Lab Exercise #6 -- Integer Operations

1. Examine the C program below, and give the value displayed by the program for each output operation.

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#include <stdio.h>

int main()
{
  signed int   AAA = 0x7d0000f2, BBB = 0xb500004e;

  unsigned int CCC = 0x7d0000f2, DDD = 0xb500004e;

  printf( "\nUnary Operations\n\n" );

  printf( "%08x\n", -AAA );               /* ____________________________________ */

  printf( "%08x\n", ~AAA );               /* ____________________________________ */

  printf( "%08x\n", -BBB );               /* ____________________________________ */

  printf( "%08x\n", ~BBB );               /* ____________________________________ */

  printf( "\nBinary Bitwise Operations (signed)\n\n" );

  printf( "%08x\n", AAA & BBB );          /* ____________________________________ */

  printf( "%08x\n", AAA ^ BBB );          /* ____________________________________ */

  printf( "%08x\n", AAA | BBB );          /* ____________________________________ */

  printf( "%08x\n", AAA << 4 );           /* ____________________________________ */

  printf( "%08x\n", BBB << 4 );           /* ____________________________________ */

  printf( "%08x\n", AAA >> 12 );          /* ____________________________________ */

  printf( "%08x\n", BBB >> 12 );          /* ____________________________________ */

  printf( "\nBinary Bitwise Operations (unsigned)\n\n" );

  printf( "%08x\n", CCC & DDD );          /* ____________________________________ */

  printf( "%08x\n", CCC ^ DDD );          /* ____________________________________ */

  printf( "%08x\n", CCC | DDD );          /* ____________________________________ */

  printf( "%08x\n", CCC << 4 );           /* ____________________________________ */

  printf( "%08x\n", DDD << 4 );           /* ____________________________________ */

  printf( "%08x\n", CCC >> 12 );          /* ____________________________________ */

  printf( "%08x\n", DDD >> 12 );          /* ____________________________________ */
```

```
  printf( "\nBinary Arithmetic Operations (signed)\n\n" );
  printf( "%08x\n", AAA + BBB );          /* _____________________________ */
  printf( "%08x\n", AAA - BBB );          /* _____________________________ */
  printf( "%08x\n", BBB - AAA );          /* _____________________________ */
  printf( "%08x\n", AAA * 16 );           /* _____________________________ */
  printf( "%08x\n", BBB * 16 );           /* _____________________________ */
  printf( "%08x\n", AAA / 4096 );         /* _____________________________ */
  printf( "%08x\n", BBB / 4096 );         /* _____________________________ */
  printf( "%08x\n", AAA % 4096 );         /* _____________________________ */
  printf( "%08x\n", BBB % 4096 );         /* _____________________________ */
  printf( "\nBinary Arithmetic Operations (unsigned)\n\n" );
  printf( "%08x\n", CCC + DDD );          /* _____________________________ */
  printf( "%08x\n", CCC - DDD );          /* _____________________________ */
  printf( "%08x\n", DDD - CCC );          /* _____________________________ */
  printf( "%08x\n", CCC * 16 );           /* _____________________________ */
  printf( "%08x\n", DDD * 16 );           /* _____________________________ */
  printf( "%08x\n", CCC / 4096 );         /* _____________________________ */
  printf( "%08x\n", DDD / 4096 );         /* _____________________________ */
  printf( "%08x\n", CCC % 4096 );         /* _____________________________ */
  printf( "%08x\n", DDD % 4096 );         /* _____________________________ */
  printf( "\nMasking Operations\n\n" );
  printf( "%08x\n", CCC & 0xffff );       /* _____________________________ */
  printf( "%08x\n", CCC | 0xffff );       /* _____________________________ */
  printf( "%08x\n", DDD & 0xffff );       /* _____________________________ */
  printf( "%08x\n", DDD | 0xffff );       /* _____________________________ */
}
```

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2. When you have completed your work, use the executable program in the file named "~cse320/Labs/lab06.ops" to check your work.

3. The file "lab06.outline.c" contains a C program which repeatedly prompts the user to enter a signed integer value, then displays that number in decimal. Copy that program into your account and revise it as specified in the comments.