1. (100 pts) Write a function to find the middle node in a linked list and return a pointer to the middle node. Function prototype is given below.

\[
\text{node *middlenode(node *list1)}
\]

If the list has \(2k+1\) elements where \(k\) is an integer \(\geq 0\), return the \((k+1)^{th}\) node from the start. If the list has \(2k\) elements where \(k\) is an integer \(\geq 0\), return the \((k+1)^{th}\) node from the start. For the following linked list the function returns a pointer to node containing 12.

```
5 6 12 18 21
```

This is an in-class exercise and no submission is required.