

Lab # 4: Programming Practice and Using Header Files

EC-102 – Computer Systems and Programming

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December 14, 2016

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Lab Task 1

Write a program which asks the user to enter the number of gallons and displays the equivalent in cubic feet.
(1 cubic-foot = 7.48 gallons)

[code](#)

Header Files

- `iomanip.h`
- `ctype.h`

iomanip.h

The `iomanip` is a parameterized input output manipulator.

- `setprecision(int n)` – It sets the precision of floating point number to `n` digits.
- `setw(int n)` – It sets the width of the field of the next output to `n` characters. If the length of the output stream is less than `n` then spaces are padded. The no of spaces padded is the difference between `n` and length of the output stream. If the length of the output stream is less than `n` there will be no effect on output stream.
- `setbase(int n)` – It sets the output representation of the number to octal, decimal or hexadecimal corresponding to the argument `n` which is 8 in case of octal, 10 for decimal and 16 for hexadecimal.
- `setfill (char c)` – It sets the fill character to be the value of character `c`.

Lab Task 2

Write a code which gives you the following output.

Hint: use setw and setfill.

```
LOCATION.....POPULATION
Portcity.....2425785
Hightown.....47
Lowville.....9761
Press any key to continue . . .
```

ctype.h

- The ctype.h header file of the C Standard Library declares several functions that are useful for testing and mapping characters.
- These functions take the int equivalent of one character as parameter and the functions return non-zero (true) if the argument c satisfies the condition described, and zero(false) if not.

ctype.h functions

- isalnum: Check if character is alphanumeric
- isalpha: Check if character is alphabetic
- islower: Check if character is lowercase letter
- isspace: Check if character is a white-space
- isupper: Check if character is uppercase letter
- isxdigit: Check if character is hexadecimal digit

Example

```
1 // takes a single character (a letter) as an argument
   and returns a non-zero integer if the letter is
   lowercase, or zero if it is uppercase
2 #include <iostream>
3 #include <ctype.h>
4 using namespace std;
5
6 int main()
7 {
8     char letter;
9     cin >> letter;
10    cout << islower(letter) << endl;
11    return 0;
12 }
```

Code Lab Task 1

```
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6     float gallons, cubic_feet;
7     cout<<"enter number of gallons to convert into cubic
8         -feet: ";
9     cin >> gallons;
10    cout << gallons * 0.133681 << " cubic-feet" << endl;
11    system("pause");
12    return 0;
13 }
```

[return](#)

Code Lab Task 2

```
1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4
5 int main()
6 {
7     long p1 = 2425785, p2 = 47, p3 = 9761;
8
9     cout << setfill('.') << setw(8) << "LOCATION" <<
10    setw(18) << "POPULATION" << endl
11    << setw(8) << "Portcity" << setw(18) << p1 << endl
12    << setw(8) << "Hightown" << setw(18) << p2 << endl
13    << setw(8) << "Lowville" << setw(18) << p3 << endl
14    ;
15    return 0;
16 }
```

[return](#)