3) (5 pts) ALG (Tries)
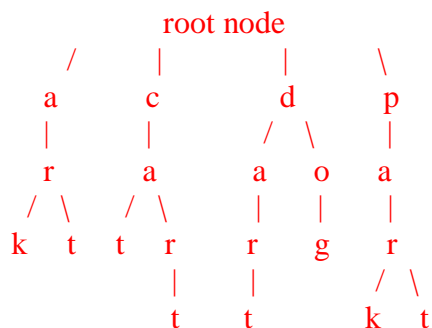
Consider inserting the following words into an initially empty trie, where nodes are created ONLY if they are necessary. Note that an empty trie is a NULL pointer and has zero nodes. How many nodes will be created after all these words are inserted, including the root node?

cat
part
do
art
cart
car
dog
dart
ark
park

No need to include any drawing, just give your final answer, but be very careful, since the grading is completely based on your numeric answer and no work at all.

Here is a text drawing of the resulting trie:

```
                         root node
         /         |          |       \
        a          c          d        p
        |          |         / \       |
        r          a        a   o      a
      /  \        / \       |   |      |
     k   t      t   r       r   g      r
                    |        |        / \
                    t        t       k   t
```

Total number of nodes = **21 (1 + 4 + 5 + 7 + 4)**

Grading: 5 pts for 21
**   4 pts for 20 or 22**
**   3 pts for 19 or 23**
**   2 pts for 18 or 24**
**   1 pt for 17 or 25**
**   0 pts otherwise**

Computer Science Foundation Exam

September 5, 2020

Section II A

ALGORITHMS AND ANALYSIS TOOLS

SOLUTION

Directions: You may either directly edit this document, or write out your answers in a .txt file, or scan your answers to .pdf and submit them in the COT 3960 Webcourses for the Assignment "Section II A". Please put your _name, UCFID and NID_ **on the top left hand corner of each document you submit. Please aim to submit 1 document, but if it's necessary, you may submit 2. Clearly mark for which question your work is associated with. If you choose to edit this document, please remove this cover page from the file you submit and make sure your** _name, UCFID and NID_ **are on the top left hand corner of the next page (first page of your submission).**

Question #	Max Pts	Category	Score
1	10	ANL	
2	10	ANL	
3	5	ANL	
TOTAL	25		

You must do all 3 problems in this section of the exam.

Problems will be graded based on the completeness of the solution steps and **not** **graded based on the answer alone. Credit cannot be given unless all work is shown and is readable. Be complete, yet concise, and above all** **be neat**. **For each coding question, assume that all of the necessary includes (stdlib.h, stdio.h, math.h, string.h) for that particular question have been made.**