CISS350: Data Structures and Advanced Algorithms Quiz q10706

Name: YOUR EMAIL Score:	Name:	YOUR EMAIL	Score:	
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For the following questions, here's an example on how to describe a binary tree in text. For this tree

```
(10)
(4) (25)
(1) (12) (27)
(29)
```

you write

```
[10, [4, 25]]
[4, [1, None]]
[25, [12, 27]]
[1, [None, None]]
[12, [None, None]]
[27, [None, 29]]
[29, [None, None]]
```

Q1. For this tree:



What is the tree after performing a left rotation at the node with key value of 10? Answer:

Q2. For this tree:

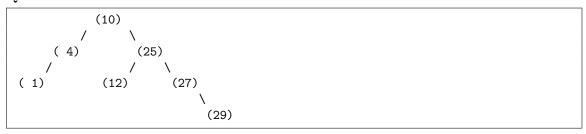
What is the tree after performing a right rotation at the node with key value of 10? Answer:

Q3. For this BST:

insert 30 and then balance it (if necessary). Write the resulting tree in text below. Answer:

?

Q4. For this BST:



insert 2 and then balance it (if necessary). Write the resulting tree in text below. Answer:

?

Instructions

In the file thispreamble.tex look for

\renewcommand\AUTHOR{}

and enter your email address:

\renewcommand\AUTHOR{jdoe5@cougars.ccis.edu}

(This is not really necessary since alex will change that for you when you execute make.) In your bash shell, execute "make" to recompile main.pdf. Execute "make v" to view main.pdf.

Enter your answers in main.tex. In the bash shell, execute "make" to recompile main.pdf. Execute "make v" to view main.pdf.

For each question, you'll see boxes for you to fill. For small boxes, if you see

```
1 + 1 = \langle answerbox \{ \} .
```

you do this:

```
1 + 1 = \answerbox{2}.
```

answerbox will also appear in "true/false" and "multiple-choice" questions.

For longer answers that need typewriter font, if you see

```
Write a C++ statement that declares an integer variable name x.
\begin{answercode}
\end{answercode}
```

you do this:

```
Write a C++ statement that declares an integer variable name x.
\begin{answercode}
int x;
\end{answercode}
```

answercode will appear in questions asking for code, algorithm, and program output. In this case, indentation and spacing is significant. For program output, I do look at spaces and newlines.

For long answers (not in typewriter font) if you see

```
What is the color of the sky?
\begin{answerlong}
\end{answerlong}
```

vou can write

```
What is the color of the sky?
\begin{answerlong}
The color of the sky is blue.
\end{answerlong}
```

A question that begins with "T or F or M" requires you to identify whether it is true or false, or meaningless. "Meaningless" means something's wrong with the question and it is not well-defined. Something like "1+2=4" is either true or false (of course it's false). Something like "1+2=4?" does not make sense.

When writing results of computations, make sure it's simplified. For instance write 2 instead of 1 + 1.

HIGHER LEVEL CLASSES.

For students beyond 245: You can put LATEX commands in answerlong.

More examples of meaningless statements: Questions such as "Is $42 = 1+_2$ true or false?" or "Is $42 = \{2\}^{\{3\}}$ true or false?" does not make sense. "Is $P(42) = \{42\}$ true or false?" is meaningless because P(X) is only defined if X is a set. For "Is 1 + 2 + 3 true or false?", "1 + 2 + 3" is well-defined but as a "numerical expression", not as a "proposition", i.e., it cannot be true or false. Therefore "Is 1 + 2 + 3 true or false?" is also not a well-defined question.

More examples of simplification: When you write down sets, if the answer is $\{1\}$, do not write $\{1,1\}$. And when the values can be ordered, write the elements of the set in ascending order. When writing polynomials, begin with the highest degree term.

When writing a counterexample, always write the simplest.