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1 • Libraries
2   •<cstring>    manage c-strings
3   •<string>    manage strings
4   •<fstream>   using file i/o
5   •<cstdlib>   use exit(1)
6   •<cctype>   use to manipulate or read type(ex:isspace())
7   •<cmath>    advanced math functions
8 •*File I/O
9   •(1)create stream object(istream, ostream)
10  •(2)open i/o w/ (in_stream.open("text.txt"))
11  •(3)use .fail() and exit(1) to test for file opening
12  •(4)close i/o w/ (in_stream.close("text.txt"))
13  •read with << or >>
14  •end of file
15      •in_stream.eof()    used for reading text
16      •in_stream>>next    used for reading numerical data
17  •.get(char)              reads one character from text at a time
18  •.getline(in_stream,string) reads line as a string
19  •>> ignores whitespace, .get() reads for \t, \n, and spaces
20  •.put(char)              returns at least one character to ostream
21  •.putback()              puts at least one character back into the input stream
22 •*Strings
23  •toupper(),tolower()    change case of character
24  •+ concatenate, += append
25  •Search Functions
26      •.find(),rfind,find_first_of,find_first_not_of
27      •return string::npos if position not found
28  •Descriptor Functions
29      •.length(), .size()
30  •Content Changers
31      •.substr(start, length),.replace(),.append(),.insert(),.erase()
32 •Assert
33   • Will exit program if returns false.
34   • Tests for pre and post conditions (ex: assert(n>1&&n!=15);)
35 •Formatting Output
36   • cout.setf()
37       •cout.setf(ios::fixed)    Fixed point notation
38       •showpoint                Always shows decimal point
39       •scientific               scientific notation
40       •showpos                  shows + for positive numbers
41       •right/left               puts output on one end of the width(set right)
42   • cout.precision(n):         Always shows n decimal places
43   • cout.setprecision(n);      same as precision, stays set
44   • cout.unsetf()
45   • out_stream.width(n), cout<<setw(n)
46   • out_stream.open("file.txt", ios::app)
47                                   append data after existing data in file
48 • Generating Random Numbers
49   •Step 1: seed random number generator
50       srand(time(0));//place inside main,only need to do once
51   •Step 2: use rand()
52       int r = rand();
53       • creates random numbers from 0<=r<=RAND_MAX
54       • to get random number in in range 0<=r<=n: int r = (rand()%n)+1;
55 • Functions in C++:
56   •functions call by value by default
57   •functions will call a variable by reference with '&'
58   •overloading
59       •Must have the same number of arguments but at least one diff type
60       •or Must have all the same type of argument but different number
61 • Command Line Inputs to C++ Programs
62   int main(int argc, char* argv[])
63   •<cstdlib>:atoi(),atof(),atol()
64 •Type Casting: static_cast<end_type>(start_type)

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