Thursday, April 26

Warmup
Draw a binary search tree with the following letters inserted in this order:

goodbye

goodbyedodooby

d removed from the rightmost deleted node in left subtree

e moved from the rightmost deleted node in left subtree

work on binarytree assignment in lab on Tuesday
due Friday May 4

Before lab ...
copy the files
build the project
read the assignment
at least start insert
we want to use time in lab wisely

final exam
Thursday, May 10, 10:15am - 12:15pm
hand out sample final
we will review it next Thursday (last day of class)
there will also be a question about intellectual property
**Intellectual property**
what it is, what protections it provides, what it means in Computer Science
I am not a lawyer; this is my understanding
(additional understanding as owner of needlework chart publisher
Told in a Garden - http://tiag.com)
http://www.wipo.int/about-ip/en/
https://www.uspto.gov/patents-getting-started/general-information-concerning-patents

**intellectual property** - a creative work existing in a tangible form such as an image, a machine, a story, a song, a process, or a piece of software

**intellectual property rights** - laws that allow IP creators to share the IP with others but also be recognized as the creator; encourage innovation

**patent, trademark, copyright**

**patent** - protection of a useful invention for a period of time

"any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof"

must disclose details
laws vary by country
usually not software

novelty, utility, non-obvious (hard part)

"...whether a skilled programmer who is familiar with various methods and tools used in the field, considers the program truly innovative or merely the next logical step in the current state of programming."

**trademark** - protects name or symbol used by businesses to mark their work

**copyright** - protects original expression and derivative works

protection applies as soon as the concept is expressed
expression important; can't just be in head
emphasis on expression
limits who may use the work
"fair use" is allowed
creators can further describe what is allowed

for example, many people allow copyleft which allows using the creation but only if derivative works are also copyleft
https://www.gnu.org/licenses/copyleft.en.html

software is usually covered by copyright
Backtracking
recursive method for solving problems searching for a solution, but if you don’t get to a base case, you back up to a previous partial solution usually have some way to represent partial solution

N-Queens
problem: place n chess queens on an n-by-n chessboard so that they are not attacking each other link to 362 assignment: http://cs.millersville.edu/~ekatz/cs362/queens.html

see also p. 358 of text which suggests solving this problem using backtracking and a stack backtracking through a maze recursively is discussed on p. 435