```c
/*------------------------------------------------------------------------
--
-                                           SE 185 Lab 01
-           Developed for 185-Rursch by T.Tran and K.Wang
-    Name:
-      Section:
-    NetID:
-    Date:
------------------------------------------------------------------------
*/

/*
  Here is a block comment
  These lines don't run
*/

/*------------------------------------------------------------------------
--
-                                                        Includes
------------------------------------------------------------------------
*/
#include <stdio.h>


/*------------------------------------------------------------------------
--
-
Implementation
------------------------------------------------------------------------
*/
int main()
{

    // This is a C comment, this line doesn't run in the program

    printf("Patriots are winning the Super Bowl"); // Modify this line
    printf("\n"); // This prints a newline character

    return 0; // This is a return statement

}




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--
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-    Section:
-      NetID:
```

```
/*------------------------------------------------------------------------
--
-                                       Includes
--------------------------------------------------------------------------
*/
#include <stdio.h>


/*------------------------------------------------------------------------
--
-                                       Implementation
--------------------------------------------------------------------------
*/
int main()
{
    int num = 12; // Change the zero to a different number

    printf("%d", num);
    printf("\n");

    printf("apatel1"); // Change this to your netID
    printf("\n");

    return 0;

}
```

```
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--
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-      Name:
-      Section:
-      NetID:
-      Date:
--------------------------------------------------------------------------
*/

/*------------------------------------------------------------------------
--
-                                       Includes
```

```c
   ------------------------------------------------------------------------------
 */
#include <stdio.h>
#include <stdlib.h>


/*------------------------------------------------------------------------------
--
-                                             Implementation
-------------------------------------------------------------------------------
*/
int main()
{
    /* DO NOT EDIT THIS FILE */
    char id [1000];

    int num = 0;

    printf("Value before input: %d\n", num);

    printf("Type a number: ");
    scanf("%d", &num);
    printf("\n");

    printf("Type your netID: ");
    scanf("%s", id);
    printf("\n");

    printf("Your input was %d ", num);
    printf("and your ISU email is %s@iastate.edu\n", id);

    return 0;

}
```

```
/cygdrive/u/se185r/lab1                                    —    □    ✕

apatel1@CO2018-09 ~
$ cd u:se185r/lab1

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ls
lab1_1.c  lab1_input.c  lab1_output.c

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ gcc -o lab1 lab1_1.c

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ls
lab1.exe  lab1_1.c  lab1_input.c  lab1_output.c

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ./lab.exe
-bash: ./lab.exe: No such file or directory

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ./lab1.exe
Patriots are winning the Super Bowl

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ |
```

```
/cygdrive/u/se185r/lab1                                    —    □    ×

lab1.exe      lab1_1.PNG  lab1_input.exe  lab1_output.exe  NETID.txt

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ./lab1_output.exe > mydata.txt

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ./lab1_input.exe < mydata.txt
Value before input: 0
Type a number:
Type your netID:
Your input was 12 and your ISU email is apatel1@iastate.edu

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ./lab1_output.exe | ./lab1_input.exe
Value before input: 0
Type a number:
Type your netID:
Your input was 12 and your ISU email is apatel1@iastate.edu

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ ./lab1_output.exe | ./lab1_input.exe > apatel1.txt

apatel1@CO2018-09 /cygdrive/u/se185r/lab1
$ |
```

Value before input: 0Type a number: Type your netID: Your input was 12 and your ISU email is apatel1@iastate.edu

Decimal 1, 10, 42, 255
Hexadecimal F, DF, 81, 04
Binary 1001001l, 111111

$8+0+2+0=10$

$$8 \quad 4 \quad 2 \quad 1$$
$$\uparrow \quad \uparrow \quad \uparrow \quad \uparrow$$
$$2^3 \ 2^2 \ 2^1 \ 2^0$$
$$\uparrow$$

Decimal:

[1] Binary → 1
     Octal → 1
     Hex → 1

[10] Binary: $10/2 = 5R0 \Rightarrow 1010$
            $5/2 = 2R1$
            $2/2 = 1R0$
            $1/2 = 0R1$

     Octal: $10/8 = 1R2 \Rightarrow \overset{8^1 \ 8^0}{12}$
            $1/8 = 0R1$

     Hex: $10 \Rightarrow A$

[42] Binary: $42/2 = 21R0 \Rightarrow 101010$ Octal: $42/8 = 5R2 \Rightarrow 52$
            $21/2 = 10R1$ $5/8 = 0R5$
            $10/2 = 5R0$
            $5/2 = 2R1$ Hex: $42/16 = 2R10 = 2A$
            $2/2 = 1R0$ $2/16 = 0R2$
            $1/2 = 0R1$

[255] Binary: $255/2 = 127R1$ Octal: $255/8 = 31R7$
             $127/2 = 63R1$ $31/8 = 3R7 \Rightarrow 377$
             $63/2 = 31R1 \Rightarrow 11111111$ $3/8 = 0R3$
             $31/2 = 15R1$
             $15/2 = 7R1$ Hex: $255/16 = 15R15 \Rightarrow FF$
             $7/2 = 3R1$ $15/16 = 0R15$
             $3/2 = 1R1$
             $1/2 = 0R1$

$$16^5\ 16^4\ 16^3\ 16^2\ 16^1 \quad 16^0$$

Hex → 100A D F   Decimal → $10^2\ 10^1\ 10^0$ 68

[13] [15]
      +15

$16^1\ 16^0$
A B   1 0 0

160 + 11 = 171

Hexadecimal:

F)

Decimal: F = 15

Binary: 15/2 = 7 R1
        7/2 = 3 R1   => 1111
        3/2 = 1 R1
        1/2 = 0 R1

Octal: 15/8 = 1 R7 = 17
       1/8 = 0 R1

DF)

Binary: D   F   => 11011111
        1101   1111

Octal: 223/8 = 27.R7
       27/8 = 3 R3 = 337
       3/8 = 0 R3

Decimal: 16^1 16^0
          ×13   ×15
          208 + 15 = 223

81)

decimal: $(81)_{16}$

$8 \times 16^1 + 1 \times 16^0$

$8 \times 16 + 1 \times 1 = 129$

Octal: 129/8 = 16 R1
       16/8 = 2 R0 = 201
       2/8 = 0 R2

Binary: 129/2 = 64 R1
        64/2 = 32 R0
        32/2 = 16 R0   = 1000001
        16/2 = 8 R0
        8/2 = 4 R0
        4/2 = 2 R0
        2/2 = 1 R0
        1/2 = 0 R1

04)

decimal: $(04)_{16}$

$0 \times 16^1 + 4 \times 16^0$

$0 + 4 \times 1 = 4$

Octal: 4/8 = 0 R 4

Binary: 4/2 = 2 R0
        2/2 = 1 R0 = 100
        1/2 = 0 R1

Binary:

$$\overline{10010011}$$

decimal: $1\times2^7 + 0\times2^6 + 0\times2^5 + 1\times2^4 + 0\times2^3 + 0\times2^2 + 1\times2^1 + 1\times2^0$

$128 + 0 + 0 + 16 + 0 + 0 + 2 + 1 = \boxed{147}$

Octal: $147/8 = 18 R 3$

$18/8 = 2 R 2$ $= \boxed{223}$

$2/8 = 2 R 2$

Hexadecimal: $147/16 = 9 R 3$ $= 93$

$9/16 = 0 R 9$

$\overline{111111}$

decimal: $1\times2^5 + 1\times2^4 + 1\times2^3 + 1\times2^2 + 1\times2^1 + 1\times2^0$

$32 + 16 + 8 + 4 + 2 + 1 = \boxed{63}$

Octal: $63/8 = 7 R 7$ $= \boxed{77}$

$7/8 = 0 R 7$

Hexadecimal: $63/16 = 3 R 15 = F = \boxed{3F}$

$3/16 = 0 R 3 = 3$