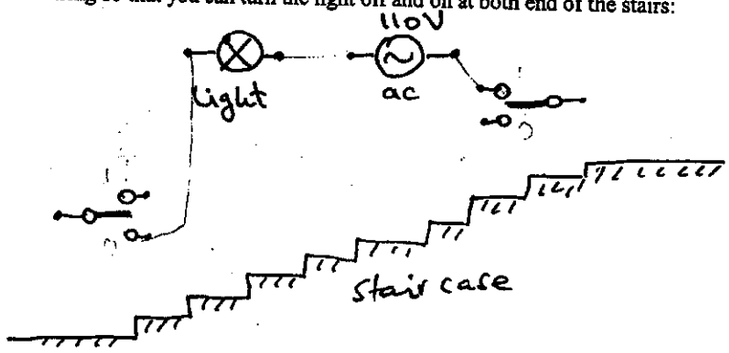
(a.) binary: 100 110

(b.) hexadecimal:

(c.) octal:

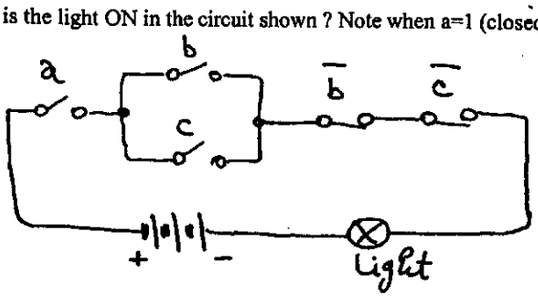
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in: $2+4+32=38$

a = 0
b = 1
:
f = 15

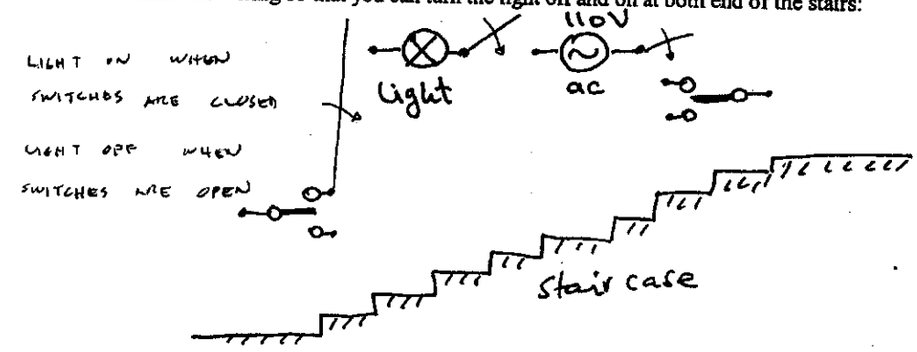
(a.) binary: 0010 0110

(b.) hexadecimal:

(c.) octal:

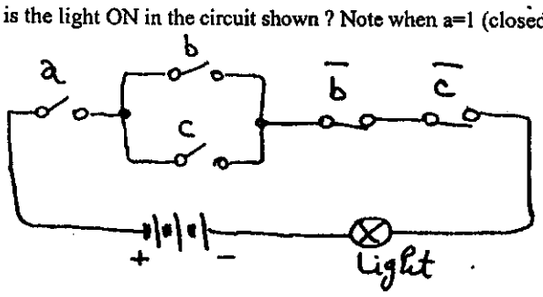
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



WHEN a = 1 ALWAYS
AND
WHEN EITHER
b = 1
OR
c = 1

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

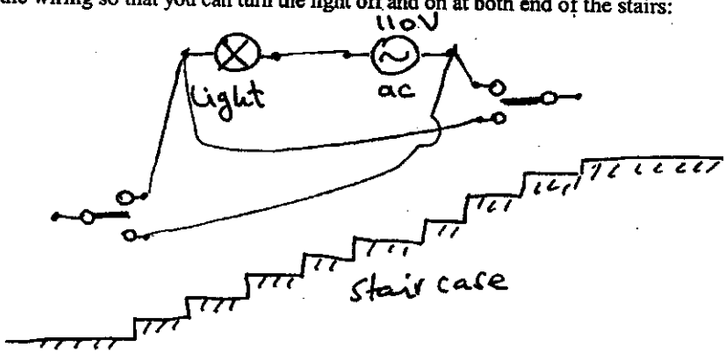
(a.) binary:

(b.) hexadecimal:

(c.) octal:

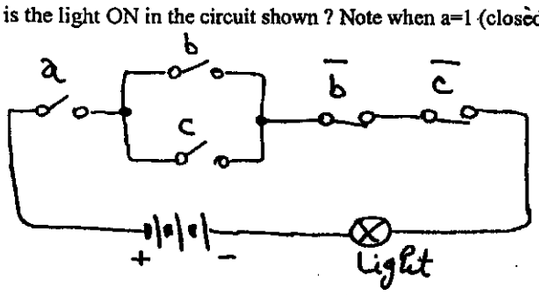
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



in this ckt, the light will never be on whether a = 1 or a = 0 because of the contradictory natures of how they are placed in the ckt

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

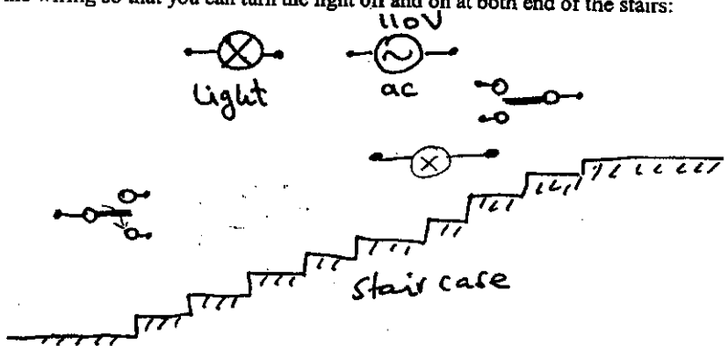
(a.) binary: 0010 0110

(b.) hexadecimal:

(c.) octal:

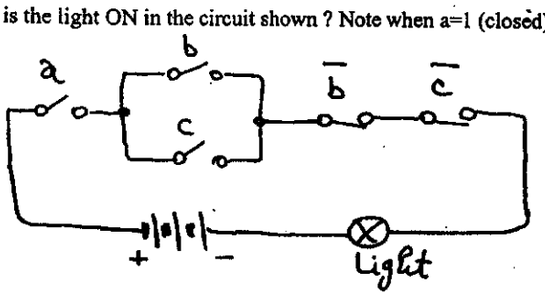
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

(a.) binary: 100110

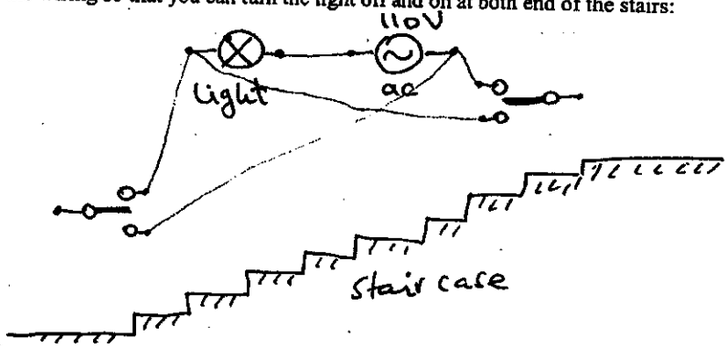
(b.) hexadecimal: 26

(c.) octal: 46

38 | 2
6 | 4

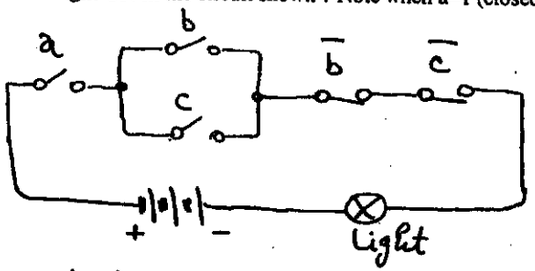
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



light = $a(b+c)\bar{b}\bar{c}$

The light is on when a is closed and $\bar{b}$ is closed and $\bar{c}$ is closed and (either b or c is closed)

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

(a.) binary: 01 1001

(b.) hexadecimal: 62

(c.) octal: 64

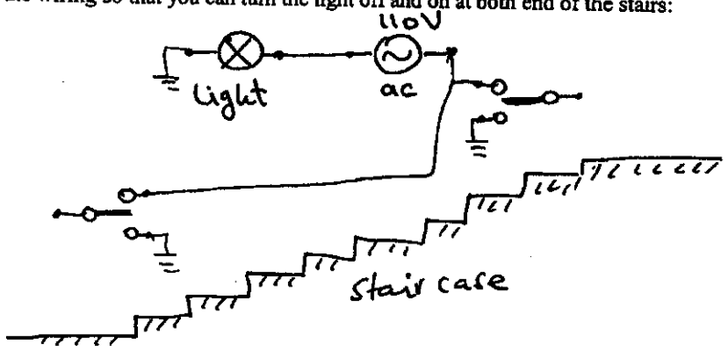
38 19 0
19 9 1
9 4 1
4 2 0
2 1 0
1 0 1

38 4 6
4 0 4

38 2 6
2 0 2

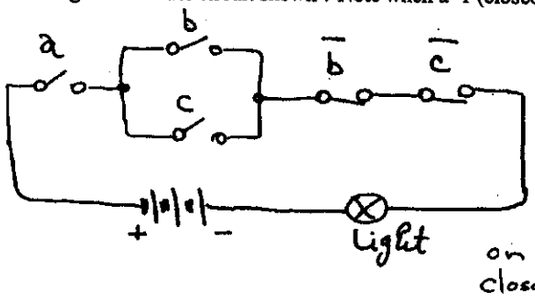
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



The light can't be on since if b is closed $\bar{b}$ is open, & if c is closed $\bar{c}$ is open, thus no current flows to the light

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

(a.) binary: 10110

(b.) hexadecimal: 26

(c.) octal: 46

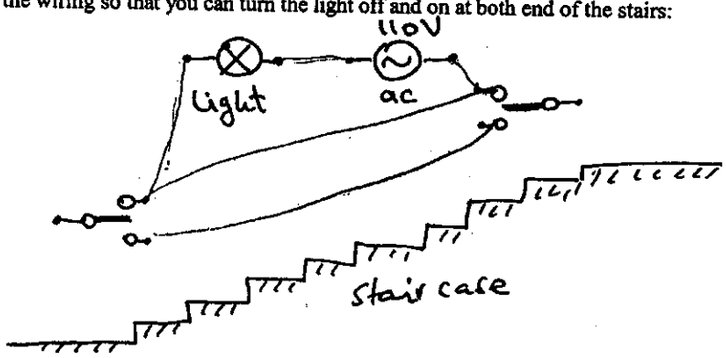
2|38 0
2|19 1
2|9 1
2|4 0
2|2
1

16|38 6
16|2
2

8|38 6
4

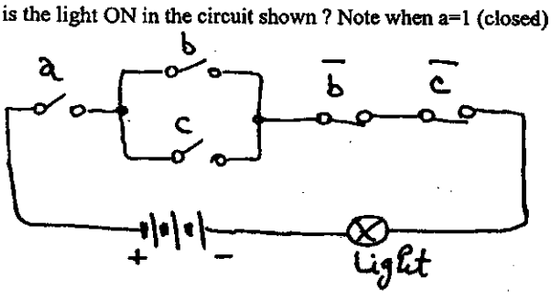
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0.(open).



Light is on:
when a = 1 and c is closed
or when a = 1, b is closed

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

(a.) binary: 100110

(b.) hexadecimal: 26

(c.) octal: 46

$\frac{38}{2} = 19 \text{ r } 0 \quad \frac{19}{2} = 9 \text{ r } 1 \quad \frac{9}{2} = 4 \text{ r } 1$

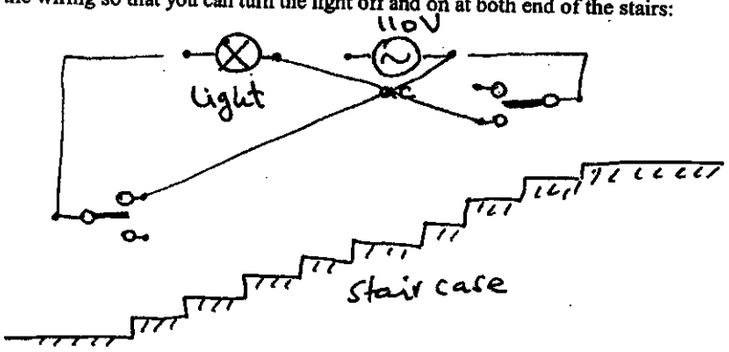
$\frac{4}{2} = 2 \text{ r } 0 \quad \frac{2}{2} = 1 \text{ r } 0 \quad \frac{1}{2} = 0 \text{ r } 1$

$\frac{38}{6} = 6 \text{ r } 2 \quad \frac{6}{6} = 1 \text{ r } 0 \quad \frac{1}{6} = 0 \text{ r } 1$

$\frac{38}{8}$

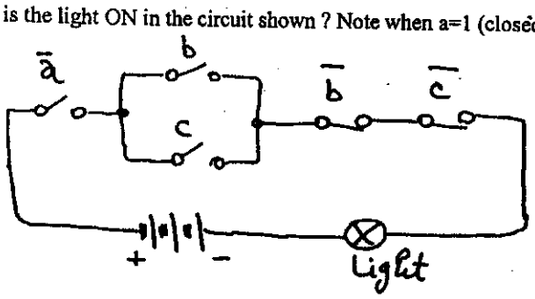
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



when a = 1
b = 0
c = 0

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

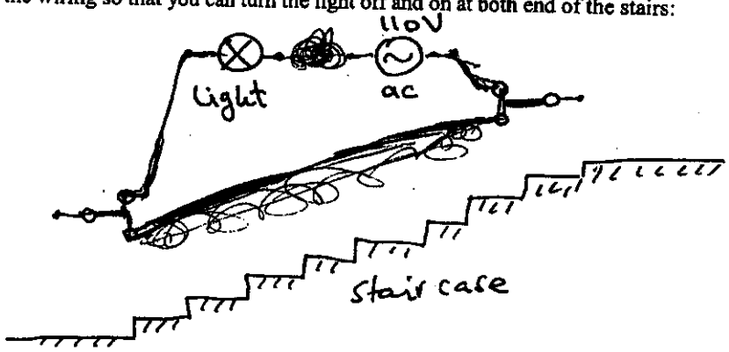
(a.) binary: 100110

(b.) hexadecimal: 26

(c.) octal: 46

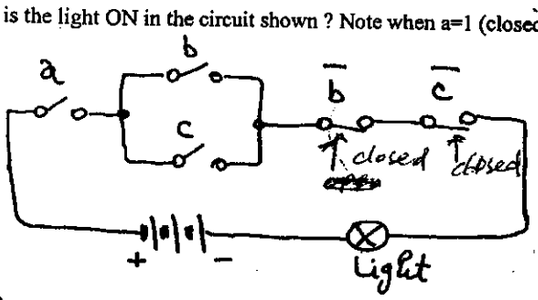
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



either b or c can be open.

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

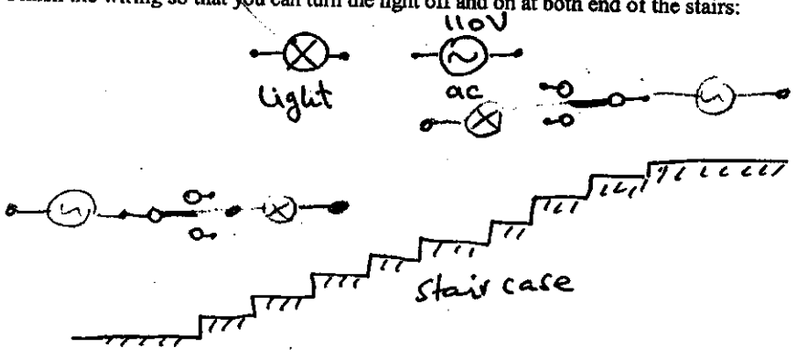
2 (a.) binary: 100001

6 (b.) hexadecimal:

7 (c.) octal:

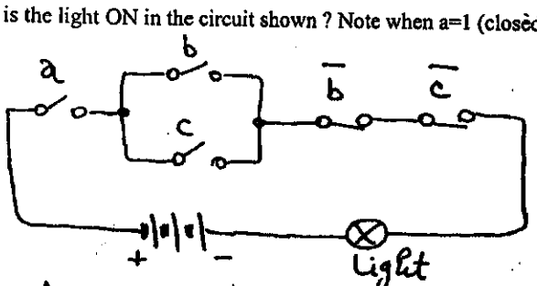
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



when a = 1, b = 1, c = 1

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

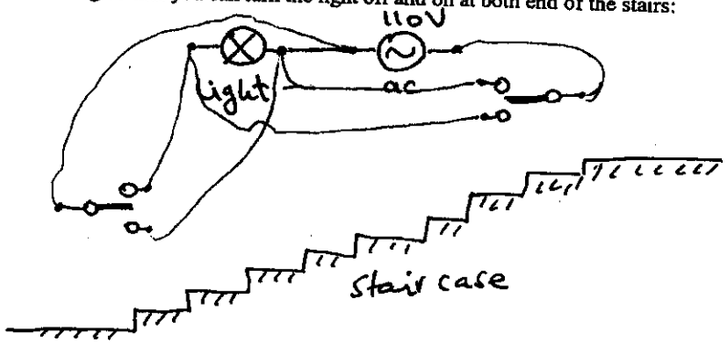
(a.) binary: 10 1011 0

(b.) hexadecimal: 0000 0000 0010 0110

(c.) octal:

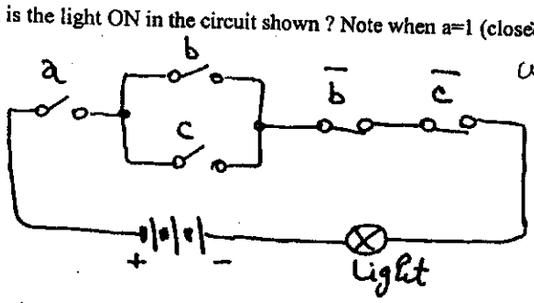
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



when all the switches are closed.

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

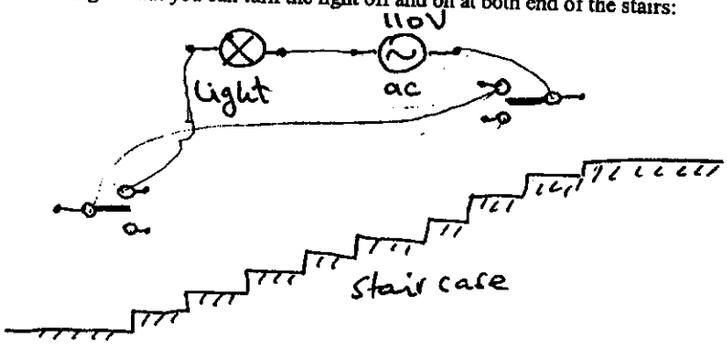
(a.) binary:
100110

(b.) hexadecimal:
26

(c.) octal:
46

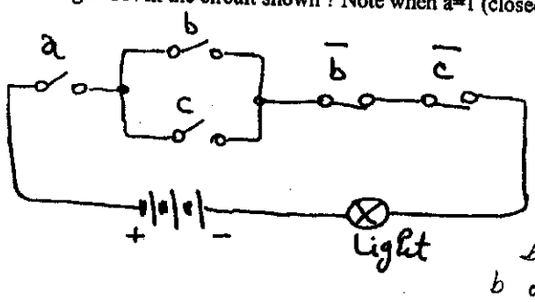
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



A = 1

the light won't be on because by closing b or c, b or c̄ opens the circuit

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name: _____

Problem #1:

Write decimal number 38 in:

(a.) binary: $38 = 2^5 + 2^2 + 2^1 \Rightarrow 100110$

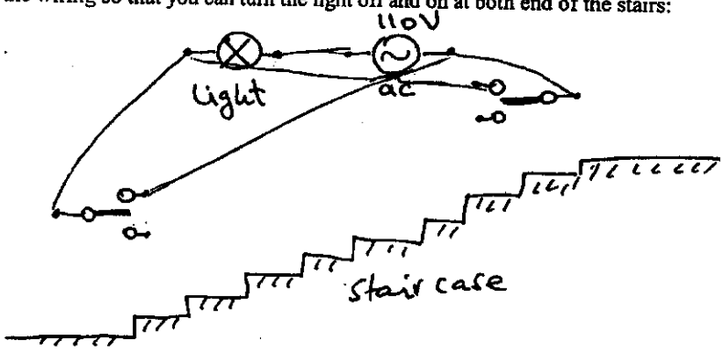
(b.) hexadecimal: $0010\ 0110 \Rightarrow 26$

(c.) octal: $48^1 + 6^0 = 32 + 6 = 38$

$\Rightarrow 0046$

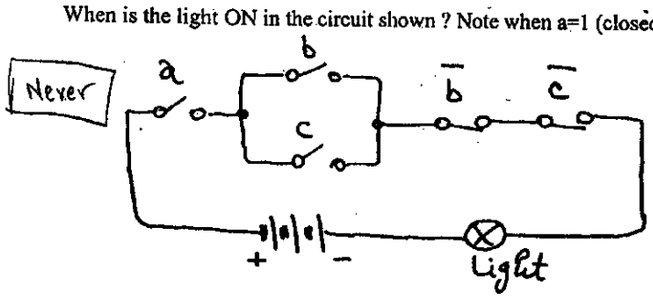
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

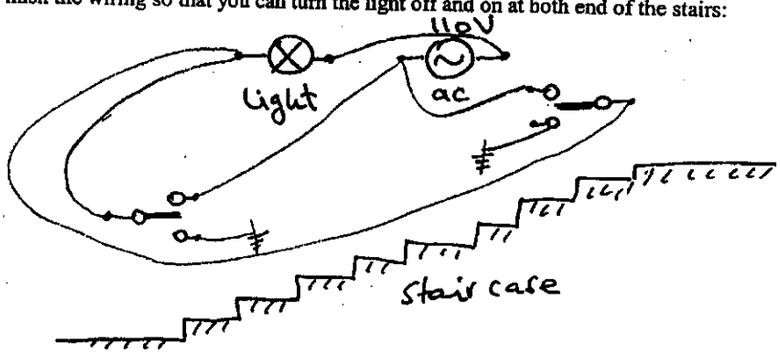
(a.) binary: 100110 (32+4+2)

(b.) hexadecimal: 26 (16+10)

(c.) octal: 46

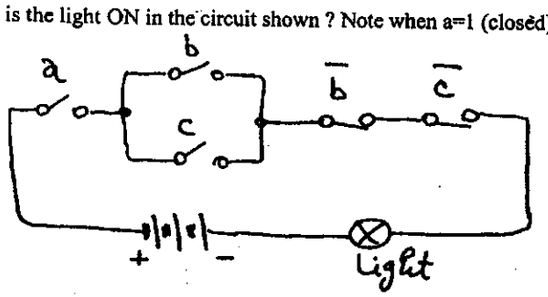
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open). Never



EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

38 → 32 + 4 + 2
0010 0110
38

16^3 16^2 16^1 16^0
0 0 2 6

Write decimal number 38 in:

(a.) binary: 0010 0110$_{(2)}$

(b.) hexadecimal: 0026$_{(16)}$

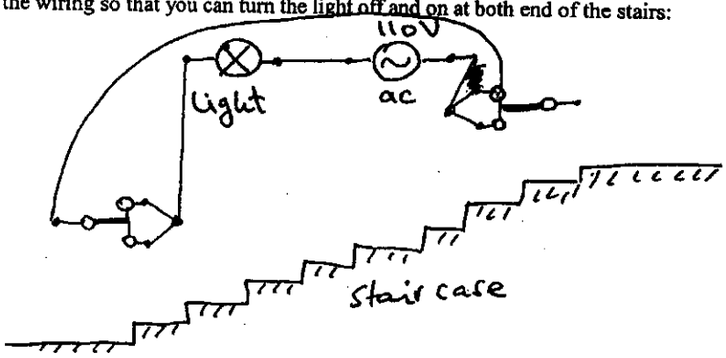
(c.) octal: 0046$_{(8)}$

8^3 8^2 8^1 8^0
0 0 4 6

38

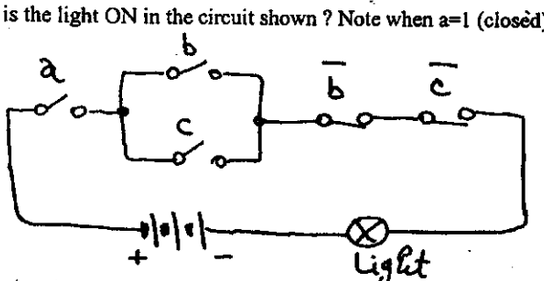
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



the light is on when

a = 1 and b = 1 or c = 1
b̄ and c̄ = 1

when a = 1, b = 1 then immediately c = 1

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name: _____

Problem #1:

Write decimal number 38 in:

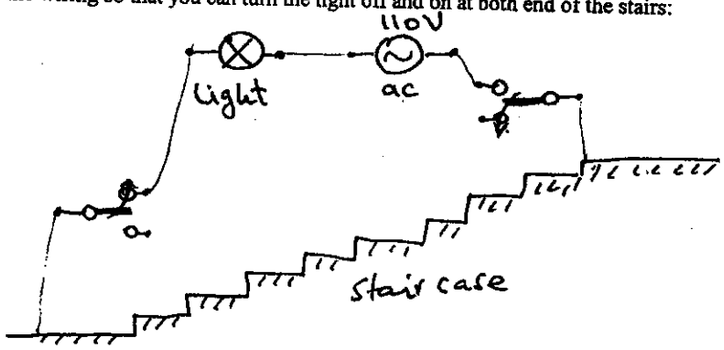
(a.) binary: 38_2

(b.) hexadecimal: 26_{16}

(c.) octal: 38_8

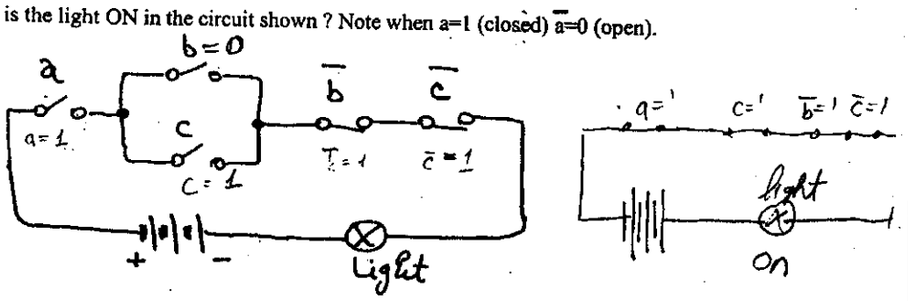
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name: [redacted]

Problem #1:

Write decimal number 38 in:

(a.) binary: $38 = 32 + 4 + 2 =$ 100110

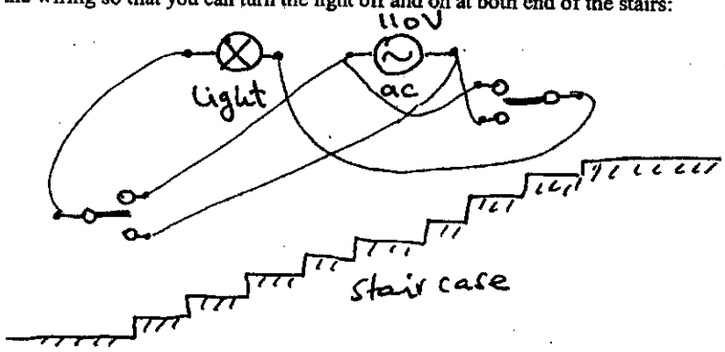
(b.) hexadecimal: $32 + 6 =$ 26

(c.) octal: $32 + 6 =$ 46

Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:

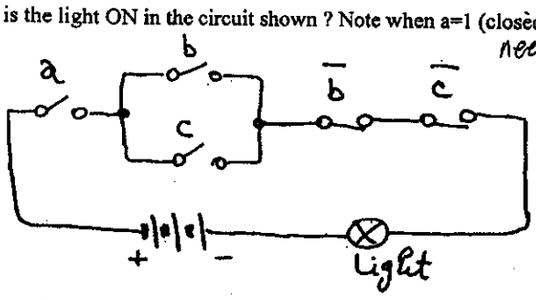
1 on
1 off
1 on
0 off



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).

need



$\bar{b} = 1$ b or c = 1

$\bar{c} = 1$

$a = 1$ ∴ impossible

~~$a=1$ $b=0$ $c=0$~~

It will Never goes on

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

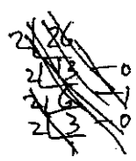
Problem #1:

Write decimal number 38 in:

(a.) binary: 100110

(b.) hexadecimal: 26

(c.) octal: 46

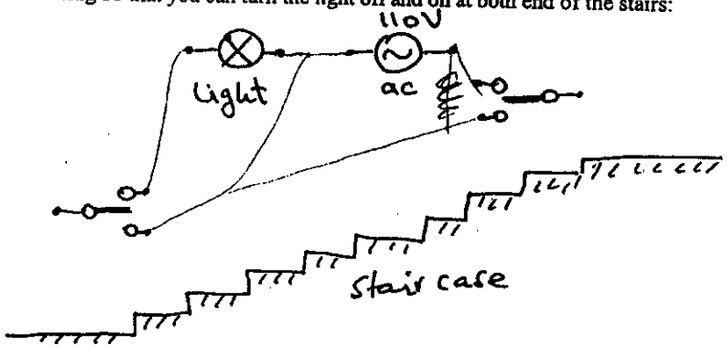


2|38
2|19 — 0
2|9 — 0
2|4 — 1
2|2 — 0
2|1 — 0
1

00|100|100
2 6

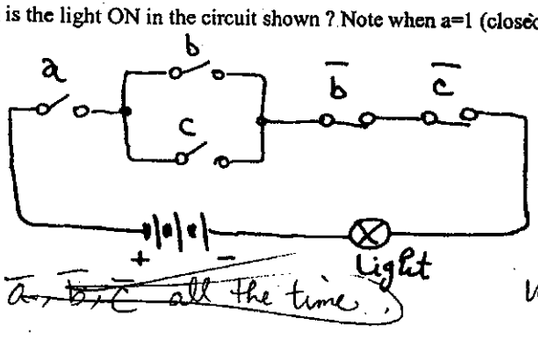
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



The light is ON when

~~$\bar{a}$, $\bar{b}$, $\bar{c}$~~ all the time.

When a = 1, c is closed
a = 1, b is closed

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

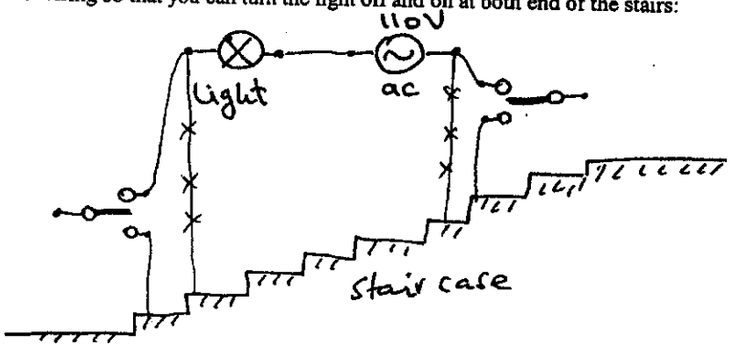
(a.) binary: 100110

(b.) hexadecimal: 0x16

(c.) octal: 100 0 0 6

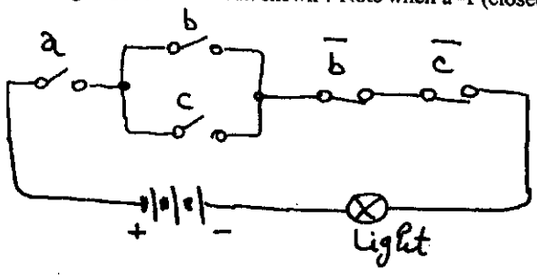
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



a = 1
b = 1
$\bar{b}$ = 1
$\bar{c}$ = 1

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name: [illegible]

Problem #1:

Write decimal number 38 in:

32 16 8 4 2 1
2^5 2^4 2^3 2^2 2^1 2^0

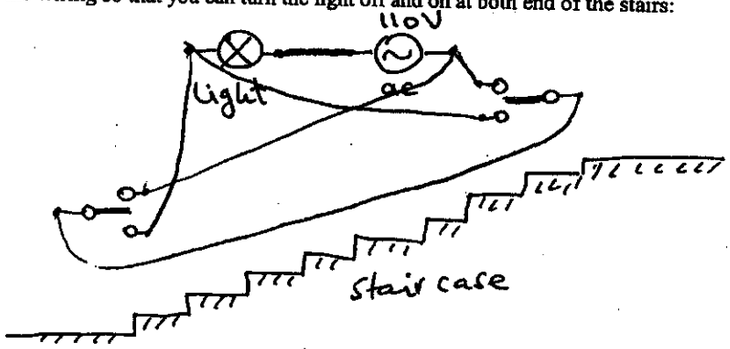
(a.) binary: 0 0 1 0 0 1 1 0

(b.) hexadecimal: 0026

(c.) octal:

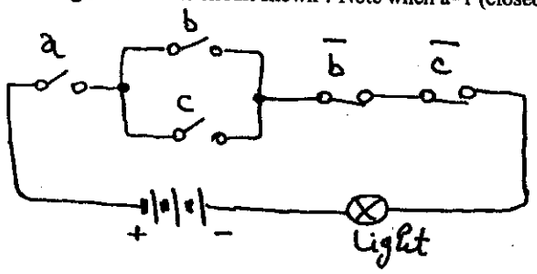
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



Never, the circuit is never completed

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

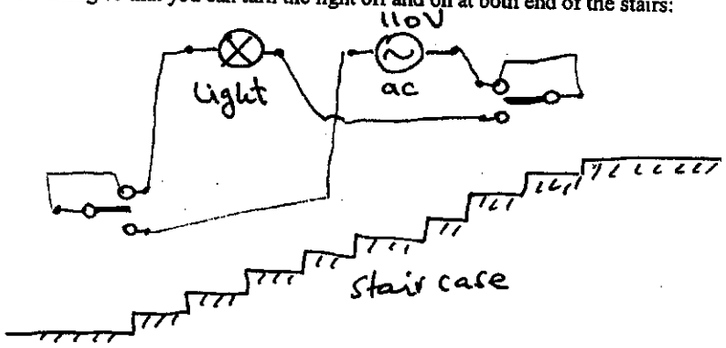
(a.) binary: 100110 00110110

(b.) hexadecimal: 26

(c.) octal: 46

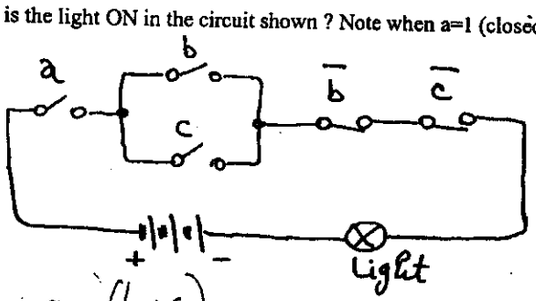
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



$a \cdot (b+c)$

EEC 180A (**Prof. V.G. Oklobdzija**) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

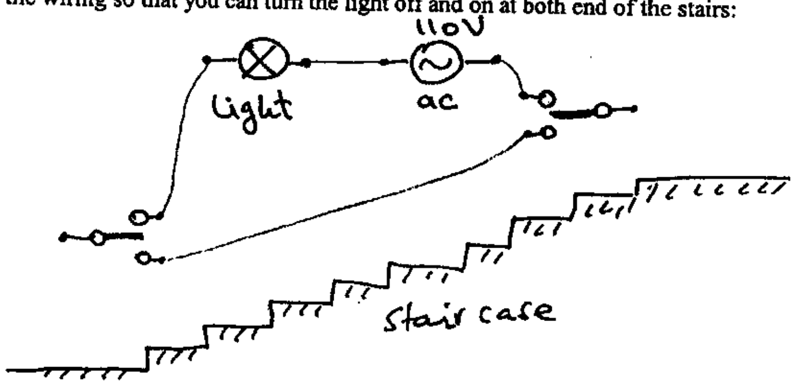
(a.) binary: 100110

(b.) hexadecimal: 0x0026

(c.) octal: 46

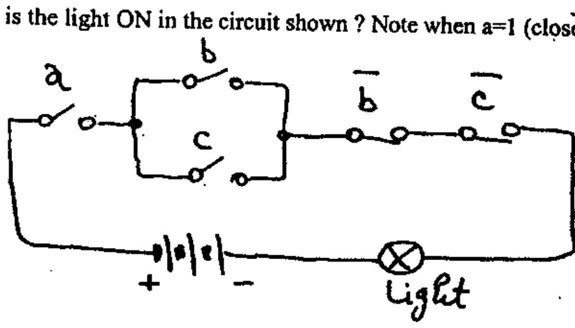
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



It never turns on !

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name: _____

Problem #1:

Write decimal number 38 in:

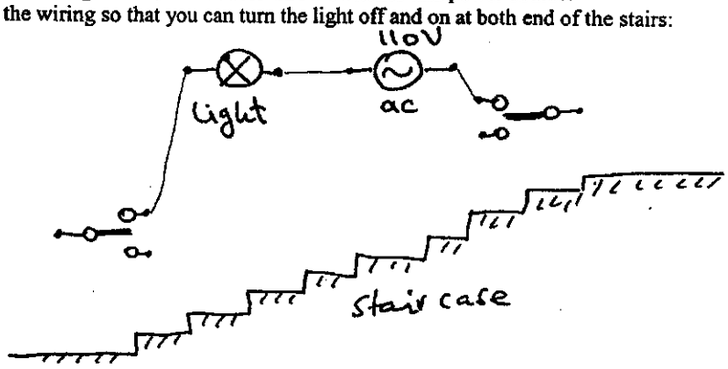
(a.) binary: 100110

(b.) hexadecimal:

(c.) octal:

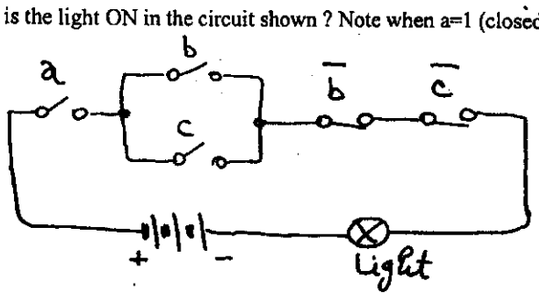
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



a = 1

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Your Name: [redacted]

Problem #1:

Write decimal number 38 in:

2 (a.) binary: 100110

16 (b.) hexadecimal: 26

8 (c.) octal: 46

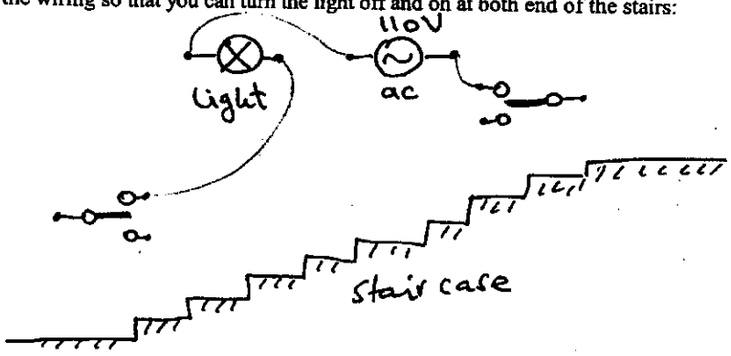
2 | 38 | 0
2 | 19 | 1
2 | 9 | 1
2 | 4 | 0
2 | 2 | 0
2 | 1 | 1
0

16 | 38 | 6
16 | 2 | 2
0

8 | 38 | 6
8 | 4 | 4
0

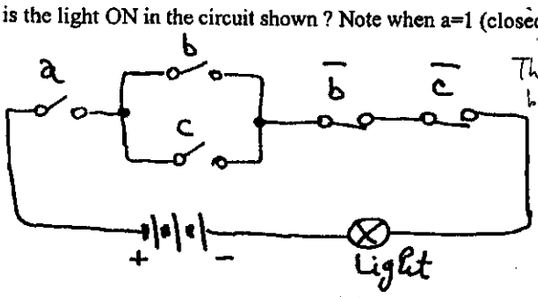
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



The Light will never on because when b is ~~open~~ closed, $\bar{b}$ will open so that no current will go there and so does C

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name: _____

Problem #1:

Write decimal number 38 in:

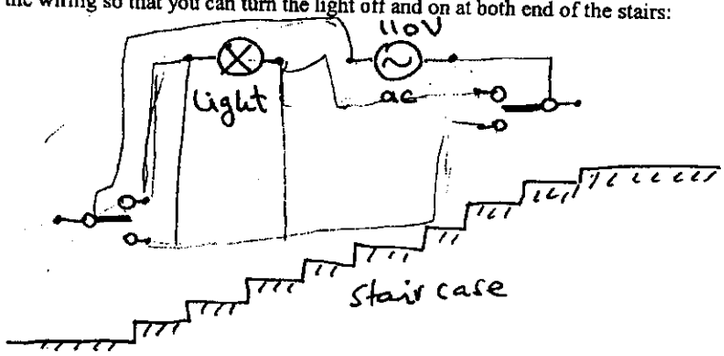
(a.) binary: 100110

(b.) hexadecimal: 26

(c.) octal: 46

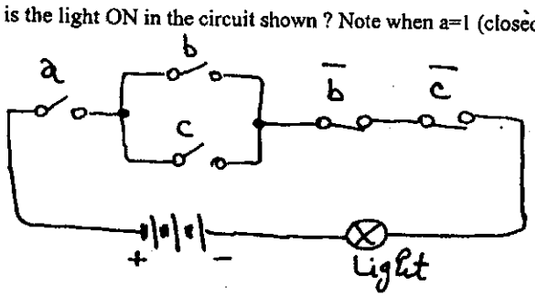
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



$A\bar{B}\bar{C}$

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

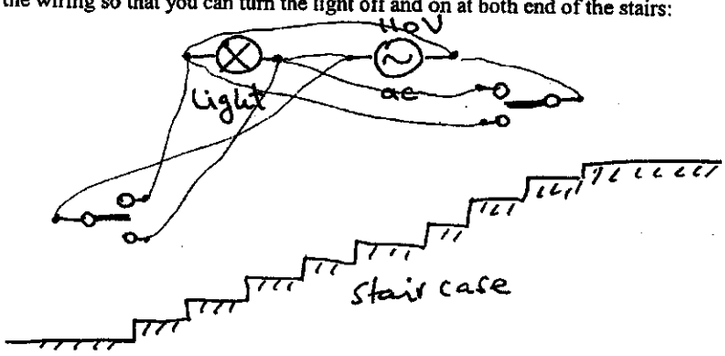
(a.) binary: 100110_2

(b.) hexadecimal: $A5_{16}$

(c.) octal: 45_8

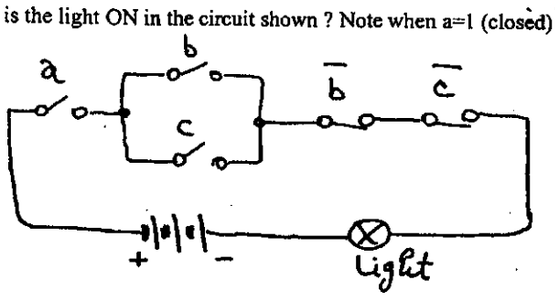
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



a=1 and b=1

a=1 and c=1.

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

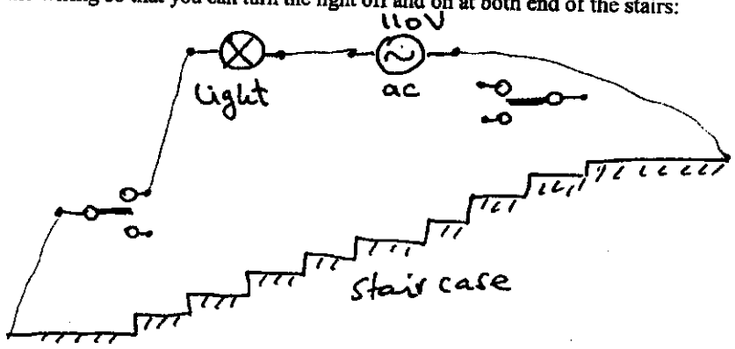
(a.) binary: 10110

(b.) hexadecimal: 26

(c.) octal: 46

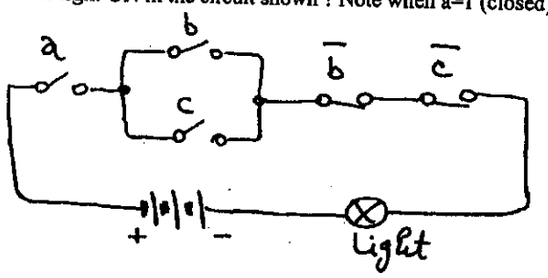
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



never
$a \to \bar{b}$
$c \to \bar{c}$

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

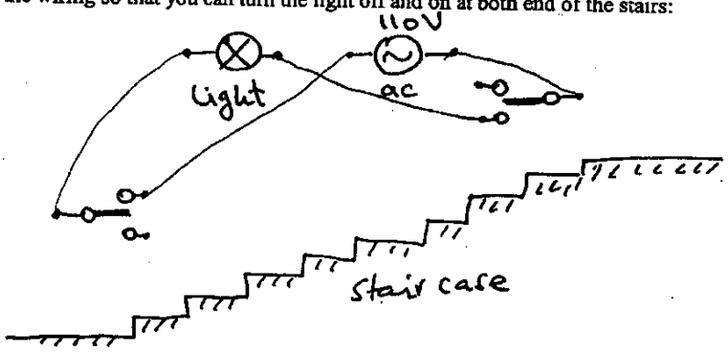
(a.) binary: 100110

(b.) hexadecimal: 26

(c.) octal: 48

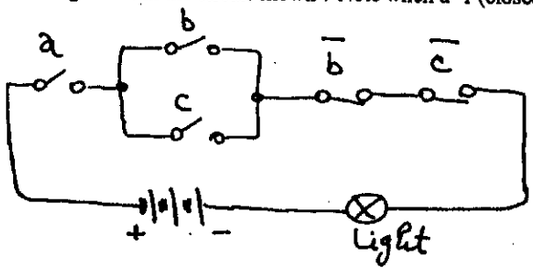
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



a when a is open the light is off.
When a is closed and b or c is closed then the light is on.

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

32 16 8 4 2 1

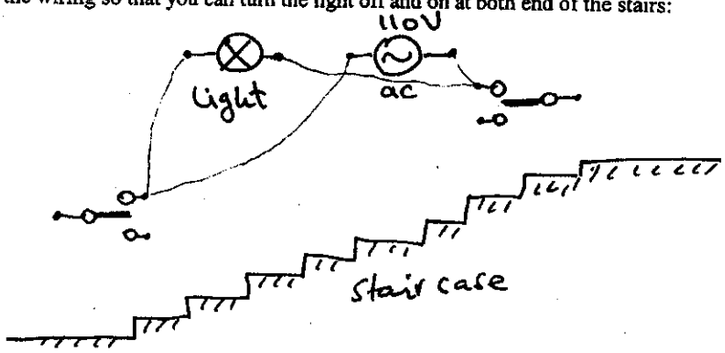
(a.) binary: 1 0 0 1 1 0

(b.) hexadecimal: 2 6

(c.) octal: 4 6

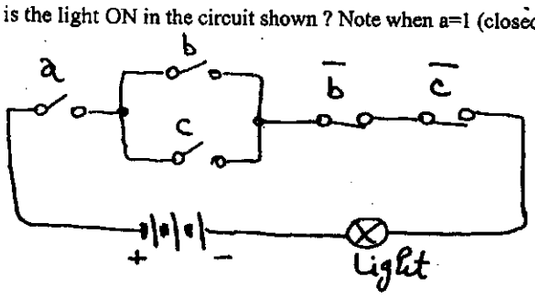
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



b open and c closed

or

c open and b closed

EEC 180A (Prof. V.G. Oklobdzija) **Quiz -1** **Spring 2000**

Your Name:

Problem #1:

Write decimal number 38 in:

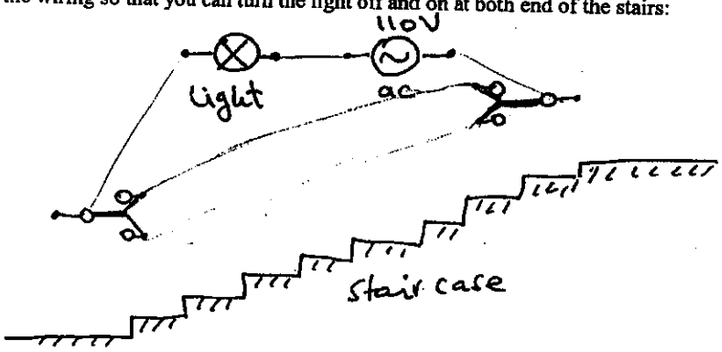
(a.) binary: 0.38×10^2.

(b.) hexadecimal:

(c.) octal:

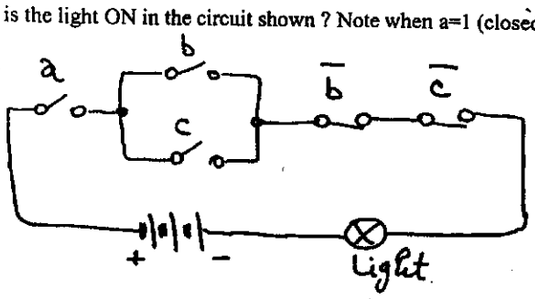
Problem #2:

Given are the light bulb, two double-throw switches and power source.
Finish the wiring so that you can turn the light off and on at both end of the stairs:



Problem #3:

When is the light ON in the circuit shown ? Note when a=1 (closed) $\bar{a}$=0 (open).



The light is on either $a = 1$ or $\bar{a} = 0$