CS421 - Yoshii - HW1B (based on Week2a) Recognizer vs. Generator - Programs

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DUE: Week 3 Friday before midnight (11:55pm)

TOTAL: 30 pts

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To receive points for any programming HW for CS421:

- Read @instructions file first.
- Your programs must be compilable and tested using g++ on empress.
- Your outputs must be a screen dump, or a "script" (.txt file)
- And it must have the line for compiling the files!! (i.e. g++)
- The state of the program statement must always be provided!!!
- Even if your program does not compile, submit the test results.
- Even if your program does not run well, submit outputs for parts that are working.

A) Write a recognizer in C++ for L = {x | x is a binary number} [10 pts]

My recognizer.cpp must be used.

main: Given a string (from E) cined from the user, pass it to
the recognizer function.
Cout "YES IN L" or "NO NOT IN L" depending on what was returned.

recognizer function: Should return TRUE or FALSE checking each character
to make sure it is 0 or 1. (leading 0's are allowed).

Testing: test with 0, 1, 00110, 2, 02, 31 in this order. ➔Routput.txt

** State of the program: <required to be graded. Explain completeness, correctness, bugs, etc.>** Everything compiles and runs, and all of the test cases were successfully completed.

Graded on: [total 10] I will fill out this table.
Correctness:
Comments:
Test results:
Following the instructions:

B) Write a generator in C++ for L = {x | x is a binary number}.[20 pts]

My generator.cpp must be used.

main: It should create each string over E = {0,1,2} systematically
(short to long) and pass each string to the recognizer function
created in Part a) above.
Only those strings for which the recognizer returned TRUE
should be displayed.
i.e.
create 0 --> returns TRUE ---> display 0
create 1 --> returns TRUE ---> display 1
create 2 --> returns FALSE

create 00 --> returns TRUE ---> display 00
create 01 --> returns TRUE ---> display 01
create 02 --> returns FALSE
create 10 --> returns TRUE ---> display 10 and keep on going

[The challenge here is to figure out how to create
all strings using 0, 1 and 2 systematically, with no repeated
strings. Hint CS311 HW1 using a queue.]

recognizer function: the same one from part a. (copy and use)

Testing: The user must somehow interactively terminate
the execution of the program after at least 20 binary strings
have been displayed although your program should be able to keep on going until the queue overflows.
➔Goutput.txt

** State of the program: <required to be graded. Explain the state of your program here, bugs etc.> **

Everything seems to be working, however I'm not sure how we are supposed to expect a queue overflow when the set of numbers only include 1, 2, and 3. Also, in order to use the *to_string* function I had to compile using the following:

g++ -std=c++0x generator.cpp

I compiled normally with g++ on my machine locally but on empress I had to compile using the above command. I hope that's acceptable.

Graded on: [total 20] I will fill out this table.
Correctness:
Comments:
Test results:
Following the instructions:

Submit 5 files:

1. Submit both the well-commented program recognizer.cpp
2. Submit both the well-commented program generator.cpp.
3. Submit the output from recognizer created on Empress (Routout.txt file).
4. Submit the output from generator created on Empress (Goutput.txt file).
5. Submit this sheet as well.

Always be extra careful and double check what you are submitting.