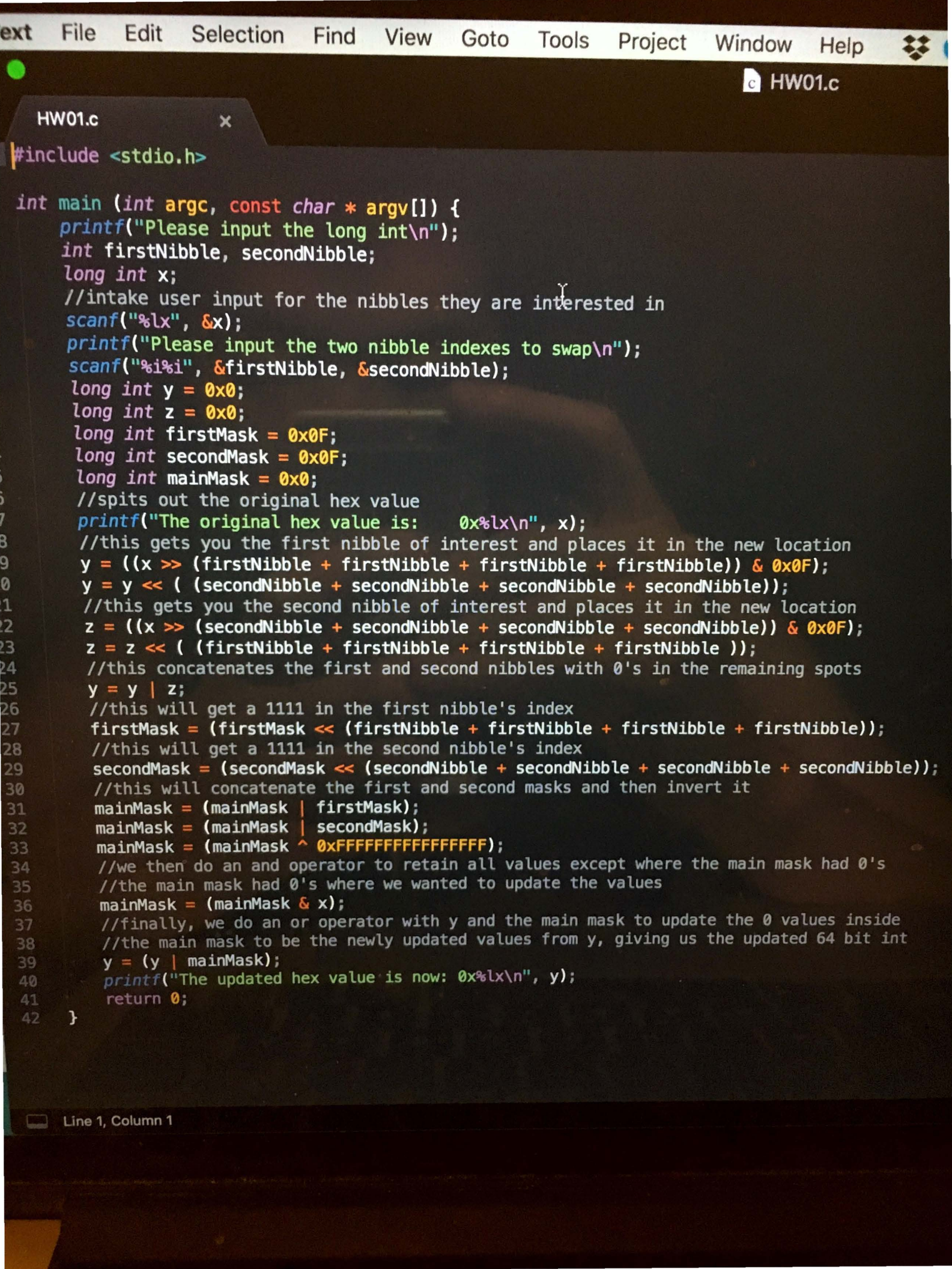
ext File Edit Selection Find View Goto Tools Project Window Help
HW01.c
HW01.c
#include <stdio.h>
int main (int argc, const char * argv[]) {
printf("Please input the long int\n");
int firstNibble, secondNibble;
long int x;
//intake user input for the nibbles they are interested in
scanf("%lx", &x);
printf("Please input the two nibble indexes to swap\n");
scanf("%i%i", &firstNibble, &secondNibble);
long int y = 0x0;
long int z = 0x0;
long int firstMask = 0x0F;
long int secondMask = 0x0F;
long int mainMask = 0x0;
//spits out the original hex value
printf("The original hex value is: 0x%lx\n", x);
//this gets you the first nibble of interest and places it in the new location
y = ((x >> (firstNibble + firstNibble + firstNibble + firstNibble)) & 0x0F);
y = y << ((secondNibble + secondNibble + secondNibble + secondNibble));
//this gets you the second nibble of interest and places it in the new location
z = ((x >> (secondNibble + secondNibble + secondNibble + secondNibble)) & 0x0F);
z = z << ((firstNibble + firstNibble + firstNibble + firstNibble));
//this concatenates the first and second nibbles with 0's in the remaining spots
y = y | z;
//this will get a 1111 in the first nibble's index
firstMask = (firstMask << (firstNibble + firstNibble + firstNibble + firstNibble));
//this will get a 1111 in the second nibble's index
secondMask = (secondMask << (secondNibble + secondNibble + secondNibble + secondNibble));
//this will concatenate the first and second masks and then invert it
mainMask = (mainMask | firstMask);
mainMask = (mainMask | secondMask);
mainMask = (mainMask ^ 0xFFFFFFFFFFFFFFFF);
//we then do an and operator to retain all values except where the main mask had 0's
//the main mask had 0's where we wanted to update the values
mainMask = (mainMask & x);
//finally, we do an or operator with y and the main mask to update the 0 values inside
//the main mask to be the newly updated values from y, giving us the updated 64 bit int
y = (y | mainMask);
printf("The updated hex value is now: 0x%lx\n", y);
return 0;
}
Line 1, Column 1

Jonathan Tso

HW 01 - CS 261

Q2.

	Decimal	Binary	Hexadecimal
1	15	0b0000000000001111	0x000F
2	-15	0b1111111111110001	0x FFF1
3	156	0b0000000010011100	0x009C
4	-4875	0b1110110011110101	0x EC F5
5	13276	0b0011001111011100	0x33DC
6	-23140	0b1010010110011100	0x A59C
7	-644	0b1111110101111100	0x FD4A
8	20987	0b0101000111111011	0x 51FB
9	7608	0b0001110110111000	0x 1DB8
10	-9926	0b1101100100111010	0x D93A
11	8942	0b0010001011101110	0x 22EE
12	7021	0b0001101101101101	0x 1B6D

3. $128 + 16 = 144 + 8 = 152 + 4 = 156$ → 0000,0000,1001,1100

4. $-2^{15} + 2^{14} + 2^{13} + 2^{12} + 2^{11} + 2^{10} + 2^{9} + 2^{8} + 2^{7} + 2^{6} + 2^{5} + 2^{4} + 2^{3} + 2^{2} + 2^{1} + 2^{0}$

6. $-2^{15} + 2^{13} + 2^{10} + 2^{8} + 2^{7} + 2^{4} + 2^{3} + 2^{2}$

~~$1024 (2^{10}) + 256 (2^{8}) = 1280 + 64 (2^{6}) = 1344 + 2^{3} + 2^{2} = 1344$~~

7. $2^{9} + 2^{7} + 2^{5} + 2^{4} + 2^{2} + 2^{1} = 644$

0000,0010,1011,0110 flipped +1 1111 1101 0100 1010

11. $8192\ (2^{13}) + 512\ (2^{9}) + 128\ (2^{7}) + 64\ (2^{6}) + 32\ (2^{5}) + 8\ (2^{3}) + 4\ (2^{2}) + 2\ (2^{1})$

0010 0010 1110 1110

Q3.

	Decimal	Binary	Hex
1	18.125	0b 00010010.0010 0000	0x 12.20
2	-18.125	0b 1110 1101. 1110 0000	0x ED.E0
3	-29.75	0b 1110 0010. 0100 0000	0x E2.40
4	-92.2148438	0b 1010 0011. 1100 1001	0x A3.C9
5	79.7109375	0b 0100 1111. 1011 0110	0x 4F.B6
6	43.8125	0b 0010 1011. 1101 0000	0x 2B.D0
7	124.625	0b 0111 1100. 1010 0000	0x 7C.A0
8	-96.250	0b 1001 1111. 1100 0000	0x 9F.C0
9	53.796875	0b 0011 0101. 1100 1100	0x 35.CC
10	89.9375	0b 0101 1001. 1111 0000	0x 59.F0
11	102.5625	0b 0110 0110. 1001 0000	0x 66.90
12	114.21875	0b 0111 0010. 0011 1000	0x 72.38

3. $-128+64+32+1 + .25 = -28 + .25 = -27.75$

4. $-128+32+2+1 + .5+.25+2^{-5}+2^{-6} = -93 + .78515625$

5. $64+8+4+2+1 + .5+.125+.0625+2^{-4}+2^{-5}$

6. $32+8+2+1 + .5+.25+.0625 = 43 + .8125$

7. $64+32+16 = 96+16 = 112+8 = 120+4 = 124$

8. -128

9. $32+16+4+1 + .5+.25+.03125 = .015625$

10. $64+16+8+1 + .5+.25+.125+.0625$

$= 89 + .875$

$.0625$

$.9375$

12. $64+32+16+2 + .125+.0625 = .03125$

114

$.0625$

$.1875$

$+.03125$

$.21875$