

15-121 Fall 2022 Quiz 6

Up to 20 minutes. No calculators, no notes, no books, no computers. Show your work!

- Consider the following program that creates a linked list. You may assume that the `ListNode` class exists and was defined as in class.

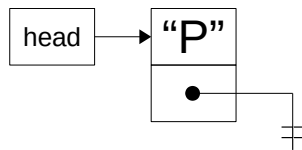
```

1 public class Quiz6CT1 {
2     public static void main(String[] args) {
3         ListNode<String> head = null;
4         ListNode<String> a = new ListNode<String>("Z");
5         ListNode<String> tmp = null;
6
7         head = new ListNode<String>("P");
8         tmp = new ListNode<String>("W");
9         tmp.next = a;
10        head.next = tmp;
11        tmp = new ListNode<String>("T");
12        tmp.next = head.next;
13        head.next = tmp;
14        tmp = tmp.next;
15        tmp.next = new ListNode<String>("S");
16        tmp.next.next = a;
17    }
18 }

```

Draw the state of the linked list after the execution of each specified line of code. (The linked list is defined as starting at `head`.) The first one is drawn for you.

- After Line 7



- (3 points) After Line 9

- (3 points) After Line 10

- (4 points) After Line 13

- (4 points) After Line 16

2. Consider the following program that creates a linked list. You may assume that the `ListNode` class exists and was defined as in class.

```
1 public class Quiz6CT2 {
2     public static void main(String[] args) {
3         int[] nums = {44, 93, 87, 45, 57};
4         ListNode<Integer> head = new ListNode<Integer>(23);
5         ListNode<Integer> tmp = null;
6         ListNode<Integer> a = null;
7
8         for(int i = 0; i < nums.length; i++) {
9             tmp = new ListNode<Integer>(nums[i]);
10            tmp.next = head;
11            head = tmp;
12        }
13        a = tmp.next.next.next.next;
14        a.next.next = head;
15        a.next.next.next = null;
16        head = a;
17    }
18 }
```

Draw the state of the linked list after the execution of each specified line of code. (The linked list is defined as starting at `head`.)

(a) (2 points) After Line 12

(b) (2 points) After Line 15

(c) (2 points) After Line 16