

Lab 4 – Predefined Functions

Topics to be covered:

- getline () function
- predefined functions such as rand ()

Example code:

- Getline.cpp
- PredefinedFuncs.cpp

Code Segments (Entire code is in each .cpp file above):

***** Getline.cpp *****

```
//Standard I/O getline ()

//File I/O getline ()
infile.getline (firstLine, 100, '\n');
```

***** PredefinedFuncs.cpp *****

```
//Additional include libraries.
#include <stdlib.h> //required for srand () and rand () functions
#include <time.h>   //required for time () function.

//Seed the random number generator.
//Only need to be called ONCE in the whole program.
srand (time (NULL));

//Assigning the randomly generated number to variable num.
//num will be within the range of [1, 100]
num = rand () % 100 + 1;
```

Logic Operators

AND &&

OR ||

NOT !

Relational Operators

greater than	greater than or equal to	less than	less than or equal to	equal to	not equal to
>	>=	<	<=	==	!=

Boolean Type

true : any non-zero value

false : zero

Consider:

1. $1 < 0$
2. $3 == 4$
3. $(10 < 7) \&\& (4 == 2)$
4. $(5 <= 23) || (3 != 3)$
5. $1 || 0$
6. $1 \&\& 1$
7. $!(0)$
8. $!(4 <= 4) || !(5 > 4)$
9. $!((4 < 7) \&\& (2 != 5) || (8 < 10))$
10. $1 \&\& 1 \&\& 1 \&\& 1 \&\& 0$
11. $!((9 <= 21) \&\& !(4 > 7) \&\& ((1 >= 0) || (2 \&\& 0)) \&\& (2 < 1) \&\& 0)$
12. $(5 + 2) \&\& (3 < 9)$
13. $(0 || (5 != 10))$
14. $(9 - 7) || (2 >= 95)$
15. $((9 * 56) || !(7 >= 6)) \&\& (2*3-6)$
16. $(!(2 - 6) \&\& ((5 < 9) || (10 == 11))$

Lab 4

Assignment 1:

Write a complete C++ program illustrating the use of the random number generator. *For each of the 3 ranges listed below, call the random number generator 2 times.* You should have 6 calls to the random number generator in your program. Your output should be descriptive (i.e. tell what range of values the random number was generated within and the value generated) and written to a file, the name of which is supplied by the user.

Use rand () to generate random values in the following ranges:

1. Generate character in the range of 'C' – 'R'
2. Generate integer within range [3, 5]
3. Generate integer within range (-10, 15)

Assignment 2:

This assignment requires reading two input files “*words.txt*” and “*phrases.txt*”. *words.txt* will contain exactly 5 words appearing on multiple lines, *phrases.txt* will contain 3 lines of text. You also need an output file with the name supplied by the user. Write a complete C++ program that first reads each individual word in *words.txt*, and writes each word to the output file, one word per line. It should then read each complete line in *phrases.txt* using getline, and write each line, as read, to the same output file.

Sample words.txt: (notice it has 5 words)
Programming

is frustrating
and
fun.

Sample phrases.txt: (notice it has 3 lines)
Programming is frustrating and fun.
Debugging is the most painful thing I've ever experienced!
CS135 rocks! Can't wait until the final project.

Associated sample output file:

Output from words.txt file:
Programming
is
frustrating
and
fun.

Output from phrases.txt file:
Programming is frustrating and fun.
Debugging is the most painful thing I've ever experienced!
CS135 rocks! Can't wait until the final project.

(We have to set a specific number of words and lines right now because we don't have the ability to read an unknown number – we'll be able to do that when we learn about while loops – it'll give us much more flexibility – try while loops if you want to.)