week 4, continued

file i/o

JPEG

255 216 255

decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

binary

0, 1

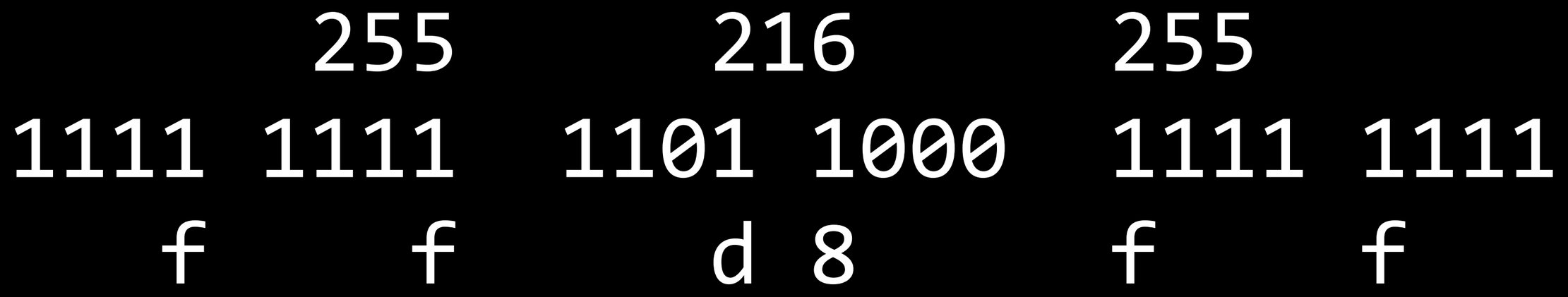
hexadecimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, a, b, c, d, e, f

255 216 255

255	216	255
11111111	11011000	11111111

255	216	255
1111 1111	1101 1000	1111 1111


255 216 255
1111 1111 1101 1000 1111 1111
f f d 8 f f

255	216	255
1111 1111	1101 1000	1111 1111
f f	d 8	f f
0xff	0xd8	0xff

0xff 0xd8 0xff

offset	type	name	
0	WORD	bfType	BITMAPFILEHEADER
2	DWORD	bfSize	
6	WORD	bfReserved1	
8	WORD	bfReserved2	
10	DWORD	bfOffBits	
14	DWORD	biSize	BITMAPINFOHEADER
18	LONG	biWidth	
22	LONG	biHeight	
26	WORD	biPlanes	
28	WORD	biBitCount	
30	DWORD	biCompression	
34	DWORD	biSizeImage	
38	LONG	biXPelsPerMeter	
42	LONG	biYPelsPerMeter	
46	DWORD	biClrUsed	
50	DWORD	biClrImportant	
54	BYTE	rgbtBlue	RGBTRIPLE
55	BYTE	rgbtGreen	
56	BYTE	rgbtRed	
57	BYTE	rgbtBlue	RGBTRIPLE
58	BYTE	rgbtGreen	
59	BYTE	rgbtRed	

...

243	BYTE	rgbtBlue	RGBTRIPLE
244	BYTE	rgbtGreen	
245	BYTE	rgbtRed	

```
typedef struct
{
    string name;
    string house;
}
student;
```


FLAVOR
FLAVOR

lunch this Fri 10/3, 1:15pm

cs50.harvard.edu/rsvp

```
void swap(int a, int b)
{
    int tmp = a;
    a = b;
    b = tmp;
}
```

```
void swap(int a, int b)
{
    int tmp = a;
    a = b;
    b = tmp;
}
```

gdb

```
run
break
next
step
continue
print
display
backtrace
frame
...
```

string

char*

malloc

```
int main(void)
{
    int* x;
    int* y;

    x = malloc(sizeof(int));

    *x = 42;

    *y = 13;

    y = x;

    *y = 13;
}
}
```

to be continued...