

```

/*-----
-           SE 185: Lab 01 - Getting to Know the 185 Environment           -
-   Name: Alvin Thomas                                                     -
-                                                                           -
-   Section: Section 2                                                    -
-                                                                           -
-   NetID: alvin                                                           -
-                                                                           -
-   Date: 8/29/2023                                                       -
-                                                                           -
-----*/

/*
   Here is a block comment.
   These lines don't run when you compile or run the code.
   I.e., they're the machine doesn't see them, only you.
*/

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

/*-----
-                               Implementation                           -
-----*/
int main(int argc, char *argv[])
{
    // This is a C comment, this line doesn't run in the program

    printf("Hello world"); // Modify this line
    printf("\n"); // This prints a newline character

    return 0; // This is a return statement
}

```

```
/cygdrive/u/fall2023/se185/lab01

These files are for the users to personalise their cygwin experience.
They will never be overwritten nor automatically updated.

'./bashrc' -> '/home/alvin/./bashrc'
'./bash_profile' -> '/home/alvin/./bash_profile'
'./inputrc' -> '/home/alvin/./inputrc'
'./profile' -> '/home/alvin/./profile'

alvin@C02048-15 ~
$ cd u:fall2023/se185/lab01

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ ls

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ gcc lab01-1.c -o lab01-1

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ ./lab01-1
Hello world

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ |
```

Value before input: 0

Type a number: Type your NetID:

Your input was 35 and your ISU email is alvin@iastate.edu

```
/cygdrive/u/fall2023/se185/lab01

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ ./lab01-output > mydata.txt

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ ./lab01-input < mydata.txt

Value before input: 0

Type a number: Type your NetID:
Your input was 35 and your ISU email is alvin@iastate.edu
alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ ./lab01-output | ./lab01-input

Value before input: 0

Type a number: Type your NetID:
Your input was 35 and your ISU email is alvin@iastate.edu
alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ ./lab01-output | ./lab01-input > NETID.txt

alvin@C02048-15 /cygdrive/u/fall2023/se185/lab01
$ |
```

HOMEWORK

Alvin Thomas

Base Conversion Companion Homework

Decimal	Binary	Octal	Hexadecimal
1	1	1	1
10	1010	12	A
42	101010	52	2A
255	11111111	377	FF
15	1111	17	F
223	11011111	337	DF
129	10000001	201	81
147	10010011	223	93
63	111111	77	3F
18	10010	22	12

$$\begin{array}{l}
 10_{10} \rightarrow 10/2 = 5 \quad 0 \rightarrow 1010_2 \quad 10/8 = 1 \quad 2 \rightarrow 12 \\
 \quad \quad 5/2 = 2 \quad \quad \quad 1 \quad \quad \quad 2/8 = 0 \quad 1 \\
 \quad \quad 2/2 = 0 \quad \quad \quad 0 \\
 \quad \quad 1/2 = 0 \quad \quad \quad 1
 \end{array}$$

$$\begin{array}{l}
 42 \rightarrow 42/2 = 21 \quad 0 \quad 42/8 = 5 \quad 2 \quad 42/16 = 2 \quad 10 \\
 \quad \quad 21/2 = 10 \quad 1 \quad 5/8 = 0 \quad 5 \quad 2/16 = 0 \quad 2 \\
 \quad \quad 10/2 = 5 \quad 0 \\
 \quad \quad 5/2 = 2 \quad 1 \\
 \quad \quad 2/2 = 1 \quad 0 \\
 \quad \quad 1/2 = 0 \quad 1
 \end{array}$$

$$\begin{array}{l}
 255 \rightarrow 255/2 = 127 \quad 1 \quad 255/8 = 31 \quad 7 \quad 255/16 = 15 \quad 15 \\
 \quad \quad 127/2 = 63 \quad 1 \quad 31/8 = 3 \quad 7 \quad 15/16 = 0 \quad 15 \\
 \quad \quad 63/2 = 31 \quad 1 \quad 3/8 = 0 \quad 3 \\
 \quad \quad 31/2 = 15 \quad 1 \\
 \quad \quad 15/2 = 7 \quad 1 \\
 \quad \quad 7/2 = 3 \quad 1 \\
 \quad \quad 3/2 = 1 \quad 1 \\
 \quad \quad 1/2 = 0 \quad 1
 \end{array}$$

$$\begin{array}{rcl}
 F \rightarrow 15 & 15/2 = 7 & 1 \\
 & 7/2 = 3 & 1 \\
 & 3/2 = 1 & 1 \\
 & 1/2 = 0 & 1
 \end{array}
 \quad
 \begin{array}{rcl}
 15/8 = 1 & 7 \\
 \cancel{15/8 = 1} & 7 \\
 11/8 = 0 & 1
 \end{array}$$

$$DF \rightarrow 13 \times 16^2 + 15 \times 16 = 3328 + 240 = 3568$$

$$DF \rightarrow 13 \times 16^1 + 15 \times 16^0 = 208 + 15 = 223$$

$$\begin{array}{rcl}
 223/2 = 111 & 1 & \\
 111/2 = 55 & 1 & \\
 55/2 = 27 & 1 & \\
 27/2 = 13 & 1 & \\
 13/2 = 6 & 1 & \\
 6/2 = 3 & 0 & \\
 3/2 = 1 & 1 & \\
 1/2 = 0 & 1 &
 \end{array}
 \quad
 \begin{array}{rcl}
 223/8 = 27 & 7 & \\
 27/8 = 3 & 3 & \\
 3/8 = 0 & 3 &
 \end{array}$$

$$81 \rightarrow 8 \times 16^1 + 1 \times 16^0 = 128 + 1 = 129$$

$$\begin{array}{rcl}
 129/2 = 64 & 1 & \\
 64/2 = 32 & 0 & \\
 32/2 = 16 & 0 & \\
 16/2 = 8 & 0 & \\
 8/2 = 4 & 0 & \\
 4/2 = 2 & 0 & \\
 2/2 = 1 & 0 & \\
 1/2 = 0 & 1 &
 \end{array}
 \quad
 \begin{array}{rcl}
 129/8 = 16 & 1 & \\
 16/8 = 2 & 0 & \\
 2/8 = 0 & 2 &
 \end{array}$$

$$10010011 \rightarrow 1 \times 2^7 + 0 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$$

$$= 128 + 0 + 0 + 16 + 0 + 0 + 2 + 1 = 147$$

$$147/8 = 18 \quad 3$$

$$147/16 = 9 \quad 3$$

$$18/8 = 2 \quad 2$$

$$9/16 = 0 \quad 9$$

$$2/8 = 0 \quad 2$$

$$111111 \rightarrow 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 32 + 16 + 8 + 4 + 2 + 1 = 63$$

$$63/8 = 7 \quad 7$$

$$63/16 = 3 \quad 15$$

$$7/8 = 0 \quad 7$$

$$3/16 = 0 \quad 3$$

$$22 \rightarrow 2 \times 8^1 + 2 \times 8^0 = 16 + 2 = 18$$

$$18/2 = 9 \quad 0$$

$$18/16 = 1 \quad 2$$

$$9/2 = 4 \quad 1$$

$$~~2/16 = 0 \quad 0~~ \quad 1/16 = 0 \quad 1$$

$$4/2 = 2 \quad 0$$

$$2/2 = 1 \quad 0$$

$$1/2 = 1 \quad 1$$