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### 15-121 Fall 2021 Quiz 6

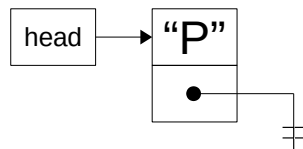
Up to 20 minutes. No calculators, no notes, no books, no computers. Show your work!

1. 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>("M");
5         ListNode<String> b = new ListNode<String>("T");
6
7         head = new ListNode<String>("P");
8         b.next = a;
9         head.next = b;
10        a = head.next;
11        b = head.next.next;
12        head.next.next = new ListNode<String>("X");
13        head.next.next.next = b;
14    }
15 }
```

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.

- (a) After Line 7



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- (b) (4 points) After Line 9

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- (c) (3 points) After Line 11

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- (d) (3 points) After Line 12

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- (e) (4 points) After Line 13

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         ListNode<Integer> head = null;
4         ListNode<Integer> a = null;
5         ListNode<Integer> b = null;
6
7         head = new ListNode<Integer>(23);
8         a = new ListNode<Integer>(41);
9         a.next = head;
10        b = new ListNode<Integer>(59);
11        head.next = b;
12        b.next = new ListNode<Integer>(65);
13        b.next.next = a;
14        a = head.next.next.next.next;
15        a.next = new ListNode<Integer>(92);
16        head = b;
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

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(b) (2 points) After Line 15

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(c) (2 points) After Line 16