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CS 201 Data Structures  
HW6

A1.

```
rot(4)
rot(1)
rot(3)
```

A2.

```
fix(u)
    if (u.right != null && u.right > u)
        fix(u.right)
    if (u.left != null && u.left < u)
        fix(u.left)
    if(u.right != null && u.right < u)
        swapKey(u.right)
        fix(u.parent)
    if(u.left != null && u.left > u)
        swapKey(u.left)
        fix(u.parent)
```

A3.

```
check(u)
    Node turtle = head;
    Node rabbit = head;
    while(turtle != null && rabbit != null && rabbit.next != null)
        turtle = turtle.next;
        rabbit = rabbit.next.next;
        if(turtle == rabbit)
            return false
    return true
```

A4.

```
check2(u)
    Node tmp = u
    while(tmp.next != null)
        if(tmp != tmp.next.prev)
            return false
        tmp = tmp.next
    return true
```