1. array[0] = 0x44434241
   array[1] = 0x48474645
   str0 = qrstuvwx
   str1 = yz234560

   Contents of Memory starting from 0x7ffd858e3ed0:

0	6	5	4
3	2	z	y
x	w	v	u
t	s	r	q
p	o	n	m
l	k	j	i
48	47	46	45
44	43	42	41

Array[0] (0x7ffd858e3ed0) starts at 41
Array[1] (0x7ffd858e3ed4) starts at 45
str0 (0x7ffd858e3ee0) starts at q
str1 (0x7ffd858e3ef0) starts at y

2. (3^5) is 243, there is 8 left, so 2*(3^1) and 2*(3^0), therefore 100022.

3. 1101//1110//1010//1101//1011//1110//1110//1111//0000 goes 0xdeadbeef0

4. (2^5) is 32, (2^3) is 8, (2^2) is 4, (2^0) is 1, 32+8+4+1 = 45.
   32+16+8+4 = 60
   16+8+2+1 = 27
   8+2+1 = 11
   16+1 = 17
   32+16+8+4+2+1 = 63

5. -32 + 8 + 4 + 1 = -19
   -32 + 16 + 8 + 4 = -4
   16 + 8 + 2 + 1 = 27
   8 + 2 + 1 = 11
   16 + 1 = 17
   -32 + 16 + 8 + 4 + 2 + 1 = -1

6. 0x2d
   0x3c
   0x1b
   0x0b

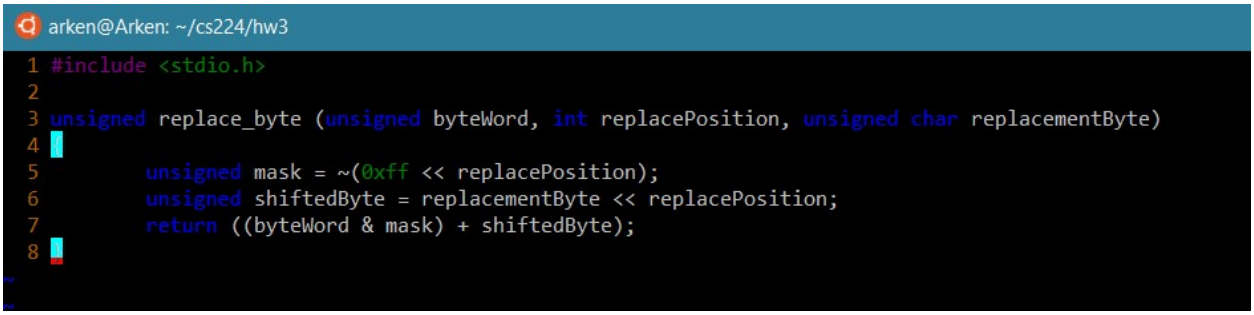
0x11
0x3f

7.

arken@Arken: ~/cs224/hw3

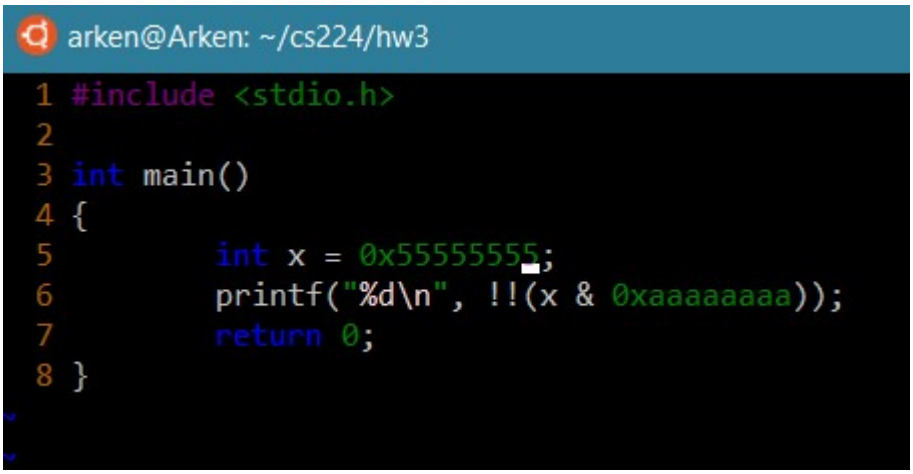
```c
#include <stdio.h>
typedef unsigned char* byte_pointer;

void show_bytes(byte_pointer start, size_t length)
{
        for (unsigned int i = 0; i < length; ++i)
        {
                printf(" %.2x", start[i]);
        }
        printf("\n");
}

void show_short(short x)
{
        show_bytes((byte_pointer) &x, sizeof(short));
}

void show_long(long x)
{
        show_bytes((byte_pointer) &x, sizeof(long));
}

void show_double(double x)
{
        show_bytes((byte_pointer) &x, sizeof(double));
}

int main()
{
        show_short(47);
        show_long(5673);
        show_double(65.998);
        return 0;
}
```

8.



9. A) !!x
   B) !!(~x)
   C) !!(x & 0xff)
   D) !!(~x & (0xff << 24))

10.



11. A) maxBytes gets implicitly cast to a size_t, so therefore if maxBytes is too small, it will become the hugely positive representation of the negative number resulting from the subtraction.
    B) if ((signed)(maxBytes – sizeof(val)) > = 0)

12. A) (x << 4) + (x << 0)
    B) (x << 0) – (x << 3)
    C) (x << 6) – (x << 2)
    D) (x << 4) – (x << 7)

13.

Format A Bits	Value	Format B Bits	Value
1 01111 001	-9/8	1 0111 0010	-9/8
0 10110 011	176	0 1110 0110	176
1 00111 010	-5/1024	1	
0 00000 111	7/131072	0	
1 11100 000	-8192	1	
0 10111 100	384	0	

14. Taylor Whitlock, Evan Smith, Nathan Nelson, Neil Knight; Group 25