**2023-2024数据结构基础错题整理**

1、The recurrent equations for the time complexities of programs P1 and P2 are:

* P1: *T*(1)=1,*T*(*N*)=*T*(*N*/3)+1
* P2: *T*(1)=1,*T*(*N*)=3*T*(*N*/3)+1

Then the correct conclusion about their time complexities is:

A.they are both *O*(log*N*)

B.*O*(log*N*) for P1, *O*(*N*) for P2

C.they are both *O*(*N*)

D.*O*(log*N*) for P1, *O*(*N*log*N*) for P2

（ ）

2、For a sequentially stored linear list of length *N*, the time complexities for deleting the first element and inserting the last element are *O*(1) and *O*(*N*), respectively.

（ ）

3、Push 5 characters ooops onto a stack. In how many different ways that we can pop these characters and still obtain ooops?

A.1

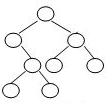
B.3

C.5

D.6

（ ）

4、Given the shape of a binary tree shown by the figure below. If its inorder traversal sequence is { E, A, D, B, F, H, C, G }, then the node on the same level of C must be:



1. D and G
2. E
3. B
4. A and H

5、Among the following binary trees, which one can possibly be the decision tree (the external nodes are excluded) for binary search?

A．剪刀和眼镜

中度可信度描述已自动生成 B 剪刀和眼镜

中度可信度描述已自动生成

C 剪刀和眼镜

中度可信度描述已自动生成 D 剪刀和眼镜

中度可信度描述已自动生成

6、If besides finding the shortest path from S to every other vertices, we also need to count the number of different shortest paths, we can modify the Dijkstra algorithm in the following way: add an array count[] so that count[V] records the number of different shortest paths from S to V. Then count[V] shall be initialized as:

A. count[S]=1; and count[V]=0 for other V

B .count[S]=0; and count[V]=1 for other V

C. count[V]=1 for all vertices

D .count[V]=0 for all vertices

Key

1. B（直接代入法）
2. F（顺序存取的线性表支持随机存取，查询时间是常数时间，删第一个是O(N)(所有元素向前移动一个)，删最后一个是O（1）））
3. C（O-NULL-O-NULL-O-NULL；O-NULL-O-OO-O-NULL；O-OO-O-NULL-O-NULL；O-OO-O-OO-O-NULL；O-OO-OOO-OO-O-NULL）
4. A
5. A（选定折半查找数据可以选择向上取整也可以选择向下取整，但无论选择哪种，都要求在画这棵折半查找判定树的过程只能选择一种。若选择向上取整：对于该树中每个结点的左子树都大于等于右子树高度，且每个结点的左子树上的结点个数都大于等于右子树上的结点个数。若选择向下取整：对于该树中每个结点的左子树都小于等于右子树高度，且每个结点的左子树上的结点个数都小于等于右子树上的结点个数。）

6、A（在Dijkstra算法中，当初始化计数数组以记录不同最短路径的数量时，要将count[S]设置为1，因为到达源顶点S有一种方式（即它自己）。对于所有其他顶点，你将count[V]初始化为0，因为最初你还没有找到通往它们的路径。）