

node1.cxx

```
// FILE: node1.cxx
// IMPLEMENTS: The functions of the node class and the
// linked list toolkit (see node1.h for documentation).
// INVARIANT for the node class:
//   The data of a node is stored in data_field, and the link in link_field.

#include "node1.h"
#include <cassert>    // Provides assert
#include <cstdlib>    // Provides NULL and size_t
using namespace std;

namespace main_savitch_5
{
    size_t list_length(const node* head_ptr)
    // Library facilities used: cstdlib
    {
        const node *cursor;
        size_t answer;

        answer = 0;
        for (cursor = head_ptr; cursor != NULL; cursor = cursor->link( ))
            ++answer;

        return answer;
    }

    void list_head_insert(node*& head_ptr, const node::value_type& entry)
    {
        head_ptr = new node(entry, head_ptr);
    }

    node* list_search(node* head_ptr, const node::value_type& target)
    // Library facilities used: cstdlib
    {
        node *cursor;

        for (cursor = head_ptr; cursor != NULL; cursor = cursor->link( ))
            if (target == cursor->data( ))
                return cursor;
        return NULL;
    }

    const node* list_search(const node* head_ptr, const node::value_type& target)
    // Library facilities used: cstdlib
    {
        const node *cursor;

        for (cursor = head_ptr; cursor != NULL; cursor = cursor->link( ))
            if (target == cursor->data( ))
                return cursor;
        return NULL;
    }
}

.....
}
```