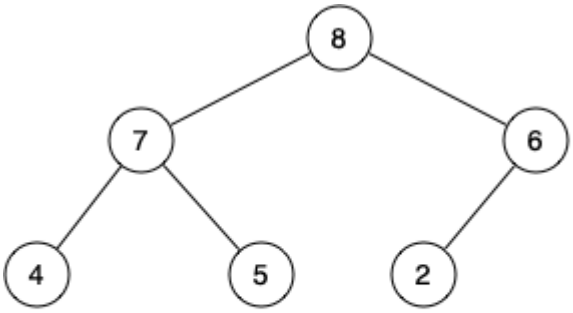
Quiz 6

Deadline	Friday, 24 July 2020 at 11:59PM
Latest Submission	*no submission yet*
Maximum Mark	4

Question 1 (1 mark)

Consider the following heap and its array representation



[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
not used	8	7	6	4	5	2	-	-

If the value 9 is inserted into this heap, what does the updated array look like?

(a) ○

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
not used	9	7	8	4	5	2	6	-

(b) ○

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
not used	8	7	6	4	5	2	9	-

(c) ○

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
not used	9	8	7	6	5	4	2	-

(d) ○

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
not used	9	7	8	4	5	6	2	-

(e) ○ None of the above.

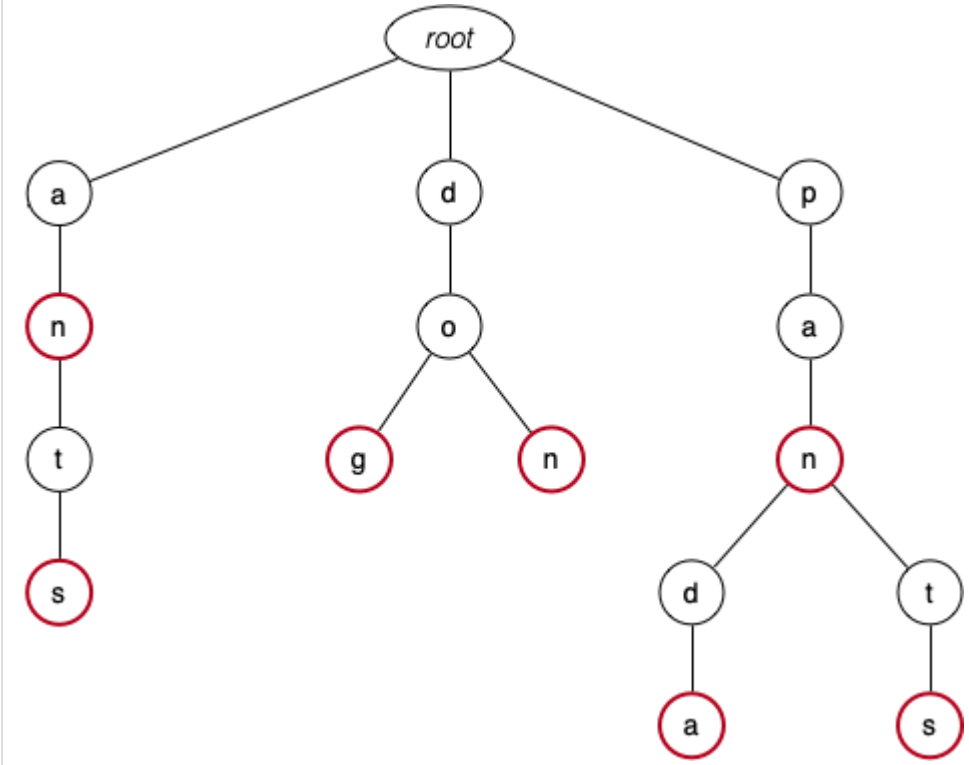
Question 2 (1 mark)

What is the trie resulting from inserting the following keys into an initially empty trie, in the order given?

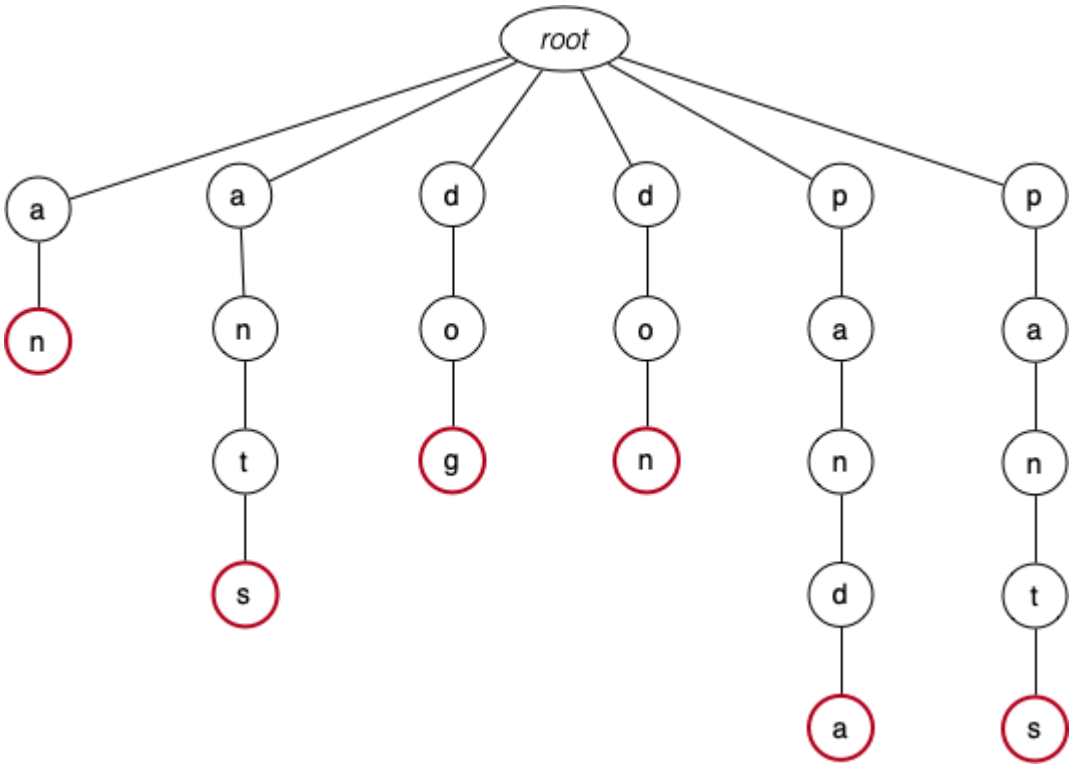
```
ants
pants
panda
dog
an
pan
don
```

Finishing nodes are shown in the tree in **red**.

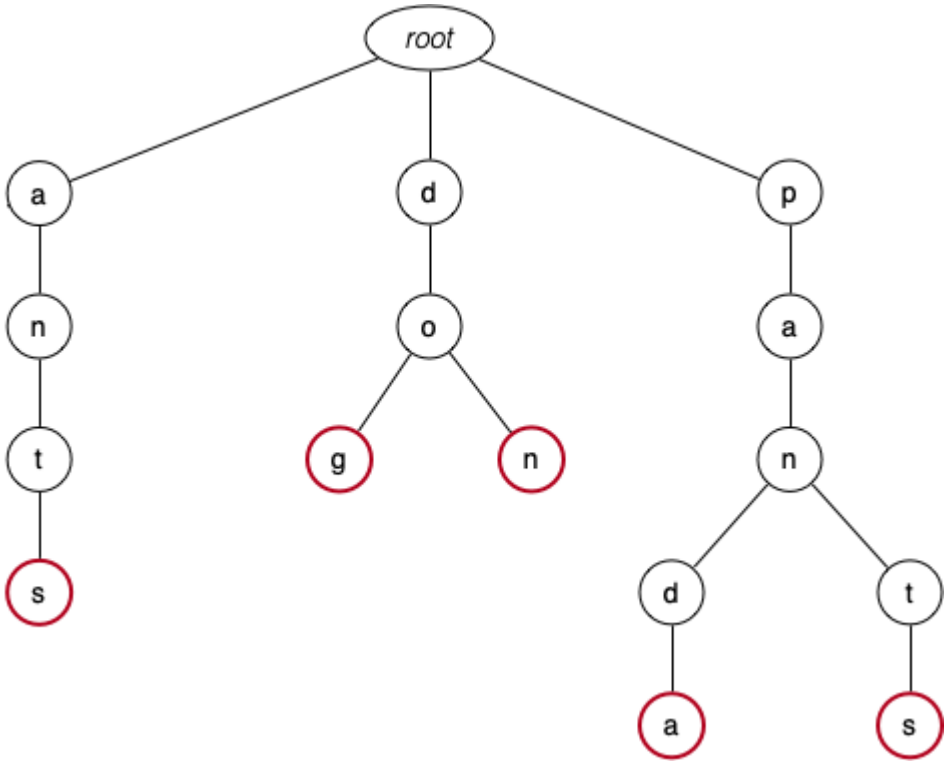
(a) ○



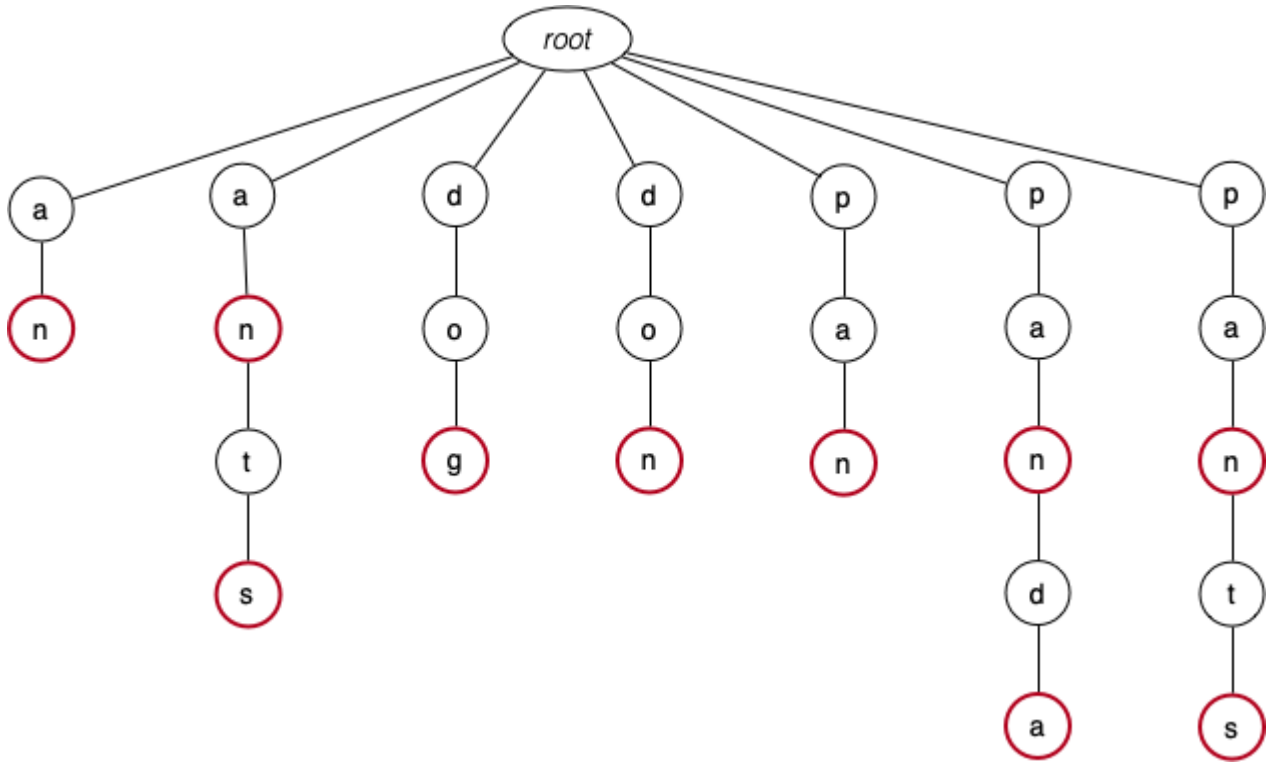
(b) ○



(c) ○



(d) ○



(e) ○ None of the above

Question 3 (1 mark)

If we have an initially empty linear-probed hash table with 7 slots, and a with a hash function

```
int hash(int n) { return (n % 7); }
```

what is the final state of the table after the following values:

```
10  5  7  3  14  12
```

are inserted in the order given?

Empty entries in the hash table are indicated by a value of '-'.

(a) ○

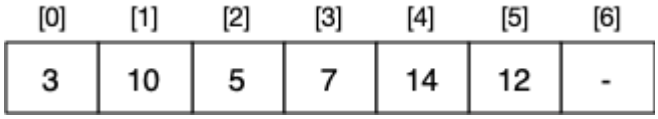
[0]	[1]	[2]	[3]	[4]	[5]	[6]
10	-	12	3	14	5	7

(b) ○

[0]	[1]	[2]	[3]	[4]	[5]	[6]
12	7	2	10	3	5	-

(c) ○

[0]	[1]	[2]	[3]	[4]	[5]	[6]
7	14	-	10	3	5	12

(d) ○	
(e) ○	None of the above is correct

Question 4 (1 mark)

What has value is returned by the following hash function

```
int hash(char *key, int N) {
   int i;  char *c;
   unsigned int h = 127;
   for (i = 0, c = key; *c != '\0'; i++, c++)
      h *= (*c + i);
   return h % N;
}
```

if it is invoked as

```
hash("2521", 42)
```

Assume that `unsigned int` values are 32-bits long.

(a) ○	0
(b) ○	1
(c) ○	14
(d) ○	24
(e) ○	None of the above is correct

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