

CSC 209 Review 9 Solution

September 13, 2020

1. a) 8

Correct Solution

0

b) 0

c) 1

d) 6

Correct Solution

15

Notes

- a) is 0 because

$i \gg 1 + j \gg 1$ is $8 \gg 10 \gg 1$

Which is $0 \gg 1$

Which is 0.

- d) is 15 because

$i \& k$ is $78 \& 9$

which is 78

which is 15

2. Use XOR on target bit using value 1.

This is because the operator of two like values equals to 0, and unequal values equal to 1.

a	b	$a \oplus b$
0	0	0
0	1	1
1	0	1
1	1	0

3. The macro switches the value of x and y .

Take for example $x = 100$ (8) and $y = 010$ (4)

For the first part of macro, we have $x = x \oplus y = 100 \oplus 010 = 110$.

Taking this to second part of macro, we have $y = y \oplus x = 010 \oplus 110 = 100$.

Lastly, we have $x = x \oplus y = 110 \oplus 100 = 010$.

Thus, we can see the value of x and y are switched.

```

4_1  #define MK_COLOR(red,green,blue) ((long)((blue << 16) | (blue | (
      green << 8)) | red)

5_1  #define GET_RED(color) ((int)(color & 255))
      2
      3  #define GET_GREEN(color) ((int)((color >> 8) & 255))
      4
      5  #define GET_BLUE(color) ((int)((color >> 16) & 255))

```

6. a) Please see file `question_6_a.c` for details.
 b) Please see file `question_6_b.c` for details.

Notes

- Unsigned short has at max 4 bits.
- Any out-of-bound bits are omitted