Trạng thái	Đã xong
Bắt đầu vào lúc	Thứ Ba, 30 tháng 1 2024, 4:11 PM
Kết thúc lúc	Thứ Ba, 30 tháng 1 2024, 4:25 PM
Thời gian thực	14 phút 2 giây
hiện	
Điểm	8,80/9,00
Điểm	<b>9,78</b> trên 10,00 ( <b>97,78</b> %)

Đúng

Đạt điểm 1,00 trên 1,00 Class LLNode is used to store a node in a singly linked list, described on the following:

```
class LLNode {
    public:
        int val;
        LLNode* next;
        LLNode();
        LLNode(int val, LLNode* next);
}
```

Where val is the value of node, next is the pointer to the next node.

**Request:** Implement function:

```
LLNode* addLinkedList(LLNode* 10, LLNode* 11);
```

Where 10, 11 are two linked lists represented positive integers, each node is a digit, the head is the least significant digit (the value of each node is between 0 and 9, the length of each linked list is between 0 and 100000). This function returns the linked list representing the sum of the two integers.

#### **Example:**

Given 10 = [2, 3] (representing 32) and 11 = [1, 8] (representing 81). The result would be 10 = [3, 1, 1] (representing 32 + 81 = 113).

#### Note:

In this exercise, the libraries iostream, string, cstring, climits, utility, vector, list, stack, queue, map, unordered\_map, set, unordered\_set, functional, algorithm has been included and namespace std are used. You can write helper functions and classes. Importing other libraries is allowed, but not encouraged, and may result in unexpected errors.

#### For example:

Test	Result
<pre>int arr1[] = {2, 9}; int arr2[] = {0, 5};</pre>	[2, 4, 1]
LLNode* head1 = LLNode::createWithIterators(arr1, arr1 + sizeof(arr1) / sizeof(int)); LLNode* head2 = LLNode::createWithIterators(arr2, arr2 + sizeof(arr2) / sizeof(int));	
<pre>LLNode* newhead = addLinkedList(head1, head2);</pre>	
<pre>LLNode::printList(newhead); head1-&gt;clear();</pre>	
head2->clear(); newhead->clear();	

**Answer:** (penalty regime: 0, 0, 0, 5, 10, ... %)

```
1 | LLNode* addLinkedList(LLNode* 10, LLNode* 11) {
2      LLNode *tmp0 = 10;
3      LLNode *tmp1 = 11;
```

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Singly Linked List: Xem lại lần làm thử | BK-LMS

```
LLNode *head = NULL;
 5
        LLNode *tail = NULL;
 6
        int sum = 0;
 7
        int carry = 0;
 8
        while (tmp0 != NULL || tmp1 != NULL || carry != 0) {
 9 •
10
            sum = carry;
11
12 ▼
           if (tmp0 != NULL) {
13
               sum += tmp0->val;
14
                tmp0 = tmp0->next;
15
16
17 ▼
            if (tmp1 != NULL) {
18
               sum += tmp1->val;
19
                tmp1 = tmp1->next;
20
21
22
            carry = sum / 10;
23
            sum = sum % 10;
24
25
            LLNode* newNode = new LLNode(sum);
26
27 •
           if (head == NULL) {
28
               head = newNode;
29
               tail = newNode;
30 •
           } else {
31
               tail->next = newNode;
32
               tail = newNode;
33
34
        }
35
36
        return head;
37
38
```

	Test	Expected	Got	
<b>~</b>	<pre>int arr1[] = {2, 9}; int arr2[] = {0, 5};</pre>	[2, 4, 1]	[2, 4, 1]	~
	<pre>LLNode* head1 = LLNode::createWithIterators(arr1, arr1 + sizeof(arr1) / sizeof(int)); LLNode* head2 = LLNode::createWithIterators(arr2, arr2 + sizeof(arr2) / sizeof(int)); LLNode* newhead = addLinkedList(head1, head2); LLNode::printList(newhead);</pre>			
	head1->clear(); head2->clear(); newhead->clear();			

11

^



Đúng

Đạt điểm 1,00 trên 1,00 Polynomials is an important application of arrays and linked lists. A polynomial is composed of different terms where each of them holds a coefficient and an exponent. A polynomial p(x) is the expression in variable x which is in the form  $(a_nx^n + a_{n-1}x^{n-1} + .... + a_1x + a_0)$ , where  $a_n$ ,  $a_{n-1}$ , ....,  $a_0$  fall in the category of real numbers and 'n' is the non-negative integer, which is called the degree of polynomial.

Example:  $10x^2 + 26x$ , here 10 and 26 are coefficients and 2, 1 is its exponential value.

Points to keep in Mind while working with Polynomials:

- The sign of each coefficient and exponent is stored within the coefficient and the exponent itself.
- The storage allocation for each term in the polynomial must be done in descending order of their exponent.

In this question, complete SLinkedList class is included. You should use this class to complete your Polynomial class with initialized frame as following. This task is implement insertTerm to insert a term into a polynomial.

```
class Polynomial;
class Term {
private:
   double coeff;
   int exp;
   friend class Polynomial;
public:
   Term(double coeff = 0.0, int exp = 0) {
       this->coeff = coeff;
       this->exp = exp;
   bool operator==(const Term& rhs) const {
       return this->coeff == rhs.coeff && this->exp == rhs.exp;
   friend ostream & operator<<(ostream &os, const Term& term) {</pre>
       cout << endl;</pre>
       cout << "Term: " << "(" << term.coeff << " " << term.exp << ")";</pre>
       return os;
class Polynomial {
private:
   SLinkedList<Term>* terms;
public:
   Polynomial() {
       this->terms = new SLinkedList<Term>();
   ~Polynomial() {
       this->terms->clear();
   void insertTerm(const Term& term);
   void insertTerm(double coeff, int exp);
   void print() {
       SLinkedList<Term>::Iterator it;
       cout << "[";
       for (it = this->terms->begin(); it != this->terms->end(); it++) {
            cout << (*it);
       cout << endl << "]";
```

//SLinkedList has been done with the following attributes and methods:

```
class SLinkedList : IList<T>
public:
   class Iterator; //forward declaration
                   //forward declaration
   class Node;
protected:
   Node* head;
   Node* tail;
   int count;
public:
   SLinkedList() : head(NULL), tail(NULL), count(0) {};
   virtual ~SLinkedList();
   virtual void add(const T& e);
   virtual void add(int index, const T& e);
   virtual T removeAt(int index);
   virtual bool removeItem(const T& removeItem);
   virtual bool empty();
   virtual int size();
   virtual void clear();
   virtual T get(int index);
   virtual void set(int index, const T& e);
   virtual int indexOf(const T& item);
   virtual bool contains(const T& item);
```

## For example:

Test	Result
<pre>Polynomial *poly = new Polynomial(); poly-&gt;insertTerm(6.0, 2); poly-&gt;insertTerm(4.0, 5); poly-&gt;insertTerm(4.0, 3); poly-&gt;insertTerm(6.0, 5); poly-&gt;insertTerm(-1.0, 0); poly-&gt;insertTerm(-6.0, 6); poly-&gt;insertTerm(6.0, 6); poly-&gt;print();</pre>	[ Term: (10 5) Term: (4 3) Term: (6 2) Term: (-1 0) ]

```
Test

int n = 5;
int coeff[] = { 1, 2, 3, 4, 5 };
int exp[] = { 1, 2, 3, 4, 5 };
Term: (5 5)
Term: (4 4)
Term: (3 3)
Polynomial p1;
for (int i = 0; i < n; ++i)
    p1.insertTerm(coeff[i], exp[i]);

p1.print();</pre>

Result

I rem: (5 5)
Term: (2 2)
Term: (1 1)
p1.print();
```

**Answer:** (penalty regime: 0, 0, 0, 5, 10 %)

```
1 void Polynomial::insertTerm(const Term& term) {
 2
        // STUDENT ANSWER
 3 ▼
        if(term.coeff != 0){
 4
            if (terms->size() == 0 || terms->get(terms->size()-1).exp > term.exp)
 5
            terms->add(term);
 6 •
            else {
 7
                int i = 0;
 8
                SLinkedList<Term>::Iterator it;
 9 •
                for (it = this->terms->begin(); it != this->terms->end(); it++){
10 •
                    if (term.exp == (*it).exp){
11
                        if (term.coeff + (*it).exp == 0) it.remove();
12
                        else it.set(Term(term.coeff + (*it).coeff, term.exp));
13
                        break;
14
15 ,
                    if (term.exp > (*it).exp){
16
                        terms->add(i, term);
17
                        break;
18
19
                    i++;
20
21
22
23
        SLinkedList<Term>::Iterator it;
24
        for (it = this->terms->begin(); it != this->terms->end(); it++)
25
        if ((*it).coeff == 0)
26
        it.remove();
27
28
29 void Polynomial::insertTerm(double coeff, int exp) {
30
        // STUDENT ANSWER
31
        const Term* newT = new Term(coeff, exp);
32
        insertTerm(*newT);
33 }
```

		ı	ı	
	Test	Expected	Got	
<b>~</b>	<pre>Polynomial *poly = new Polynomial(); poly-&gt;insertTerm(6.0, 2); poly-&gt;insertTerm(4.0, 5); poly-&gt;insertTerm(4.0, 3); poly-&gt;insertTerm(6.0, 5); poly-&gt;insertTerm(-1.0, 0); poly-&gt;insertTerm(-6.0, 6); poly-&gt;insertTerm(6.0, 6); poly-&gt;print();</pre>	[ Term: (10 5) Term: (4 3) Term: (6 2) Term: (-1 0) ]	Term: (6 2)	<b>~</b>
~	<pre>int n = 5; int coeff[] = { 1, 2, 3, 4, 5 }; int exp[] = { 1, 2, 3, 4, 5 };  Polynomial p1; for (int i = 0; i &lt; n; ++i)     p1.insertTerm(coeff[i], exp[i]);  p1.print();</pre>	[ Term: (5 5) Term: (4 4) Term: (3 3) Term: (2 2) Term: (1 1) ]	[ Term: (5 5) Term: (4 4) Term: (3 3) Term: (2 2) Term: (1 1) ]	<b>~</b>

https://lms.hcmut.edu.vn/mod/quiz/review.php?attempt=239947&cmid=115623

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Đúng một phần

Đạt điểm 0,80 trên 1,00 Implement Iterator class in class SLinkedList.

**Note**: Iterator is a concept of repetitive elements on sequence structures. Iterator is implemented in class vector, list in STL container in C++ (<a href="https://www.geeksforgeeks.org/iterators-c-stl/">https://www.geeksforgeeks.org/iterators-c-stl/</a>). Your task is to implement the simple same class with iterator in C++ STL container.

Please read example and testcase carefully.

```
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```

```
template <class T>
class SLinkedList
public:
   class Iterator; //forward declaration
   class Node;
                   //forward declaration
protected:
   Node *head;
   Node *tail;
   int count;
public:
   SLinkedList() : head(NULL), tail(NULL), count(0){};
   ~SLinkedList();
   void add(const T &e);
   void add(int index, const T &e);
   T removeAt(int index);
   bool removeItem(const T &removeItem);
   bool empty();
   int size();
   void clear();
   T get(int index);
   void set(int index, const T &e);
   int indexOf(const T &item);
   bool contains(const T &item);
   string toString();
   SLinkedList(const SLinkedList &list)
       this->count = 0;
       this->head = NULL;
       this->tail = NULL;
   Iterator begin()
       return Iterator(this, true);
   Iterator end()
       return Iterator(this, false);
public:
   class Node
   private:
       T data;
       Node *next;
       friend class SLinkedList<T>;
   public:
       Node()
```

```
next = 0;
    Node(Node *next)
        this->next = next;
    Node(T data, Node *next = NULL)
        this->data = data;
        this->next = next;
};
class Iterator
private:
   SLinkedList<T> *pList;
   Node *current;
   int index; // corresponding with current node
public:
   Iterator(SLinkedList<T> *pList, bool begin);
   Iterator &operator=(const Iterator &iterator);
   void set(const T &e);
   T &operator*();
    bool operator!=(const Iterator &iterator);
   // Prefix ++ overload
   Iterator &operator++();
   // Postfix ++ overload
   Iterator operator++(int);
};
```

For example:

```
Test
                                                  Result
SLinkedList<int> list;
int size = 10;
for(int idx=0; idx < size; idx++){</pre>
   list.add(idx);
SLinkedList<int>::Iterator it;
int expvalue = 0;
for(it = list.begin(); it != list.end(); it++){
   assert(*it == expvalue);
   expvalue += 1;
SLinkedList<int> list;
int size = 10;
for(int idx=0; idx < size; idx++){</pre>
   list.add(idx);
SLinkedList<int>::Iterator it;
int expvalue = 0;
for(it = list.begin(); it != list.end(); ++it){
   assert(*it == expvalue);
   expvalue += 1;
```

**Answer:** (penalty regime: 0, 0, 0, 5, 10 %)

```
1 | template <class T>
   SLinkedList<T>::Iterator::Iterator(SLinkedList<T>* pList, bool begin)
 2
 3 ▼ {
 4 ▼
 5
            Constructor of iterator
 6
            * Set pList to pList
 7
            * begin = true:
 8
            * * Set current (index = 0) to pList's head if pList is not NULL
 9
            * * Otherwise set to NULL (index = -1)
10
            * begin = false:
11
            * * Always set current to NULL
12
            * * Set index to pList's size if pList is not NULL, otherwise 0
13
14
            this->pList = pList;
15 ▼
            if (begin==true){
16
            if(pList!=nullptr) {this->current = pList->head; this->index = 0;}
```

```
this->current = nullptr;
17
18
            this->index = -1;
19
20 🔻
            if (begin == false){
21
            this->current = nullptr;
22
            if (pList != nullptr) this->index = this->pList->size();
23
            this->index=0;
24
25
26
27
    template <class T>
    typename SLinkedList<T>::Iterator& SLinkedList<T>::Iterator::operator=(const Iterator& ite
29 ▼ {
30 ▼
        /*
31
            Assignment operator
32
            * Set this current, index, pList to iterator corresponding elements.
33
34
        this->pList = iterator.pList;
35
        this->current = iterator.current;
36
        this->index = iterator.index;
37
        return *this;
38
39
    template <class T>
41
    void SLinkedList<T>::Iterator::remove()
42 ▼
43 ▼
        /*
44
            Remove a node which is pointed by current
            * After remove current points to the previous node of this position (or node with
45
46
            * If remove at front, current points to previous "node" of head (current = NULL, i
47
            * Exception: throw std::out_of_range("Segmentation fault!") if remove when current
48
        */
        if (this->current == nullptr || this->pList->head == nullptr || this->index<0 || this-</pre>
49
50
        throw std::out_of_range("Segmentation fault!");
51
        Node* pDelete;
52
53 ▼
        if (this->index == 0){
        pDelete = this->pList->head;
54
55
        this->current = nullptr;
56
        this->index = -1;
57
        }
58
59 ▼
        else{
60
        Node* prev = this->pList->head;
61 🔻
        for (int i=1: i<this->index: i++){
62
```

	Test	Got	
~	SLinkedList <int> list;</int>		<b>~</b>
	<pre>int size = 10; for(int idx=0; idx &lt; size; idx++){     list.add(idx); }</pre>		
	<pre>SLinkedList<int>::Iterator it; int expvalue = 0; for(it = list.begin(); it != list.end(); it++){     assert(*it == expvalue);     expvalue += 1; }</int></pre>		
<b>~</b>	<pre>SLinkedList<int> list; int size = 10; for(int idx=0; idx &lt; size; idx++){     list.add(idx); }</int></pre>		~
	<pre>SLinkedList<int>::Iterator it; int expvalue = 0; for(it = list.begin(); it != list.end(); ++it){    assert(*it == expvalue);    expvalue += 1; }</int></pre>		

Your code failed one or more hidden tests.

## Đúng một phần

Đúng

Đạt điểm 1,00 trên 1,00 Class **LinkedList** is used to represent single linked list, described as the following:

```
class LinkedList {
  public:
    class Node;
  private:
    Node* head;
    Node* tail;
    int size;
  public:
    class Node {
       private:
         int value;
         Node* next;
         friend class LinkedList;
       public:
         Node() {
           this->next = NULL;
         Node(Node* node) {
           this->value = node->value;
           this->next = node->next;
         Node(int value, Node* next = NULL) {
           this->value = value;
           this->next = next;
    LinkedList(): head(NULL), tail(NULL), size(0) {};
    void partition(int k);
};
```

In this class; head, tail and size are the pointers of the first element, the last element and size of linked list.

Request: Implement function

void LinkedList::partition(int k);

To rearrange elements in this linked list by this way: split all elements of this linked list to 3 groups include: group I (the value of each element is smaller than k), group II (the value of each element is equal to k) and group III (the value of each element is larger than k); after that, move group I to the head of linked list, group II is after group I and group III is after group II. Note that the orders of the elements of each group are unchanged.

#### Example:

```
- The given linked list: 10->55->45->42->50
```

- k=45

In this case, group I includes elements with value 10 and 42, group II includes elements with 45 and group III includes elements with value 55 and 50. Rearrange by above way, this linked list will become 10->42->45->55->50 (the orders of th elements in each group is unchanged: 10 before 42 and 55 before 50).

Note: In this exercise, libraries iostream, sstream and using namespace std; have been used. You can add other functions for your answer, but you are not allowed to add other libraries.

#### For example:

Test	Result
LinkedList* 11 = new LinkedList(); 11->add(20); 11->add(30); 11->add(10); 11->add(60); 11->add(40); 11->add(45); 11->add(55);	[20,30,10,40,45,60,55]
<pre>11-&gt;partition(45); cout &lt;&lt; 11-&gt;toString() &lt;&lt; "\n";</pre>	

**Answer:** (penalty regime: 0 %)

```
1 ▼ void LinkedList::partition(int k){
 2
        Node *tmp = this->head;
 3
        int len = this->size;
 4
        int arr[len];
 5
        int count = 0;
 6
        for (int i = 0; i < len; i++)</pre>
 7 ,
 8
             if (tmp->value < k)</pre>
 9 •
10
                 arr[count] = tmp->value;
11
                 count++;
12
13
             tmp = tmp->next;
14
15
        tmp = this->head;
16
        for (int i = 0; i < len; i++)</pre>
17 ▼
             if (tmp->value == k)
18
```

```
19 ▼
20
                arr[count] = tmp->value;
21
                count++;
22
23
            tmp = tmp->next;
24
25
        tmp = this->head;
26
        for (int i = 0; i < len; i++)</pre>
27 ▼
28
            if (tmp->value > k)
29 🔻
30
                arr[count] = tmp->value;
31
                count++;
32
33
            tmp = tmp->next;
34
35
        tmp = this->head;
        for (int i = 0; i < count; i++)</pre>
36
37 ▼
38
            tmp->value = arr[i];
39
            tmp = tmp->next;
40
41 }
```

	Test	Expected	Got	
~	<pre>LinkedList* 11 = new LinkedList(); 11-&gt;add(20); 11-&gt;add(30); 11-&gt;add(10); 11-&gt;add(60); 11-&gt;add(40);</pre>	[20,30,10,40,45,60,55]	[20,30,10,40,45,60,55]	~
	11->add(45); 11->add(55);			
	<pre>l1-&gt;partition(45); cout &lt;&lt; l1-&gt;toString() &lt;&lt; "\n";</pre>			

Đúng

Đúng

Đạt điểm 1,00 trên 1,00 Implement methods **add**, **size** in template class **SLinkedList** (**which implements List ADT**) representing the singly linked list with type T with the initialized frame. The description of each method is given in the code.

```
template <class T>
class SLinkedList {
public:
   class Node; // Forward declaration
protected:
   Node* head;
   Node* tail;
   int count;
public:
   SLinkedList();
   ~SLinkedList();
   void
           add(T e);
   void
           add(int index, T e);
           size();
   int
public:
   class Node {
   private:
       T data;
       Node* next;
       friend class SLinkedList<T>;
   public:
       Node() {
           next = 0;
       Node(Node* next) {
           this->next = next;
       Node(T data, Node* next) {
           this->data = data;
           this->next = next;
   };
```

For example:

Test	Result
<pre>SLinkedList<int> list; int size = 10;</int></pre>	[0,1,2,3,4,5,6,7,8,9]
<pre>for(int index = 0; index &lt; size; index++){     list.add(index); }</pre>	
<pre>cout &lt;&lt; list.toString();</pre>	
<pre>SLinkedList<int> list; int size = 10;</int></pre>	[9,8,7,6,5,4,3,2,1,0]
<pre>for(int index = 0; index &lt; size; index++){     list.add(0, index); }</pre>	
<pre>cout &lt;&lt; list.toString();</pre>	

**Answer:** (penalty regime: 0, 0, 0, 5, 10, 15, ... %)

```
1 template <class T>
 2 v void SLinkedList<T>::add(const T& e) {
    /* Insert an element into the end of the list. */
 3
 4
        Node* pNew = new Node(e, nullptr);
 5 ▼
        if(this->head==nullptr){
 6
        this->head = pNew;
 7
 8 •
        else {
 9
        this->tail->next = pNew;
10
11
        this->tail = pNew;
12
        this->count++;
13
14
15
   template<class T>
16 void SLinkedList<T>::add(int index, const T& e) {
    /* Insert an element into the list at given index. */
18
        Node* pNew = new Node(e, nullptr);
19
        if (index==0)
20 🔻
21 🔻
        if (this->head == nullptr){
22
        this->head = pNew;
        this->tail = pNew;
23
24 ▼
        } else {
25
        pNew->next = this->head;
26
        this->head = pNew;
27
```

```
28
        this->count++;
29
        } else if (index == this->size()) add(e);
30 ▼
        else {
31
        Node* pPrev = this->head;
        for (int i=1; i<index; i++){</pre>
32 ▼
33
        if (pPrev->next == nullptr) break;
34
        pPrev = pPrev->next;
35
36
        pNew->next = pPrev->next;
37
        pPrev->next = pNew;
38
        this->count++;
39
40
41
42
   template<class T>
43 v int SLinkedList<T>::size() {
44
     /* Return the length (size) of list */
45
        Node* pCurr = this->head;
46
        int length = 0;
47 ▼
        while(pCurr != nullptr){
48
        length++;
49
        pCurr = pCurr->next;
50
51
        return length;
52 }
53
```

	Test	Expected	Got	
~	<pre>SLinkedList<int> list; int size = 10;</int></pre>	[0,1,2,3,4,5,6,7,8,9]	[0,1,2,3,4,5,6,7,8,9]	<b>~</b>
	<pre>for(int index = 0; index &lt; size; index++){     list.add(index); }</pre>			
	<pre>cout &lt;&lt; list.toString();</pre>			

Đúng

Đúng

Đạt điểm 1,00 trên 1,00 Implement methods get, set, empty, indexOf, contains in template class SLinkedList (which implements List

ADT) representing the singly linked list with type T with the initialized frame. The description of each method is given in the code.

```
template <class T>
class SLinkedList {
public:
   class Node; // Forward declaration
protected:
   Node* head;
   Node* tail;
   int count;
public:
   SLinkedList(): head(NULL), tail(NULL), count(0);
   ~SLinkedList() { };
   void
           add(T e);
           add(int index, T e);
   void
   int
           size();
   bool
           empty();
   Τ
           get(int index);
   void
           set(int index, T e);
           indexOf(T item);
   int
   bool
           contains(T item);
public:
   class Node {
   private:
       T data;
       Node* next;
       friend class SLinkedList<T>;
   public:
       Node() {
           next = 0;
       Node(Node* next) {
           this->next = next;
       Node(T data, Node* next = NULL) {
           this->data = data;
           this->next = next;
   };
```

For example:

Test	Result
<pre>SLinkedList<int> list; int values[] = {10, 15, 2, 6, 4, 7, 40, 8}; int index[] = {0, 0, 1, 3, 2, 3, 5, 0}; int expvalues[]= {8, 15, 2, 4, 7, 10, 40, 6};  for (int idx = 0; idx &lt; 8; idx++){    list.add(index[idx], values[idx]); }</int></pre>	[8,15,2,4,7,10,40,6]
<pre>assert( list.size() == 8 );</pre>	
<pre>for (int idx = 0; idx &lt; 8; idx++){    assert( list.get(idx) == expvalues[idx] ); }</pre>	
<pre>cout &lt;&lt; list.toString();</pre>	
SLinkedList <int> list;</int>	[]
<pre>assert( list.empty() == true ); cout &lt;&lt; list.toString();</pre>	

**Answer:** (penalty regime: 0, 0, 0, 5, 10, 15, ... %)

```
1 template<class T>
 2 v T SLinkedList<T>::get(int index) {
        /* Give the data of the element at the given index in the list. */
 3
 4
        Node* tmp = head;
 5
        int pos = 0;
 6
        if(index < 0 || index > size())
 7 •
 8
            return 0;
 9
10 •
        while(tmp != nullptr){
11 ▼
            if(pos ==index){
12
                return tmp->data;
13
14
            tmp = tmp->next;
15
            pos++;
16
17
        return tmp->data;
18
19
   template<class T>
21 void SLinkedList<T>::set(int index, const T& e) {
        /* Assign a new value for the element at the given index in the list */
22
        int pos = 0:
23
```

```
24
        //Node* p = new Node(e);
25
        Node* tmp = head;
26 ▼
        if(index <0 ||index > size()){
27
            return;
28
29
        tmp = head;
        while(tmp!= nullptr && pos < index){</pre>
30 ▼
31
           tmp = tmp->next;
32
            pos++;
33
34 🔻
        if(tmp != nullptr){
35
            tmp->data = e;
36
37
38
39
   template<class T>
40 ▼ bool SLinkedList<T>::empty() {
41
        /* Check if the list is empty or not. */
42
        return head == nullptr;
43
44
45
    template<class T>
46 v int SLinkedList<T>::indexOf(const T& item) {
        /* Return the first index whether the item appears in the list, otherwise return -1 */
47
48
        int pos = -1;
49
        Node* tmp = head;
50
        Node* p = new Node(item);
51 ▼
        while (tmp != nullptr) {
52
            pos++;
53 ▼
            if (tmp->data == p->data){
54
                return pos;
55
56
        tmp = tmp->next;
57
58
        return -1;
59
60
61 template<class T>
62 🕶
```

	Test	Expected	Got	
<b>~</b>	<pre>SLinkedList<int> list; int values[] = {10, 15, 2, 6, 4, 7, 40, 8}; int index[] = {0, 0, 1, 3, 2, 3, 5, 0}; int expvalues[]= {8, 15, 2, 4, 7, 10, 40, 6};  for (int idx = 0; idx &lt; 8; idx++){     list.add(index[idx], values[idx]); }  assert( list.size() == 8 );  for (int idx = 0; idx &lt; 8; idx++){     assert( list.get(idx) == expvalues[idx] ); }  cout &lt;&lt; list.toString();</int></pre>	[8,15,2,4,7,10,40,6]	[8,15,2,4,7,10,40,6]	~
<b>~</b>	<pre>SLinkedList<int> list;  assert( list.empty() == true ); cout &lt;&lt; list.toString();</int></pre>	[]	[]	<b>~</b>

Đúng

Đúng

Đạt điểm 1,00 trên 1,00 Implement methods **removeAt**, **removeItem**, **clear** in template class **SLinkedList** (**which implements List ADT**) representing the singly linked list with type T with the initialized frame. The description of each method is given in the code.

```
template <class T>
class SLinkedList {
public:
    class Node; // Forward declaration
protected:
   Node* head;
   Node* tail;
   int count;
public:
   SLinkedList();
    ~SLinkedList();
   void
           add(T e);
           add(int index, T e);
   void
   int
           size();
           empty();
   bool
   int
            size();
   void
           clear();
            get(int index);
   Τ
   void
           set(int index, T e);
   int
           indexOf(T item);
   bool
           contains(T item);
   Τ
           removeAt(int index);
           removeItem(T item);
   bool
public:
   class Node {
   private:
       T data;
       Node* next;
       friend class SLinkedList<T>;
   public:
       Node() {
           next = 0;
       Node(Node* next) {
           this->next = next;
       Node(T data, Node* next = NULL) {
           this->data = data;
           this->next = next;
   };
```

For example:

Test	Result
SLinkedList <int> list;</int>	[1,2,3,4,5,6,7,8,9]
<pre>for (int i = 0; i &lt; 10; ++i) {     list.add(i); } assert(list.get(0) == list.removeAt(0));</pre>	
<pre>cout &lt;&lt; list.toString();</pre>	
SLinkedList <int> list;</int>	[0,1,2,3,4,5,6,7,8]
<pre>for (int i = 0; i &lt; 10; ++i) {     list.add(i); }</pre>	
<pre>assert(list.get(9) == list.removeAt(9));</pre>	
<pre>cout &lt;&lt; list.toString();</pre>	
SLinkedList <int> list;</int>	[0,1,2,3,4,5,6,7,8]
<pre>for (int i = 0; i &lt; 10; ++i) {     list.add(i); }</pre>	
<pre>assert(list.removeItem(9));</pre>	
<pre>cout &lt;&lt; list.toString();</pre>	

**Answer:** (penalty regime: 0, 0, 0, 5, 10, 15, ... %)

```
1 template <class T>
 2 T SLinkedList<T>::removeAt(int index)
 3 ▼ {
     /* Remove element at index and return removed value */
 4
 5
        Node* pDelete;
        if (index<0 || index >=this->size())
 6
        throw std::out_of_range("Segmentation fault!");
 7
 8
        if (index == 0)
 9 •
10
        pDelete = this->head;
        if (this->size() == 1)
11
12 ▼
13
        this->head = nullptr;
14
        this->tail = nullptr;
15
        } else
16
            this->head = this->head->next;
17
        } else
18 -
```

```
19
            Node* pPrev = this->head;
20 ▼
                for (int i=1; i<index; i++){</pre>
21
                    if (pPrev->next == nullptr) break;
22
                    pPrev = pPrev->next;
23
24
                pDelete = pPrev->next;
25
                if (pDelete) pPrev->next = pDelete->next;
26
                if (index == this->size() - 1) this->tail = pPrev;
27
28
        T dataOut = pDelete->data;
29
        delete pDelete;
30
        this->count--;
31
        return dataOut;
32
33
34
    template <class T>
35
    bool SLinkedList<T>::removeItem(const T& item)
36 ▼
     /* Remove the first apperance of item in list and return true, otherwise return false */
37
38
        Node* pCurr = this->head;
39
        int index = 0;
40 •
        while (pCurr != nullptr){
41 🔻
            if (pCurr->data == item){
42
            removeAt(index);
43
            return true;
44
45
        index++;
46
        pCurr = pCurr->next;
47
48
     return false;
49
50
    template<class T>
51 void SLinkedList<T>::clear(){
     /* Remove all elements in list */
52
53
    Node* pCurr = this->head;
    while (pCurr != nullptr){
54 ▼
55
    pCurr = pCurr->next;
56
     delete this->head;
57
    this->head = pCurr;
58
59
    this->count = 0;
     this->head = nullptr;
     this->tail = nullptr;
61
62 }
```

	Test	Expected	Got	
<b>✓</b>	SLinkedList <int> list;</int>	[1,2,3,4,5,6,7,8,9]	[1,2,3,4,5,6,7,8,9]	~
	<pre>for (int i = 0; i &lt; 10; ++i) {     list.add(i); }</pre>			
	<pre>} assert(list.get(0) == list.removeAt(0));</pre>			
	<pre>cout &lt;&lt; list.toString();</pre>			
~	SLinkedList <int> list;</int>	[0,1,2,3,4,5,6,7,8]	[0,1,2,3,4,5,6,7,8]	~
	<pre>for (int i = 0; i &lt; 10; ++i) {     list.add(i);</pre>			
	<pre>} assert(list.get(9) == list.removeAt(9));</pre>			
	<pre>cout &lt;&lt; list.toString();</pre>			

Đúng

Đúng

Đạt điểm 1,00 trên 1,00 Class LLNode representing a node of singly linked lists is declared as below:

```
class LLNode {
public:
    int val;
    LLNode* next;
    LLNode(); // Constructor: val = 0, next = nullptr
    LLNode(int val, LLNode* next); // Constructor with customized data
}
```

Given a singly linked list head node.

Your task is to implement a function with following prototype:

```
LLNode* reverseLinkedList(LLNode* head);
```

The function returns head node of the reversed singly linked list.

#### Note:

- The iostream library has been included and namespace std is being used. No other libraries are allowed.
- The constructors and methods of class LLNode have been defined fully so you do not need to redefine them.
- You can write helper functions.

#### For example:

Test	Result
<pre>int arr[] = {13, 88, 60, 7, 192}; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = reverseLinkedList(head); LLNode::printList(newhead); newhead-&gt;clear();</pre>	[13, 88, 60, 7, 192] [192, 7, 60, 88, 13]

**Answer:** (penalty regime: 0 %)

```
1 | LLNode* reverseLinkedList(LLNode* head) {
 2
        // STUDENT ANSWER
 3 ▼
        if (head == nullptr || head->next == nullptr){
 4
            return head;
 5
 6
        LLNode*tmp = head;
 7
        LLNode*revLL = nullptr;
 8
        LLNode* next = nullptr;
 9
        while (tmp!= nullptr)
10 •
11
            next = tmp->next;
12
            tmp->next = revLL;
```

	Test	Expected	Got	
<b>~</b>	<pre>int arr[] = {13, 88, 60, 7, 192}; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = reverseLinkedList(head); LLNode::printList(newhead); newhead-&gt;clear();</pre>	[13, 88, 60, 7, 192] [192, 7, 60, 88, 13]	[13, 88, 60, 7, 192] [192, 7, 60, 88, 13]	<b>~</b>
~	<pre>int arr[] = {}; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = reverseLinkedList(head); LLNode::printList(newhead); newhead-&gt;clear();</pre>			~
~	<pre>int arr[] = {31, 22, 46, 152, 14, 87, 196, 97, 5, 93}; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = reverseLinkedList(head); LLNode::printList(newhead); newhead-&gt;clear();</pre>	[31, 22, 46, 152, 14, 87, 196, 97, 5, 93] [93, 5, 97, 196, 87, 14, 152, 46, 22, 31]	[31, 22, 46, 152, 14, 87, 196, 97, 5, 93] [93, 5, 97, 196, 87, 14, 152, 46, 22, 31]	~

	Test	Expected	Got	
<b>~</b>	<pre>int arr[] = {115, 59, 178, 39, 109, 18, 154, 106, 94, 174, 51, 33, 132, 195, 161, 37, 61, 107, 120, 190}; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = reverseLinkedList(head); LLNode::printList(newhead); newhead-&gt;clear();</pre>	[115, 59, 178, 39, 109, 18, 154, 106, 94, 174, 51, 33, 132, 195, 161, 37, 61, 107, 120, 190] [190, 120, 107, 61, 37, 161, 195, 132, 33, 51, 174, 94, 106, 154, 18, 109, 39, 178, 59, 115]	[115, 59, 178, 39, 109, 18, 154, 106, 94, 174, 51, 33, 132, 195, 161, 37, 61, 107, 120, 190] [190, 120, 107, 61, 37, 161, 195, 132, 33, 51, 174, 94, 106, 154, 18, 109, 39, 178, 59, 115]	~
	<pre>int arr[] = {104, 50, 154, 40, 15, 171, 56, 114, 67, 90, 46, 179, 152, 177, 139, 45, 18, 55, 38, 158, 8, 157, 143, 37, 16, 83, 173, 82, 156, 51, 124, 25, 68, 51, 194, 105, 44, 17, 97, 0, 150, 66, 71, 81, 11, 180, 148, 160, 127, 93, 108, 13, 122, 172, 39, 88, 62, 38, 61, 156, 45, 131, 69, 191, 123, 42, 103, 56, 69, 138, 185, 162, 192, 147, 71, 80, 12, 36, 191, 121, 194, 86, 92, 183, 164, 97, 185, 130, 29, 174, 112, 194, 185, 132, 27, 197, 158, 151, 51, 174}; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = reverseLinkedList(head); LLNode::printList(newhead); newhead-&gt;clear();</pre>	[104, 50, 154, 40, 15, 171, 56, 114, 67, 90, 46, 179, 152, 177, 139, 45, 18, 55, 38, 158, 8, 157, 143, 37, 16, 83, 173, 82, 156, 51, 124, 25, 68, 51, 194, 105, 44, 17, 97, 0, 150, 66, 71, 81, 11, 180, 148, 160, 127, 93, 108, 13, 122, 172, 39, 88, 62, 38, 61, 156, 45, 131, 69, 191, 123, 42, 103, 56, 69, 138, 185, 162, 192, 147, 71, 80, 12, 36, 191, 121, 194, 86, 92, 183, 164, 97, 185, 130, 29, 174, 112, 194, 185, 132, 27, 197, 158, 151, 51, 174] [174, 51, 151, 158, 197, 27, 132, 185, 194, 112, 174, 29, 130, 185, 97, 164, 183, 92, 86, 194, 121, 191, 36, 12, 80, 71, 147, 192, 162, 185, 138, 69, 56, 103, 42, 123, 191, 69, 131, 45, 156, 61, 38, 62, 88, 39, 172, 122, 13, 108, 93, 127, 160, 148, 180, 11, 81, 71, 66, 150, 0, 97, 17, 44, 105, 194, 51, 68, 25, 124, 51, 156, 82, 173, 83, 16, 37, 143, 157, 8, 158, 38, 55, 18, 45, 139, 177, 152, 179, 46, 90, 67, 114, 56, 171, 15, 40, 154, 50, 104]	[104, 50, 154, 40, 15, 171, 56, 114, 67, 90, 46, 179, 152, 177, 139, 45, 18, 55, 38, 158, 8, 157, 143, 37, 16, 83, 173, 82, 156, 51, 124, 25, 68, 51, 194, 105, 44, 17, 97, 0, 150, 66, 71, 81, 11, 180, 148, 160, 127, 93, 108, 13, 122, 172, 39, 88, 62, 38, 61, 156, 45, 131, 69, 191, 123, 42, 103, 56, 69, 138, 185, 162, 192, 147, 71, 80, 12, 36, 191, 121, 194, 86, 92, 183, 164, 97, 185, 130, 29, 174, 112, 194, 185, 132, 27, 197, 158, 151, 51, 174] [174, 51, 151, 158, 197, 27, 132, 185, 194, 112, 174, 29, 130, 185, 97, 164, 183, 92, 86, 194, 121, 191, 36, 12, 80, 71, 147, 192, 162, 185, 138, 69, 56, 103, 42, 123, 191, 69, 131, 45, 156, 61, 38, 62, 88, 39, 172, 122, 13, 108, 93, 127, 160, 148, 180, 11, 81, 71, 66, 150, 0, 97, 17, 44, 105, 194, 51, 68, 25, 124, 51, 156, 82, 173, 83, 16, 37, 143, 157, 8, 158, 38, 55, 18, 45, 139, 177, 152, 179, 46, 90, 67, 114, 56, 171, 15, 40, 154, 50, 104]	

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Test 52, 113, 58, 184, 70, 73, 37, 83, 71, 46, 133, 100, 37, 186, 199, 69, 79, 71, 70, 13, 155, 90, 60, 82, 180, 125, 108, 160, 74, 93, 72, 152, 106, 11, 174, 164, 168, 6, 9, 41, 58, 65, 141, 22, 103, 49, 114, 197, 175, 131, 109, 135, 124, 19, 76, 109, 130, 15, 120, 12, 11, 77, 88, 56, 127, 162, 67, 133, 162, 22, 94, 122, 53, 132, 167, 111, 138, 61, 169, 64, 98, 159, 58, 147, 137, 50, 193, 190, 173, 28, 35, 108, 138, 110, 184, 82, 114, 199, 137, 156, 155, 167, 165, 134, 193, 22, 173, 176, 46, 61, 196, 137, 151, 69, 67, 87, 161, 72, 60, 70, 67, 109, 149, 16, 38, 127, 15, 12, 107, 48, 184, 185, 43, 178, 14, 188, 61, 79, 189, 144, 27, 41, 114, 182, 118, 76, 89, 126, 124, 195, 180, 133, 118, 96, 61, 95, 127, 40, 62, 102, 130, 174, 47, 131, 187, 103, 88, 109, 153, 110, 184, 72, 178, 41, 93, 112, 24, 156, 180, 150, 114, 172, 43, 170, 46, 166, 109, 193, 13, 17, 190, 153, 80, 106, 199, 163, 106, 39, 85, 56, 174, 189, 61, 72, 154, 149, 59, 110, 139, 189, 99, 40, 84, 180, 23, 13, 9, 192, 163, 88, 1, 3, 149, 132, 36, 34, 120, 40, 48, 32, 91, 166, 42, 155, 30, 111, 140, 6, 189, 169, 50, 15, 144, 67, 145, 169, 49, 135, 49, 76, 0, 105, 90, 60, 75, 88, 150, 88, 122, 11, 158, 12, 43, 182, 152, 112, 65, 149, 14, 194, 146, 120, 114, 178, 177, 159, 105, 45, 169, 152, 150, 60, 99, 39, 73, 101, 162, 173, 127, 122, 157, 116, 139, 57, 101, 121, 45, 133, 151, 171, 186, 186, 116, 4, 173, 118, 103, 70, 133, 158, 119, 47, 142, 111, 110, 96, 68, 118, 153, 178, 174, 130, 176, 186, 23, 193, 40, 175, 107, 184, 168, 185, 56, 167, 169, 68, 42, 75, 26, 174, 92, 46, 18, 85, 131, 164, 15, 116, 197, 88, 143, 8, 115, 199, 173, 142, 139, 162, 62, 7, 33, 2, 4, 54, 22, 135, 194, 34, 17, 90, 154, 71, 6, 156, 76, 66, 172, 157, 39, 92, 68, 169, 117, 166, 86, 153, 106, 63, 142, 190, 149, 58, 31, 19, 114, 35, 110, 108, 103, 27, 139, 97, 166, 186, 164, 55, 19, 133, 194, 153, 38, 8, 87, 35, 179, 5, 32, 143, 104, 86, 184, 116, 70, 39, 22, 172, 28, 40, 72, 116, 192, 17, 159, 169, 143, 167, 77, 25, 128, 102, 140, 120, 140, 71, 56, 76, 16, 13, 144, 91, 166, 2, 74, 164, 153, 71, 37, 187, 104, 172, 122, 9, 109, 116, 173, 75, 70, 117, 57, 129, 171, 198, 194, 154, 177, 82, 103, 30, 174, 85, 191, 116, 30, 164, 155, 38, 38, 49, 84, 34, 111, 159};

**Expected** [106, 14, 71, 71, 166, 172, 128, 128, 52, 113, 58, 184, 70, 73, 37, 83, 71, 46, 133, 100, 37, 186, 199, 69, 79, 71, 70, 13, 155, 90, 60, 82, 180, 125, 108, 160, 74, 93, 72, 152, 106, 11, 174, 164, 168, 6, 9, 41, 58, 65, 141, 22, 103, 49, 114, 197, 175, 131, 109, 135, 124, 19, 76, 109, 130, 15, 120, 12, 11, 77, 88, 56, 127, 162, 67, 133, 162, 22, 94, 122, 53, 132, 167, 111, 138, 61, 169, 64, 98, 159, 58, 147, 137, 50, 193, 190, 173, 28, 35, 108, 138, 110, 184, 82, 114, 199, 137, 156, 155, 167, 165, 134, 193, 22, 173, 176, 46, 61, 196, 137, 151, 69, 67, 87, 161, 72, 60, 70, 67, 109, 149, 16, 38, 127, 15, 12, 107, 48, 184, 185, 43, 178, 14, 188, 61, 79, 189, 144, 27, 41, 114, 182, 118, 76, 89, 126, 124, 195, 180, 133, 118, 96, 61, 95, 127, 40, 62, 102, 130, 174, 47, 131, 187, 103, 88, 109, 153, 110, 184, 72, 178, 41, 93, 112, 24, 156, 180, 150, 114, 172, 43, 170, 46, 166, 109, 193, 13, 17, 190, 153, 80, 106, 199, 163, 106, 39, 85, 56, 174, 189, 61, 72, 154, 149, 59, 110, 139, 189, 99, 40, 84, 180, 23, 13, 9, 192, 163, 88, 1, 3, 149, 132, 36, 34, 120, 40, 48, 32, 91, 166, 42, 155, 30, 111, 140, 6, 189, 169, 50, 15, 144, 67, 145, 169, 49, 135, 49, 76, 0, 105, 90, 60, 75, 88, 150, 88, 122, 11, 158, 12, 43, 182, 152, 112, 65, 149, 14, 194, 146, 120, 114, 178, 177, 159, 105, 45,

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Got

Singly Linked List: Xem lại lần làm thử   BK-L	MS
Test	Ex
LLNode* head = LLNode::createWithIterators(arr,	73
<pre>arr + sizeof(arr) / sizeof(int));</pre>	15
<pre>LLNode::printList(head);</pre>	45
cout << "\n";	110
<pre>LLNode* newhead = reverseLinkedList(head);</pre>	13
<pre>LLNode::printList(newhead);</pre>	110
newhead->clear();	174
	40
	56
	174
	164
	8,
	16
	13
	71
	39
	86
	149
	110
	160
	194
	5,
	110
	72
	14:
	140
	16
	164
	17
	75
	198
	30 <sub>1</sub>
	111
	[1:
	38
	85
	154
	11
	9,
	71
	14
	120
	16
	110
	70
	32
	52

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	143, 149, 30, 130, 9, 164,	143, 149, 30, 130, 9, 164,	
	31, 122, 91, 195, 42, 60,	31, 122, 91, 195, 42, 60,	
	105, 148, 73, 41, 179, 87,	105, 148, 73, 41, 179, 87,	
	64, 34, 178, 126, 62, 173,	64, 34, 178, 126, 62, 173,	
	165, 57, 81, 113, 28, 107,	165, 57, 81, 113, 28, 107,	
	32, 86, 44, 109, 111, 170,	32, 86, 44, 109, 111, 170,	
	131, 42, 70, 64, 78, 196, 51,	131, 42, 70, 64, 78, 196, 51,	
	82, 50, 54, 105, 49, 136,	82, 50, 54, 105, 49, 136,	
	106, 33, 27, 4, 196, 95, 53,	106, 33, 27, 4, 196, 95, 53,	
	175, 167, 160, 66, 131, 119,	175, 167, 160, 66, 131, 119,	
	179, 60, 183, 192, 116, 65,	179, 60, 183, 192, 116, 65,	
	100, 150, 89, 184, 46, 142,	100, 150, 89, 184, 46, 142,	
	6, 172, 14, 11, 27, 41, 16,	6, 172, 14, 11, 27, 41, 16,	
	59, 113, 198, 24, 132, 97,	59, 113, 198, 24, 132, 97,	
	67, 139, 194, 61, 11, 194,	67, 139, 194, 61, 11, 194,	
	92, 146, 100, 73, 31, 174,	92, 146, 100, 73, 31, 174,	
	86, 26, 121, 22, 105, 123,	86, 26, 121, 22, 105, 123,	
	192, 124, 83, 95, 5, 167, 8,	192, 124, 83, 95, 5, 167, 8,	
	3, 44, 154, 187, 62, 39, 1, 14, 167, 115, 41, 125, 170,	3, 44, 154, 187, 62, 39, 1, 14, 167, 115, 41, 125, 170,	
	129, 47, 96, 34, 152, 52,	129, 47, 96, 34, 152, 52,	
	114, 141, 1, 135, 76, 173,	114, 141, 1, 135, 76, 173,	
	108, 132, 142, 107, 131, 19,	108, 132, 142, 107, 131, 19,	
	135, 16, 124, 179, 180, 126,	135, 16, 124, 179, 180, 126,	
	107, 168, 190, 44, 104, 67,	107, 168, 190, 44, 104, 67,	
	152, 1, 86, 153, 128, 186,	152, 1, 86, 153, 128, 186,	
	53, 166, 100, 199, 56, 188,	53, 166, 100, 199, 56, 188,	
	0, 195, 113, 134, 182, 155,	0, 195, 113, 134, 182, 155,	
	69, 137, 62, 144, 27, 29,	69, 137, 62, 144, 27, 29,	
	166, 144, 106, 191, 45, 121,	166, 144, 106, 191, 45, 121,	
	3, 115, 115, 183, 35, 1, 195,	3, 115, 115, 183, 35, 1, 195,	
	121, 196, 77, 173, 71, 61,	121, 196, 77, 173, 71, 61,	
	67, 142, 30, 64, 82, 146,	67, 142, 30, 64, 82, 146,	
	158, 147, 168, 84, 147, 82,	158, 147, 168, 84, 147, 82,	
	118, 107, 163, 123, 22, 152,	118, 107, 163, 123, 22, 152,	
	88, 51, 10, 174, 134, 128,	88, 51, 10, 174, 134, 128,	
	86, 26, 31, 7, 24, 101, 12,	86, 26, 31, 7, 24, 101, 12,	
	79, 22, 22, 150, 183, 73, 83,	79, 22, 22, 150, 183, 73, 83,	
	62, 45, 193, 26, 121, 79, 41,	62, 45, 193, 26, 121, 79, 41,	
	179, 152, 94, 3, 178, 103,	179, 152, 94, 3, 178, 103,	
	87, 119, 67, 21, 101, 64, 5,	87, 119, 67, 21, 101, 64, 5,	
	115, 45, 55, 91, 103, 88,	115, 45, 55, 91, 103, 88,	
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	187, 146, 31, 162, 179, 35,	187, 146, 31, 162, 179, 35,	
	190, 167, 170, 144, 144, 64,	190, 167, 170, 144, 144, 64,	
	81, 154, 167, 131, 138, 23,	81, 154, 167, 131, 138, 23,	

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	30, 89, 93, 144, 13, 138, 32,	30, 89, 93, 144, 13, 138, 32,	
	117, 30, 4, 142, 38, 118,	117, 30, 4, 142, 38, 118,	
	195, 112, 185, 116, 165, 33,	195, 112, 185, 116, 165, 33,	
	104, 140, 29, 41, 39, 44, 20,	104, 140, 29, 41, 39, 44, 20,	
	72, 169, 27, 162, 7, 196,	72, 169, 27, 162, 7, 196,	
	155, 38, 11, 195, 179, 57,	155, 38, 11, 195, 179, 57,	
	83, 59, 170, 136, 164, 17,	83, 59, 170, 136, 164, 17,	
	153, 186, 83, 122, 16, 175,	153, 186, 83, 122, 16, 175,	
	178, 124, 43, 107, 111, 20,	178, 124, 43, 107, 111, 20,	
	166, 146, 57, 168, 191, 164,	166, 146, 57, 168, 191, 164,	
	75, 127, 99, 107, 142, 126,	75, 127, 99, 107, 142, 126,	
	115, 84, 66, 85, 24, 12, 69,	115, 84, 66, 85, 24, 12, 69,	
	66, 44, 164, 127, 45, 35, 70,	66, 44, 164, 127, 45, 35, 70,	
	141, 77, 114, 1, 188, 113,	141, 77, 114, 1, 188, 113,	
	30, 90, 0, 122, 87, 37, 134, 144, 86, 139, 110, 123, 174,	30, 90, 0, 122, 87, 37, 134, 144, 86, 139, 110, 123, 174,	
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	43, 144, 105, 110, 2, 93, 36,	43, 144, 105, 110, 2, 93, 36,	
	193, 163, 142, 16, 10, 31,	193, 163, 142, 16, 10, 31,	
	130, 126, 151, 183, 20, 155,	130, 126, 151, 183, 20, 155,	
	94, 103, 101, 196, 171, 168,	94, 103, 101, 196, 171, 168,	
	18, 40, 43, 134, 71, 122,	18, 40, 43, 134, 71, 122,	
	112, 34, 148, 88, 86, 121, 6,	112, 34, 148, 88, 86, 121, 6,	
	46, 45, 46, 129, 32, 127, 36,	46, 45, 46, 129, 32, 127, 36,	
	28, 46, 188, 7, 77, 41, 52,	28, 46, 188, 7, 77, 41, 52,	
	76, 23, 198, 157, 79, 25,	76, 23, 198, 157, 79, 25,	
	129, 13, 148, 185, 109, 82,	129, 13, 148, 185, 109, 82,	
	25, 64, 138, 128, 83, 119,	25, 64, 138, 128, 83, 119,	
	134, 178, 158, 26, 136, 180,	134, 178, 158, 26, 136, 180,	
	74, 180, 2, 0, 10, 155, 85,	74, 180, 2, 0, 10, 155, 85,	
	56, 47, 125, 26, 99, 166, 82,	56, 47, 125, 26, 99, 166, 82,	
	110, 131, 31, 84, 183, 198,	110, 131, 31, 84, 183, 198,	
	135, 77, 118, 27, 46, 167,	135, 77, 118, 27, 46, 167,	
	124, 144, 131, 89, 120, 65,	124, 144, 131, 89, 120, 65,	
	103, 64, 169, 43, 177, 61,	103, 64, 169, 43, 177, 61,	
	55, 178, 153, 109, 80, 135,	55, 178, 153, 109, 80, 135,	
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	62, 69, 162, 179, 173, 26,	62, 69, 162, 179, 173, 26,	
	147, 161, 105, 176, 74, 151,	147, 161, 105, 176, 74, 151,	
	199, 129, 180, 79, 179, 24,	199, 129, 180, 79, 179, 24,	
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	67, 133, 121, 190, 173, 147,	67, 133, 121, 190, 173, 147,	
	147, 35, 162, 178, 89, 85,	147, 35, 162, 178, 89, 85,	
	70, 77, 112, 46, 85, 177,	70, 77, 112, 46, 85, 177,	
	160, 36, 60, 52, 18, 108,	160, 36, 60, 52, 18, 108,	

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	138, 138, 124, 35, 127, 86,	138, 138, 124, 35, 127, 86,
	97, 118, 182, 71, 56, 78,	97, 118, 182, 71, 56, 78,
	147, 180, 126, 196, 103, 65,	147, 180, 126, 196, 103, 65,
	161, 4, 10, 189, 16, 103, 18,	161, 4, 10, 189, 16, 103, 18,
	186, 81, 125, 156, 92, 44,	186, 81, 125, 156, 92, 44,
	186, 145, 29, 15, 73, 3, 16,	186, 145, 29, 15, 73, 3, 16,
	59, 174, 81, 11, 174, 24, 56,	59, 174, 81, 11, 174, 24, 56,
	91, 72, 55, 91, 42, 35, 170,	91, 72, 55, 91, 42, 35, 170,
	102, 108, 5, 75, 54, 43, 128,	102, 108, 5, 75, 54, 43, 128,
	199, 35, 31, 13, 72, 106, 73,	199, 35, 31, 13, 72, 106, 73,
	181, 93, 189, 10, 17, 133,	181, 93, 189, 10, 17, 133,
	140, 47, 188, 7, 145, 55, 22,	
	22, 183, 113, 186, 19, 155,	22, 183, 113, 186, 19, 155,
	175, 3, 59, 79, 0, 155, 194,	175, 3, 59, 79, 0, 155, 194,
	19, 172, 53, 111, 61, 16,	19, 172, 53, 111, 61, 16,
	141, 169, 20, 4, 197, 123, 0,	141, 169, 20, 4, 197, 123, 0,
	123, 185, 12, 165, 115, 86,	123, 185, 12, 165, 115, 86,
	138, 153, 133, 144, 87, 50,	138, 153, 133, 144, 87, 50,
	79, 50, 188, 116, 160, 106, 142, 186, 124, 108, 166, 92,	79, 50, 188, 116, 160, 106, 142, 186, 124, 108, 166, 92,
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	182, 37, 7, 135, 150, 61, 46,	182, 37, 7, 135, 150, 61, 46,
	42, 26, 89, 176, 187, 7, 91,	42, 26, 89, 176, 187, 7, 91,
	44, 50, 40, 198, 53, 109, 3,	44, 50, 40, 198, 53, 109, 3,
	9, 135, 90, 117, 53, 107,	9, 135, 90, 117, 53, 107,
	106, 23, 139, 188, 139, 64,	106, 23, 139, 188, 139, 64,
	138, 50, 125, 197, 32, 63,	138, 50, 125, 197, 32, 63,
	32, 118, 80, 104, 109, 107,	32, 118, 80, 104, 109, 107,
	37, 30, 11, 6, 164, 53, 108,	37, 30, 11, 6, 164, 53, 108,
	66, 183, 53, 39, 52, 40, 111,	66, 183, 53, 39, 52, 40, 111,
	0, 121, 147, 65, 14, 96, 96,	0, 121, 147, 65, 14, 96, 96,
	189, 156, 121, 103, 183, 98,	189, 156, 121, 103, 183, 98,
	126, 94, 30, 85, 73, 104,	126, 94, 30, 85, 73, 104,
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	114, 61, 29, 132, 4, 22, 157,	114, 61, 29, 132, 4, 22, 157,
	128, 18, 8, 120, 94, 119, 78,	128, 18, 8, 120, 94, 119, 78,
	152, 42, 19, 122, 126, 15,	152, 42, 19, 122, 126, 15,
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	25, 129, 111, 161, 78, 60,	25, 129, 111, 161, 78, 60,
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	103, 0, 22, 5, 199, 129, 140,	103, 0, 22, 5, 199, 129, 140,	
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**Expected** Got 166, 91, 56, 34, 9, 26, 177, 166, 91, 56, 34, 9, 26, 177, 198, 52, 48, 13, 7, 172, 125, 198, 52, 48, 13, 7, 172, 125, 13, 187, 90, 108, 174, 157, 13, 187, 90, 108, 174, 157, 37, 30, 107, 52, 136, 147, 141, 177, 181, 107, 134, 164, 34, 176, 46, 168, 75, 167, 181, 44, 136, 111, 106, 12, 89, 90, 131, 104, 38, 11, 6, 148, 107, 135, 119, 81, 20, 71, 67, 67, 173, 54, 108, 99, 134, 183, 158, 175, 61, 97, 49, 167, 11, 87, 159, 49, 99, 18, 0, 128, 40, 160, 132, 97, 14, 65, 185, 120, 195, 160, 38, 170, 79, 88, 174, 114, 42, 169, 32, 136, 5, 186, 94, 31, 156, 95, 45, 199, 122, 93, 172, 12, 157, 180, 0, 93, 131, 165, 136, 16, 149, 86, 52, 20, 66, 122, 82, 160, 143, 29, 60, 179, 149, 87, 100, 68, 132, 32, 58, 52, 111, 92, 103, 138, 199, 39, 82, 134, 92, 171, 75, 16, 112, 32, 29, 171, 198, 60, 90, 53, 68, 36, 121, 112, 93, 51, 155, 7, 41, 97, 142, 122, 41, 14, 185, 91, 149, 144, 97, 5, 96, 74, 107, 98, 62, 150, 179, 53, 100, 61, 92, 8, 193, 165, 17, 96, 196, 180, 114, 110, 101, 67, 35, 64, 184, 148, 145, 119, 7, 176, 191, 75, 167, 59, 40, 109, 86, 105, 125, 20, 91, 46, 185, 11, 103, 137, 130, 169, 146, 170, 139, 2, 104, 157, 119, 85, 109, 142, 185, 71, 150, 158, 122, 190, 26, 133, 186, 89, 17, 33, 114, 135, 19, 23, 0, 173, 28, 176, 133, 125, 63, 174, 124, 12, 57, 24, 3, 11, 174, 99, 167, 193, 129, 51, 42, 184, 152, 193, 192, 182, 166, 77, 147, 45, 61, 159, 75, 6, 83, 81, 186, 98, 92, 136, 38, 130, 40, 132, 111, 145, 174, 84, 100,

37, 30, 107, 52, 136, 147, 141, 177, 181, 107, 134, 164, 34, 176, 46, 168, 75, 167, 181, 44, 136, 111, 106, 12, 89, 90, 131, 104, 38, 11, 6, 148, 107, 135, 119, 81, 20, 71, 67, 67, 173, 54, 108, 99, 134, 183, 158, 175, 61, 97, 49, 167, 11, 87, 159, 49, 99, 18, 0, 128, 40, 160, 132, 97, 14, 65, 185, 120, 195, 160, 38, 170, 79, 88, 174, 114, 42, 169, 32, 136, 5, 186, 94, 31, 156, 95, 45, 199, 122, 93, 172, 12, 157, 180, 0, 93, 131, 165, 136, 16, 149, 86, 52, 20, 66, 122, 82, 160, 143, 29, 60, 179, 149, 87, 100, 68, 132, 32, 58, 52, 111, 92, 103, 138, 199, 39, 82, 134, 92, 171, 75, 16, 112, 32, 29, 171, 198, 60, 90, 53, 68, 36, 121, 112, 93, 51, 155, 7, 41, 97, 142, 122, 41, 14, 185, 91, 149, 144, 97, 5, 96, 74, 107, 98, 62, 150, 179, 53, 100, 61, 92, 8, 193, 165, 17, 96, 196, 180, 114, 110, 101, 67, 35, 64, 184, 148, 145, 119, 7, 176, 191, 75, 167, 59, 40, 109, 86, 105, 125, 20, 91, 46, 185, 11, 103, 137, 130, 169, 146, 170, 139, 2, 104, 157, 119, 85, 109, 142, 185, 71, 150, 158, 122, 190, 26, 133, 186, 89, 17, 33, 114, 135, 19, 23, 0, 173, 28, 176, 133, 125, 63, 174, 124, 12, 57, 24, 3, 11, 174, 99, 167, 193, 129, 51, 42, 184, 152, 193, 192, 182, 166, 77, 147, 45, 61, 159, 75, 6, 83, 81, 186, 98, 92, 136, 38, 130, 40, 132, 111, 145, 174, 84, 100,

Test	Expected	Got	
	199, 176, 126, 185, 199, 57,	199, 176, 126, 185, 199, 57,	
	94, 12, 164, 189, 22, 8, 48,	94, 12, 164, 189, 22, 8, 48,	
	120, 110, 48, 158, 17, 61,	120, 110, 48, 158, 17, 61,	
	64, 146, 72, 55, 81, 182,	64, 146, 72, 55, 81, 182,	
	149, 184, 91, 175, 122, 144,	149, 184, 91, 175, 122, 144,	
	23, 63, 4, 160, 174, 69, 78,	23, 63, 4, 160, 174, 69, 78,	
	117, 28, 139, 118, 59, 169,	117, 28, 139, 118, 59, 169,	
	87, 60, 157, 64, 37, 32, 27,	87, 60, 157, 64, 37, 32, 27,	
	169, 4, 139, 188, 92, 23,	169, 4, 139, 188, 92, 23,	
	192, 60, 39, 5, 68, 160, 82,	192, 60, 39, 5, 68, 160, 82,	
	99, 132, 105, 80, 169, 46,	99, 132, 105, 80, 169, 46,	
	198, 169, 115, 2, 53, 157,	198, 169, 115, 2, 53, 157,	
	26, 9, 172, 99, 156, 71, 36,	26, 9, 172, 99, 156, 71, 36,	
	83, 191, 21, 86, 17, 108, 18,	83, 191, 21, 86, 17, 108, 18,	
	145, 42, 19, 51, 132, 155,	145, 42, 19, 51, 132, 155,	
	50, 192, 152, 0, 59, 89, 128,	50, 192, 152, 0, 59, 89, 128,	
	27, 196, 160, 44, 149, 105,	27, 196, 160, 44, 149, 105,	
	24, 18, 137, 121, 22, 151,	24, 18, 137, 121, 22, 151,	
	111, 109, 111, 86, 30, 159,	111, 109, 111, 86, 30, 159,	
	59, 135, 6, 185, 40, 147, 27,	59, 135, 6, 185, 40, 147, 27,	
	188, 33, 165, 14, 82, 95, 28,	188, 33, 165, 14, 82, 95, 28,	
	97, 87, 65, 79, 146, 52, 152,	97, 87, 65, 79, 146, 52, 152,	
	80, 130, 173, 54, 5, 77, 109,	80, 130, 173, 54, 5, 77, 109,	
	128, 51, 148, 63, 185, 93,	128, 51, 148, 63, 185, 93,	
	153, 55, 33, 189, 50, 88,	153, 55, 33, 189, 50, 88,	
	174, 153, 58, 64, 49, 105,	174, 153, 58, 64, 49, 105,	
	117, 122, 91, 110, 130, 108,	117, 122, 91, 110, 130, 108,	
	74, 69, 197, 120, 110, 78,	74, 69, 197, 120, 110, 78,	
	124, 23, 153, 70, 91, 4, 150,	124, 23, 153, 70, 91, 4, 150,	
	28, 163, 125, 89, 163, 16,	28, 163, 125, 89, 163, 16,	
	24, 15, 28, 115, 44, 94, 24,	24, 15, 28, 115, 44, 94, 24,	
	85, 71, 0, 35, 5, 95, 125,	85, 71, 0, 35, 5, 95, 125,	
	18, 99, 35, 47, 185, 118, 99,		
	161, 119, 10, 134, 17, 156,	161, 119, 10, 134, 17, 156,	
	134, 11, 61, 101, 117, 99, 4,	134, 11, 61, 101, 117, 99, 4,	
	46, 163, 46, 71, 176, 10, 68,	46, 163, 46, 71, 176, 10, 68,	
	160, 19, 165, 54, 177, 87,	160, 19, 165, 54, 177, 87,	
	28, 188, 167, 118, 73, 33,	28, 188, 167, 118, 73, 33,	
	88, 133, 99, 37, 163, 132,	88, 133, 99, 37, 163, 132,	
	17, 178, 63, 18, 48, 153,	17, 178, 63, 18, 48, 153,	
	198, 133, 160, 174, 115, 106,	198, 133, 160, 174, 115, 106,	
	68, 179, 17, 41, 184, 137,	68, 179, 17, 41, 184, 137,	
	22, 123, 152, 149, 48, 142,	22, 123, 152, 149, 48, 142,	
	62, 73, 102, 137, 52, 161,	62, 73, 102, 137, 52, 161,	
	171, 52, 147, 136, 6, 163,	171, 52, 147, 136, 6, 163,	
	10, 154, 196, 28, 19, 149,	10, 154, 196, 28, 19, 149,	
	186, 53, 170, 2, 165, 82, 64,	186, 53, 170, 2, 165, 82, 64,	
	17, 53, 198, 135, 189, 49,	17, 53, 198, 135, 189, 49,	

Test	Expected	Got
Test	97, 5, 147, 60, 82, 198, 122, 41, 85, 117, 15, 26, 168, 172, 71, 15, 169, 172, 73, 44, 178, 134, 35, 108, 1, 51, 12, 21, 10, 48, 139, 139, 94, 14, 0, 153, 73, 73, 0, 149, 111, 103, 125, 92, 24, 3, 38, 110, 77, 75, 131, 106, 33, 110, 109, 92, 28, 49, 124, 38, 12, 132, 137, 197, 190, 17, 22, 62, 141, 13, 107, 48, 113, 169, 92, 163, 115, 50, 56, 185, 7, 63, 59, 187, 193, 155, 183, 111, 67, 84, 104, 81, 151, 131, 14, 15, 177, 197, 190, 65, 143, 25, 156, 137, 116, 98, 90, 127, 114, 88, 189, 88, 23, 65, 106, 95, 27, 93, 155, 4, 199, 99, 151, 53, 192, 125, 2, 98, 158, 155, 129, 100, 55, 119, 89, 128, 88, 60, 145, 169, 85, 132, 70, 76, 167, 25, 70, 199, 190, 52, 184, 188, 144, 53, 147, 50, 162, 130, 197, 125, 173, 147, 45, 71, 180, 173, 83, 174, 68, 77, 96, 199, 115, 167, 193, 156, 148, 175, 33, 98, 99, 96, 62, 54, 125, 131, 155, 64, 179, 66, 63, 192, 7, 149, 60, 136, 78, 172, 115, 10, 168, 158, 63, 28, 117, 81, 24, 40, 89, 67, 57, 184, 89, 160, 13, 10, 15, 37, 23, 152, 147, 188, 96, 99, 116, 88, 13, 121, 167, 67, 24, 180, 45, 199, 86, 85,	97, 5, 147, 60, 82, 198, 122, 41, 85, 117, 15, 26, 168, 172, 71, 15, 169, 172, 73, 44, 178, 134, 35, 108, 1, 51, 12, 21, 10, 48, 139, 139, 94, 14, 0, 153, 73, 73, 0, 149, 111, 103, 125, 92, 24, 3, 38, 110, 77, 75, 131, 106, 33, 110, 109, 92, 28, 49, 124, 38, 12, 132, 137, 197, 190, 17, 22, 62, 141, 13, 107, 48, 113, 169, 92, 163, 115, 50, 56, 185, 7, 63, 59, 187, 193, 155, 183, 111, 67, 84, 104, 81, 151, 131, 14, 15, 177, 197, 190, 65, 143, 25, 156, 137, 116, 98, 90, 127, 114, 88, 189, 88, 23, 65, 106, 95, 27, 93, 155, 4, 199, 99, 151, 53, 192, 125, 2, 98, 158, 155, 129, 100, 55, 119, 89, 128, 88, 60, 145, 169, 85, 132, 70, 76, 167, 25, 70, 199, 190, 52, 184, 188, 144, 53, 147, 50, 162, 130, 197, 125, 173, 147, 45, 71, 180, 173, 83, 174, 68, 77, 96, 199, 115, 167, 193, 156, 148, 175, 33, 98, 99, 96, 62, 54, 125, 131, 155, 64, 179, 66, 63, 192, 7, 149, 60, 136, 78, 172, 115, 10, 168, 158, 63, 28, 117, 81, 24, 40, 89, 67, 57, 184, 89, 160, 13, 10, 15, 37, 23, 152, 147, 188, 96, 99, 116, 88, 13, 121, 167, 67, 24, 180, 45, 199, 86, 85,
	37, 23, 152, 147, 188, 96, 99, 116, 88, 13, 121, 167,	37, 23, 152, 147, 188, 96, 99, 116, 88, 13, 121, 167,

Passed all tests! 🗸



Marks for this submission: 1,00/1,00.

## Câu hỏi **9**

Đúng

Đạt điểm 1,00 trên 1,00 Class LLNode representing a node of singly linked lists is declared as below:

```
class LLNode {
public:
    int val;
    LLNode* next;
    LLNode(); // Constructor: val = 0, next = nullptr
    LLNode(int val, LLNode* next); // Constructor with customized data
}
```

Given a singly linked list head node and a integer k.

Your task is to implement a function with following prototype:

```
LLNode* rotateLinkedList(LLNode* head, int k);
```

The function returns head node of the rotated singly linked list obtained after rotate the linked list to the right by k places.

## Note:

- The iostream library has been used and namespace std is being used. No other libraries are allowed.
- The constructors and methods of class LLNode have been defined fully so you do not need to redefine them.
- You can write helper functions.

## For example:

Test	Result
int arr[] = {2, 4, 6, 6, 3};	[2, 4, 6, 6, 3]
int k = 3;	[2, 4, 6, 6, 3] [6, 6, 3, 2, 4]
<pre>LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int));</pre>	
LLNode::printList(head);	
cout << "\n";	
<pre>LLNode* newhead = rotateLinkedList(head, k);</pre>	
LLNode::printList(newhead);	

**Answer:** (penalty regime: 0 %)

Reset answer

```
1 | LLNode* rotateLinkedList(LLNode* head, int k) {
 2 🔻
        if (head == nullptr || head->next == nullptr || k == 0) {
 3
            return head;
 4
 5
        LLNode* tail = head;
 6
        LLNode* new_list_head = head;
 7
        int len = 1;
 8 •
        while (tail->next != nullptr) {
            tail = tail->next;
 9
10
            len++;
11
12
        k = k \% len;
```

```
if (k == 0) {
13 ▼
14
           return head;
15
        for (int i = 0; i < len - k - 1; i++) {
16 ▼
           new_list_head = new_list_head->next;
17
18
19
        tail->next = head;
        head = new_list_head->next;
20
21
        new_list_head->next = nullptr;
22
        return head;
23 }
24
```

	Test	Expected	Got	
<b>~</b>	<pre>int arr[] = {2, 4, 6, 6, 3}; int k = 3; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = rotateLinkedList(head, k); LLNode::printList(newhead);</pre>	[2, 4, 6, 6, 3] [6, 6, 3, 2, 4]	[2, 4, 6, 6, 3] [6, 6, 3, 2, 4]	~
<b>~</b>	<pre>int arr[] = {}; int k = 2; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = rotateLinkedList(head, k); LLNode::printList(newhead);</pre>	[]		~
<b>~</b>	<pre>int arr[] = {0, 4, 2, 5, 1, 0, 6, 4, 8, 6}; int k = 11; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = rotateLinkedList(head, k); LLNode::printList(newhead);</pre>	[0, 4, 2, 5, 1, 0, 6, 4, 8, 6] [6, 0, 4, 2, 5, 1, 0, 6, 4, 8]	[0, 4, 2, 5, 1, 0, 6, 4, 8, 6] [6, 0, 4, 2, 5, 1, 0, 6, 4, 8]	~

	Test	Expected	Got	
<b>~</b>	<pre>int arr[] = {6, 1, 3, 2, 6, 0, 0, 0, 3, 3, 9, 8, 5, 6, 0, 7, 7, 8, 5, 7, 7, 9, 6, 3, 3, 0, 0, 8, 0, 0, 4, 9, 7, 1, 7, 2, 7, 5, 4, 4, 7, 5, 9, 2, 4, 5, 7, 9, 7, 9, 7, 2, 0, 6, 7, 6, 5, 1, 9, 7, 1, 2, 7, 8, 7, 5, 4, 7, 6, 9, 0, 2, 7, 0, 5, 5, 6, 8, 3, 1, 9, 3, 0, 1, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 0, 7, 3, 5, 2, 9, 1, 0, 9}; int k = 35; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head); cout &lt;&lt; "\n"; LLNode* newhead = rotateLinkedList(head, k); LLNode::printList(newhead);</pre>	[6, 1, 3, 2, 6, 0, 0, 0, 3, 3, 9, 8, 5, 6, 0, 7, 7, 8, 5, 7, 7, 9, 6, 3, 3, 0, 0, 8, 0, 0, 4, 9, 7, 1, 7, 2, 7, 5, 4, 4, 7, 5, 9, 2, 4, 5, 7, 9, 7, 9, 7, 2, 0, 6, 7, 6, 5, 1, 9, 7, 1, 2, 7, 8, 7, 5, 4, 7, 6, 9, 0, 2, 7, 0, 5, 5, 6, 8, 3, 1, 9, 3, 0, 1, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 0, 7, 3, 5, 2, 9, 1, 0, 9]  [0, 2, 7, 0, 5, 5, 6, 8, 3, 1, 9, 3, 0, 1, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 0, 7, 3, 5, 2, 9, 1, 0, 9, 6, 1, 3, 2, 6, 0, 0, 0, 3, 3, 9, 8, 5, 6, 0, 7, 7, 8, 5, 7, 7, 9, 6, 3, 3, 0, 0, 8, 0, 0, 4, 9, 7, 1, 7, 2, 7, 5, 4, 4, 7, 5, 9, 2, 4, 5, 7, 9, 7, 9, 7, 2, 0, 6, 7, 6, 5, 1, 9, 7, 1, 2, 7, 8, 7, 5, 4, 7, 6, 9]	7, 7, 9, 6, 3, 3, 0, 0, 8, 0, 0, 4, 9, 7, 1, 7, 2, 7, 5, 4, 4, 7, 5, 9, 2, 4, 5, 7, 9, 7, 9, 7, 2, 7, 6, 5, 1, 9, 7, 1, 2, 7, 8, 7, 5, 4, 7, 6, 9, 0, 2, 7, 0, 5, 5, 6, 8, 3, 1, 9, 3, 0, 1, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 0, 7, 3, 5, 2, 9, 1, 0, 9]  [0, 2, 7, 0, 5, 5, 6, 8, 3, 1, 9, 3, 0, 1, 4, 6, 6, 9, 2, 2, 2, 0, 6, 7, 4, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 6, 9, 2, 2, 0, 6, 7, 4, 4, 6, 0, 7, 3, 5, 2, 9, 1, 0, 9, 6, 1, 3, 2, 6, 0, 0, 0, 3, 3, 9, 8, 5, 6, 0, 7, 7, 8, 5, 7, 7, 9, 6, 3, 3, 0, 0, 8, 0, 0, 4, 9, 7, 1, 7, 2, 7, 5, 4, 4, 7, 5, 9, 2, 4, 5, 7, 9, 7, 9, 7, 2, 0, 6,	<b>&gt;</b>

Test	Expected	Got	
<pre>int arr[] = {9, 1, 7, 5, 8, 6, 2, 2, 2, 2, 6, 0, 8, 1, 9, 6, 8, 4, 8, 4, 3, 7, 0, 7, 8, 9, 5, 3, 4, 7, 4, 3, 5, 2, 2, 7, 8, 9, 7, 1, 9, 9, 8, 3, 5, 7, 1, 6, 9, 1, 2, 0, 6, 8, 0, 4, 1, 6, 5, 8, 7, 6, 8, 0, 5, 7, 8, 8, 6, 7, 5, 8, 0, 7, 6, 4, 9, 5, 9, 6, 4, 1, 5, 6, 2, 2, 6, 7, 0, 3, 4, 2, 3, 9, 0, 9, 6, 3, 6, 7, 5, 5, 5, 9, 0, 6, 1, 1, 5, 0, 9, 1, 1, 1, 0, 4, 6, 3, 3, 3, 5, 8, 7, 4, 7, 1, 7, 1, 8, 4, 2, 0, 1, 9, 0, 7, 9, 2, 8, 9, 2, 5, 3, 5, 9, 3, 2, 7, 3, 5, 9, 5, 5, 3, 2, 3, 9, 4, 1, 6, 1, 8, 3, 1, 4, 5, 2, 5, 7, 7, 0, 9, 6, 6, 4, 8, 1, 1, 6, 0, 2, 6, 0, 7, 5, 5, 0, 5, 2, 6, 9, 9, 9, 9, 2, 3, 0, 6, 8, 8, 4, 5, 6, 2, 8, 5, 9, 8, 3, 6, 8, 8, 6, 2, 1, 2, 1, 4, 6, 2, 0, 9, 3, 9, 6, 4, 2, 3, 6, 2, 0, 9, 8, 7, 0, 6, 0, 7, 0, 5, 9, 4, 3, 7, 9, 7, 3, 5, 7, 0, 3, 1, 8, 9, 9, 4, 0, 8, 6, 4, 6, 7, 3, 8, 1, 2, 1, 5, 4, 9, 5, 9, 5, 8, 6, 6, 8, 9, 4, 4, 0, 6, 4, 5, 3, 0, 3, 9, 7, 1, 7, 2, 5, 0, 1, 9, 1, 2, 5, 6, 8, 7, 1, 6, 9, 6, 2, 8, 1, 2, 0, 4, 3, 4, 6, 7, 1, 0, 7, 0, 7, 9, 4, 0, 1, 2, 3, 5, 6, 3, 5, 6, 7, 5, 4, 2, 4, 8, 2, 5, 8, 8, 6, 6, 2, 6, 6, 8, 1, 2, 2, 8, 0, 8, 9, 0, 7, 9, 0, 1, 6, 6, 3, 6, 5, 1, 5, 9, 0, 3, 7, 3, 7, 2, 0, 0, 2, 7, 5, 2, 9, 5, 5, 8, 1, 7, 7, 9, 7, 1, 1, 6, 4, 3, 8, 0, 7, 9, 1, 0, 9, 5, 2, 7, 2, 1, 5, 3, 9, 7, 6, 9, 1, 3, 5, 5, 0, 6, 9, 4, 7, 1, 7, 2, 0, 4, 5, 8, 1, 6, 1, 0, 7, 2, 2, 6, 7, 4, 4, 9, 5, 4, 5, 2, 0, 8, 0, 5, 5, 1, 8, 9, 4, 5, 6, 1, 2, 0, 7, 0, 2, 1, 6, 8, 8, 7, 8, 7, 0, 1, 8, 5, 6, 5, 9, 2, 2, 9, 3, 6, 0, 1, 7, 9, 8, 1, 1, 5, 4, 5, 7, 5, 0, 2, 0, 4, 4, 8, 0, 7, 3}; int k = 196; LLNode* head = LLNode::createWithIterators(arr, arr + sizeof(arr) / sizeof(int)); LLNode::printList(head);</pre>	[9, 1, 7, 5, 8, 6, 2, 2, 2, 2, 6, 0, 8, 1, 9, 6, 8, 4, 8, 4, 3, 7, 0, 7, 8, 9, 5, 3, 4, 7, 4, 3, 5, 2, 2, 7, 8, 9, 7, 1, 9, 9, 8, 3, 5, 7, 1, 6, 9, 1, 2, 0, 6, 8, 0, 4, 1, 6, 5, 8, 7, 6, 8, 0, 7, 6, 4, 9, 5, 9, 6, 4, 1, 5, 6, 2, 2, 6, 7, 0, 3, 4, 2, 3, 9, 0, 9, 6, 3, 6, 7, 5, 5, 5, 5, 9, 0, 6, 1, 1, 5, 0, 9, 1, 1, 1, 0, 4, 6, 3, 3, 3, 5, 8, 7, 4, 7, 1, 7, 1, 8, 4, 2, 0, 1, 9, 0, 7, 9, 2, 8, 9, 2, 5, 3, 5, 9, 3, 2, 7, 3, 5, 9, 5, 5, 3, 2, 3, 9, 4, 1, 6, 1, 8, 3, 1, 4, 5, 2, 5, 7, 7, 0, 9, 6, 6, 4, 8, 1, 1, 6, 0, 2, 6, 0, 7, 5, 5, 5, 9, 8, 3, 6, 8, 8, 6, 2, 1, 2, 1, 4, 6, 2, 0, 9, 8, 7, 0, 6, 0, 7, 0, 5, 9, 4, 3, 7, 9, 7, 3, 5, 7, 0, 3, 1, 8, 9, 9, 4, 0, 8, 6, 4, 6, 7, 3, 8, 1, 2, 1, 5, 4, 9, 5, 9, 5, 8, 6, 6, 8, 9, 4, 4, 0, 6, 4, 5, 3, 0, 3, 9, 7, 1, 7, 2, 5, 0, 1, 9, 1, 2, 5, 6, 8, 7, 1, 6, 9, 6, 2, 8, 1, 2, 0, 4, 3, 4, 6, 7, 1, 0, 7, 0, 7, 9, 4, 0, 1, 2, 3, 5, 6, 3, 5, 6, 7, 5, 4, 2, 4, 8, 2, 5,	[9, 1, 7, 5, 8, 6, 2, 2, 2, 2, 6, 0, 8, 1, 9, 6, 8, 4, 8, 4, 3, 7, 0, 7, 8, 9, 5, 3, 4, 7, 4, 3, 5, 2, 2, 7, 8, 9, 7, 1, 9, 9, 8, 3, 5, 7, 1, 6, 9, 1, 2, 0, 6, 8, 0, 4, 1, 6, 5, 8, 7, 6, 8, 0, 5, 7, 8, 8, 6, 7, 5, 8, 0, 7, 6, 4, 9, 5, 9, 6, 4, 1, 5, 6, 2, 2, 6, 7, 0, 3, 4, 2, 3, 9, 0, 9, 6, 3, 6, 7, 5, 5, 5, 9, 0, 6, 1, 1, 5, 0, 9, 1, 1, 1, 0, 4, 6, 3, 3, 3, 5, 8, 7, 4, 7, 1, 7, 1, 8, 4, 2, 0, 1, 9, 0, 7, 9, 2, 8, 9, 2, 5, 3, 5, 9, 3, 2, 7, 3, 5, 9, 5, 5, 3, 2, 3, 9, 4, 1, 6, 1, 8, 3, 1, 4, 5, 2, 5, 7, 7, 0, 9, 6, 6, 4, 8, 1, 1, 6, 0, 2, 6, 0, 7, 5, 5, 0, 5, 2, 6, 9, 9, 9, 9, 2, 3, 0, 6, 8, 8, 4, 5, 6, 2, 8, 5, 9, 8, 3, 6, 8, 8, 6, 2, 1, 2, 1, 4, 6, 2, 0, 9, 8, 7, 0, 6, 0, 7, 0, 5, 9, 4, 3, 7, 9, 7, 3, 5, 7, 0, 3, 1, 8, 9, 9, 4, 0, 8, 6, 4, 6, 7, 3, 8, 1, 2, 1, 5, 4, 9, 5, 9, 5, 8, 6, 6, 8, 9, 4, 4, 0, 6, 4, 5, 3, 0, 3, 9, 7, 1, 7, 2, 5, 0, 1, 9, 1, 2, 5, 6, 8, 7, 1, 6, 9, 6, 2, 8, 1, 2, 0, 4, 3, 4, 6, 7, 1, 0, 7, 0, 7, 9, 4, 0, 1, 2, 3, 5, 6, 3, 5, 6, 7, 5, 4, 2, 4, 8, 2, 5,	
	5, 6, 7, 5, 4, 2, 4, 8, 2, 5,         8, 8, 6, 6, 2, 6, 6, 8, 1, 2,         2, 8, 0, 8, 9, 0, 7, 9, 0, 1,         6, 6, 3, 6, 5, 1, 5, 9, 0, 3,         7, 3, 7, 2, 0, 0, 2, 7, 5, 2,         9, 5, 5, 8, 1, 7, 7, 9, 7, 1,         1, 6, 4, 3, 8, 0, 7, 9, 1, 0,         9, 5, 2, 7, 2, 1, 5, 3, 9, 7,         6, 9, 1, 3, 5, 5, 0, 6, 9, 4,         7, 1, 7, 2, 0, 4, 5, 8, 1, 6,         1, 0, 7, 2, 2, 6, 7, 4, 4, 9,         5, 4, 5, 2, 0, 8, 0, 5, 5, 1,         8, 9, 4, 5, 6, 1, 2, 0, 7, 0,	5, 6, 7, 5, 4, 2, 4, 8, 2, 5, 8, 8, 6, 6, 2, 6, 6, 8, 1, 2, 2, 8, 0, 8, 9, 0, 7, 9, 0, 1, 6, 6, 3, 6, 5, 1, 5, 9, 0, 3, 7, 3, 7, 2, 0, 0, 2, 7, 5, 2, 9, 5, 5, 8, 1, 7, 7, 9, 7, 1, 1, 6, 4, 3, 8, 0, 7, 9, 1, 0, 9, 5, 2, 7, 2, 1, 5, 3, 9, 7, 6, 9, 1, 3, 5, 5, 0, 6, 9, 4, 7, 1, 7, 2, 0, 4, 5, 8, 1, 6, 1, 0, 7, 2, 2, 6, 7, 4, 4, 9,	

Test	Expected	Got
	8, 5, 6, 5, 9, 2, 2, 9, 3, 6,	8, 5, 6, 5, 9, 2, 2, 9, 3, 6,
	0, 1, 7, 9, 8, 1, 1, 5, 4, 5,	0, 1, 7, 9, 8, 1, 1, 5, 4, 5,
	7, 5, 0, 2, 0, 4, 4, 8, 0, 7,	7, 5, 0, 2, 0, 4, 4, 8, 0, 7,
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	6, 7, 1, 0, 7, 0, 7, 9, 4, 0,	6, 7, 1, 0, 7, 0, 7, 9, 4, 0,
	1, 2, 3, 5, 6, 3, 5, 6, 7, 5,	1, 2, 3, 5, 6, 3, 5, 6, 7, 5,
	4, 2, 4, 8, 2, 5, 8, 8, 6, 6,	4, 2, 4, 8, 2, 5, 8, 8, 6, 6,
	2, 6, 6, 8, 1, 2, 2, 8, 0, 8,	2, 6, 6, 8, 1, 2, 2, 8, 0, 8,
	9, 0, 7, 9, 0, 1, 6, 6, 3, 6,	9, 0, 7, 9, 0, 1, 6, 6, 3, 6,
	5, 1, 5, 9, 0, 3, 7, 3, 7, 2,	5, 1, 5, 9, 0, 3, 7, 3, 7, 2,
	0, 0, 2, 7, 5, 2, 9, 5, 5, 8,	0, 0, 2, 7, 5, 2, 9, 5, 5, 8,
	1, 7, 7, 9, 7, 1, 1, 6, 4, 3,	1, 7, 7, 9, 7, 1, 1, 6, 4, 3,
	8, 0, 7, 9, 1, 0, 9, 5, 2, 7,	8, 0, 7, 9, 1, 0, 9, 5, 2, 7,
	2, 1, 5, 3, 9, 7, 6, 9, 1, 3,	2, 1, 5, 3, 9, 7, 6, 9, 1, 3,
	5, 5, 0, 6, 9, 4, 7, 1, 7, 2,	5, 5, 0, 6, 9, 4, 7, 1, 7, 2,
	0, 4, 5, 8, 1, 6, 1, 0, 7, 2,	0, 4, 5, 8, 1, 6, 1, 0, 7, 2,
	2, 6, 7, 4, 4, 9, 5, 4, 5, 2,	2, 6, 7, 4, 4, 9, 5, 4, 5, 2,
	0, 8, 0, 5, 5, 1, 8, 9, 4, 5,	0, 8, 0, 5, 5, 1, 8, 9, 4, 5,
	6, 1, 2, 0, 7, 0, 2, 1, 6, 8,	6, 1, 2, 0, 7, 0, 2, 1, 6, 8,
	8, 7, 8, 7, 0, 1, 8, 5, 6, 5,	8, 7, 8, 7, 0, 1, 8, 5, 6, 5,
	9, 2, 2, 9, 3, 6, 0, 1, 7, 9,	9, 2, 2, 9, 3, 6, 0, 1, 7, 9,
	8, 1, 1, 5, 4, 5, 7, 5, 0, 2,	
	0, 4, 4, 8, 0, 7, 3, 9, 1, 7,	0, 4, 4, 8, 0, 7, 3, 9, 1, 7,
	5, 8, 6, 2, 2, 2, 6, 0, 8, 1,	5, 8, 6, 2, 2, 2, 6, 0, 8, 1,
	9, 6, 8, 4, 8, 4, 3, 7, 0, 7,	9, 6, 8, 4, 8, 4, 3, 7, 0, 7,
	8, 9, 5, 3, 4, 7, 4, 3, 5, 2,	8, 9, 5, 3, 4, 7, 4, 3, 5, 2,
	2, 7, 8, 9, 7, 1, 9, 9, 8, 3,	2, 7, 8, 9, 7, 1, 9, 9, 8, 3,
	5, 7, 1, 6, 9, 1, 2, 0, 6, 8,	5, 7, 1, 6, 9, 1, 2, 0, 6, 8,
	0, 4, 1, 6, 5, 8, 7, 6, 8, 0,	
	5, 7, 8, 8, 6, 7, 5, 8, 0, 7,	
	6, 4, 9, 5, 9, 6, 4, 1, 5, 6,	
	2, 2, 6, 7, 0, 3, 4, 2, 3, 9,	
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	7, 1, 7, 1, 8, 4, 2, 0, 1, 9,	
	0, 7, 9, 2, 8, 9, 2, 5, 3, 5,	
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	4, 5, 2, 5, 7, 7, 0, 9, 6, 6,	
	4, 8, 1, 1, 6, 0, 2, 6, 0, 7,	
	5, 5, 0, 5, 2, 6, 9, 9, 9, 9,	
	2, 3, 0, 6, 8, 8, 4, 5, 6, 2,	
	8, 5, 9, 8, 3, 6, 8, 8, 6, 2,	
	1, 2, 1, 4, 6, 2, 0, 9, 3, 9,	
	6, 4, 2, 3, 6, 2, 0, 9, 8, 7,	
	0, 6, 0, 7, 0, 5, 9, 4, 3, 7,	0, 6, 0, 7, 0, 5, 9, 4, 3, 7,

Test	Expected	Got	
	9, 7, 3, 5, 7, 0, 3, 1, 8, 9,	9, 7, 3, 5, 7, 0, 3, 1, 8, 9,	
	9, 4, 0, 8, 6, 4, 6, 7, 3, 8,	9, 4, 0, 8, 6, 4, 6, 7, 3, 8,	
	1, 2, 1, 5, 4, 9, 5, 9, 5, 8,	1, 2, 1, 5, 4, 9, 5, 9, 5, 8,	
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	3, 0, 3, 9, 7, 1, 7, 2, 5, 0,	3, 0, 3, 9, 7, 1, 7, 2, 5, 0,	
	1, 9, 1, 2, 5, 6, 8, 7, 1, 6,	1, 9, 1, 2, 5, 6, 8, 7, 1, 6,	
	9]	9]	

	Test	Expected	Got	
<b>~</b>	int arr[] = {8, 0, 8, 8, 9, 3, 3, 5, 4, 9, 7, 9,	[8, 0, 8, 8, 9, 3, 3, 5, 4,	[8, 0, 8, 8, 9, 3, 3, 5, 4,	~
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	1, 0, 1, 4, 9, 0, 1, 8, 0, 2, 7, 1, 5, 7, 6, 7, 7,	4, 5, 1, 1, 5, 3, 8, 6, 1, 1,	4, 5, 1, 1, 5, 3, 8, 6, 1, 1,	
	9, 5, 0, 9, 6, 3, 7, 6, 6, 4, 6, 2, 9, 1, 5, 0, 8,	1, 0, 1, 4, 9, 0, 1, 8, 0, 2,	1, 0, 1, 4, 9, 0, 1, 8, 0, 2,	
	6, 0, 8, 6, 3, 0, 3, 6, 8, 5, 0, 1, 9, 9, 6, 3, 3,	7, 1, 5, 7, 6, 7, 7, 9, 5, 0,	7, 1, 5, 7, 6, 7, 7, 9, 5, 0,	
	2, 9, 2, 0, 0, 5, 0, 4, 6, 7, 2, 6, 5, 2, 8, 8, 7,	9, 6, 3, 7, 6, 6, 4, 6, 2, 9,	9, 6, 3, 7, 6, 6, 4, 6, 2, 9,	
	1, 0, 9, 7, 7, 1, 5, 8, 7, 5, 7, 8, 7, 8, 7, 1, 7,	1, 5, 0, 8, 6, 0, 8, 6, 3, 0,	1, 5, 0, 8, 6, 0, 8, 6, 3, 0,	
	9, 7, 1, 3, 0, 5, 5, 1, 0, 2, 1, 0, 1, 5, 3, 7, 7,	3, 6, 8, 5, 0, 1, 9, 9, 6, 3,	3, 6, 8, 5, 0, 1, 9, 9, 6, 3,	
	9, 6, 1, 6, 4, 8, 9, 8, 6, 0, 0, 3, 6, 2, 3, 4, 9,	3, 2, 9, 2, 0, 0, 5, 0, 4, 6,	3, 2, 9, 2, 0, 0, 5, 0, 4, 6,	
	7, 4, 2, 2, 9, 7, 7, 4, 9, 9, 7, 5, 6, 2, 4, 0, 1,	7, 2, 6, 5, 2, 8, 8, 7, 1, 0,	7, 2, 6, 5, 2, 8, 8, 7, 1, 0,	
	9, 9, 8, 4, 6, 1, 2, 9, 6, 7, 9, 4, 7, 5, 2, 9, 4,	9, 7, 7, 1, 5, 8, 7, 5, 7, 8,	9, 7, 7, 1, 5, 8, 7, 5, 7, 8,	
	2, 5, 9, 4, 1, 6, 0, 0, 5, 0, 0, 6, 1, 7, 8, 6, 9,	7, 8, 7, 1, 7, 9, 7, 1, 3, 0,	7, 8, 7, 1, 7, 9, 7, 1, 3, 0,	
	5, 4, 7, 0, 5, 3, 2, 4, 9, 9, 2, 3, 4, 4, 1, 8, 2,	5, 5, 1, 0, 2, 1, 0, 1, 5, 3,	5, 5, 1, 0, 2, 1, 0, 1, 5, 3,	
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	7, 3, 1, 7, 7, 5, 4, 5, 6, 2, 1, 7, 5, 9, 7, 4, 8,	6, 0, 0, 3, 6, 2, 3, 4, 9, 7,	6, 0, 0, 3, 6, 2, 3, 4, 9, 7,	
	4, 6, 9, 3, 4, 4, 3, 7, 1, 3, 9, 3, 3, 7, 9, 7, 9,	4, 2, 2, 9, 7, 7, 4, 9, 9, 7,	4, 2, 2, 9, 7, 7, 4, 9, 9, 7,	
	4, 6, 0, 5, 5, 5, 6, 2, 5, 5, 9, 0, 2, 9, 0, 3, 8,	5, 6, 2, 4, 0, 1, 9, 9, 8, 4,	5, 6, 2, 4, 0, 1, 9, 9, 8, 4,	
	7, 6, 1, 0, 4, 0, 7, 4, 2, 5, 0, 0, 6, 4, 3, 6, 0,	6, 1, 2, 9, 6, 7, 9, 4, 7, 5,	6, 1, 2, 9, 6, 7, 9, 4, 7, 5,	
	9, 2, 4, 1, 0, 3, 8, 0, 1, 7, 3, 8, 9, 0, 5, 3, 2,	2, 9, 4, 2, 5, 9, 4, 1, 6, 0,	2, 9, 4, 2, 5, 9, 4, 1, 6, 0,	
	8, 4, 0, 4, 6, 9, 8, 6, 5, 2, 7, 9, 0, 1, 7, 5, 5,	0, 5, 0, 0, 6, 1, 7, 8, 6, 9,	0, 5, 0, 0, 6, 1, 7, 8, 6, 9,	
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	8, 4, 9, 5, 6, 5, 4, 2, 5, 9, 7, 3, 0, 6, 6, 8, 8,	4, 5, 6, 2, 1, 7, 5, 9, 7, 4,	4, 5, 6, 2, 1, 7, 5, 9, 7, 4,	
	7, 1, 0, 5, 3, 5, 5, 9, 4, 8, 4, 6, 9, 3, 8, 3, 4,	8, 4, 6, 9, 3, 4, 4, 3, 7, 1,	8, 4, 6, 9, 3, 4, 4, 3, 7, 1,	
	9, 6, 8, 9, 7, 3, 4, 1, 0, 1, 2, 0, 0, 8, 1, 8, 5,	3, 9, 3, 3, 7, 9, 7, 9, 4, 6,	3, 9, 3, 3, 7, 9, 7, 9, 4, 6,	
	1, 5, 1, 0, 1, 1, 4, 0, 8, 7, 2, 8, 0, 0, 9, 6, 2,	0, 5, 5, 5, 6, 2, 5, 5, 9, 0,		
	1, 5, 1, 3, 4, 2, 5, 2, 0, 2, 5, 8, 1, 1, 6, 4, 6,	2, 9, 0, 3, 8, 7, 6, 1, 0, 4,		
	5, 8, 5, 9, 5, 8, 1, 8, 5, 4, 2, 0, 5, 5, 0, 1, 9,		0, 7, 4, 2, 5, 0, 0, 6, 4, 3,	
	7, 1, 1, 7, 6, 1, 8, 8, 4, 6, 4, 4, 3, 1, 0, 3, 3,	6, 0, 9, 2, 4, 1, 0, 3, 8, 0,		
	7, 9, 7, 9, 5, 1, 5, 1, 5, 2, 0, 3, 1, 4, 9, 2, 6,	1, 7, 3, 8, 9, 0, 5, 3, 2, 8,		
	5, 3, 2, 7, 8, 1, 6, 7, 0, 2, 7, 6, 1, 5, 8, 3, 5,	4, 0, 4, 6, 9, 8, 6, 5, 2, 7,		
	0, 4, 7, 9, 8, 8, 2, 6, 9, 9, 7, 8, 3, 8, 8, 0, 8,	9, 0, 1, 7, 5, 5, 9, 5, 6, 8,		
	6, 4, 5, 7, 2, 0, 7, 3, 5, 5, 3, 5, 6, 2, 3, 3, 1,	2, 8, 6, 7, 4, 5, 9, 0, 2, 6,		
	2, 4, 4, 4, 5, 5, 4, 9, 7, 0, 8, 0, 4, 3, 0, 9, 7,	8, 4, 3, 5, 9, 9, 1, 0, 3, 2,		
	7, 8, 1, 3, 7, 1, 5, 4, 7, 6, 3, 8, 6, 7, 5, 4, 2,	3, 8, 1, 0, 5, 9, 6, 8, 9, 0,		
	0, 6, 7, 4, 7, 4, 6, 1, 3, 7, 2, 4, 4, 0, 1, 2, 9,	9, 9, 4, 7, 5, 1, 7, 0, 3, 8,		
	1, 9, 5, 7, 1, 7, 7, 3, 2, 9, 8, 2, 4, 4, 9, 0, 5,	9, 9, 1, 0, 3, 0, 4, 2, 6, 6,		
	6, 7, 9, 1, 8, 3, 8, 2, 3, 2, 4, 6, 2, 0, 7, 5, 9,	9, 1, 2, 5, 2, 3, 5, 1, 5, 0,		
	5, 2, 2, 6, 8, 6, 9, 9, 3, 0, 4, 1, 5, 2, 3, 9, 3,	1, 6, 4, 8, 8, 4, 9, 5, 6, 5,		
	9, 1, 7, 3, 1, 2, 8, 2, 0, 4, 1, 1, 8, 4, 8, 2, 0,	4, 2, 5, 9, 7, 3, 0, 6, 6, 8,	4, 2, 5, 9, 7, 3, 0, 6, 6, 8,	
	0, 6, 6, 5, 1, 3, 5, 0, 6, 1, 6, 1, 7, 9, 2, 3, 5,	8, 7, 1, 0, 5, 3, 5, 5, 9, 4,		
	2, 9, 6, 8, 3, 6, 9, 4, 1, 0, 8, 7, 2, 5, 7, 4, 4,	8, 4, 6, 9, 3, 8, 3, 4, 9, 6,		
	0, 2, 0, 6, 6, 4, 9, 1, 8, 1, 1, 8, 8, 3, 5, 2, 5,	8, 9, 7, 3, 4, 1, 0, 1, 2, 0,		
	5, 5, 1, 8, 3, 7, 8, 8, 1, 1, 5, 5, 1, 9, 7, 2, 2,	0, 8, 1, 8, 5, 1, 5, 1, 0, 1,		
	7, 2, 4, 4, 1, 0, 0, 0, 8, 7, 9, 4, 0, 0, 3, 5, 5,	1, 4, 0, 8, 7, 2, 8, 0, 0, 9,	1, 4, 0, 8, 7, 2, 8, 0, 0, 9,	

/31/24, 9:44 AM	

Test	Expected	Got
1, 9, 5, 9, 3, 7, 5, 9, 0, 9, 8, 2, 7, 2, 0, 5, 2	, 6, 2, 1, 5, 1, 3, 4, 2, 5, 2,	6, 2, 1, 5, 1, 3, 4, 2, 5, 2,
5, 1, 6, 0, 8, 5, 2, 4, 9, 0, 8, 3, 9, 1, 9, 9, 2	, 0, 2, 5, 8, 1, 1, 6, 4, 6, 5,	0, 2, 5, 8, 1, 1, 6, 4, 6, 5,
5, 5, 3, 0, 5, 4, 4, 5, 3, 2, 0, 2, 4, 3, 5, 1, 9	, 8, 5, 9, 5, 8, 1, 8, 5, 4, 2,	8, 5, 9, 5, 8, 1, 8, 5, 4, 2,
3, 0, 8, 1, 4, 4, 9, 9, 0, 9, 9, 1, 3, 0, 1, 1, 9	, 0, 5, 5, 0, 1, 9, 7, 1, 1, 7,	0, 5, 5, 0, 1, 9, 7, 1, 1, 7,
6, 9, 2, 4, 4, 2, 5, 2, 3, 9, 6, 2, 3, 0, 8, 3, 2	, 6, 1, 8, 8, 4, 6, 4, 4, 3, 1,	6, 1, 8, 8, 4, 6, 4, 4, 3, 1,
8, 8, 3, 0, 5, 1, 8, 8, 2, 9, 3, 7, 7, 4, 9, 6, 2	, 0, 3, 3, 7, 9, 7, 9, 5, 1, 5,	0, 3, 3, 7, 9, 7, 9, 5, 1, 5,
0, 0, 6, 8, 4, 6, 7, 7, 8, 0, 7, 7, 5, 6, 5, 6, 2	, 1, 5, 2, 0, 3, 1, 4, 9, 2, 6,	1, 5, 2, 0, 3, 1, 4, 9, 2, 6,
8, 3, 2, 7, 5, 7, 4, 0, 0, 2, 2, 6, 7, 8, 5, 9, 3	, 5, 3, 2, 7, 8, 1, 6, 7, 0, 2,	5, 3, 2, 7, 8, 1, 6, 7, 0, 2,
3, 0, 6, 5, 4, 5, 9, 4, 1, 2, 9, 7, 6, 2, 0, 2, 3	, 7, 6, 1, 5, 8, 3, 5, 0, 4, 7,	7, 6, 1, 5, 8, 3, 5, 0, 4, 7,
3, 8, 0, 1, 8, 4, 7, 1, 0, 6, 4, 1, 0, 4, 0, 4, 8	, 9, 8, 8, 2, 6, 9, 9, 7, 8, 3,	9, 8, 8, 2, 6, 9, 9, 7, 8, 3,
9, 5, 1, 0, 5, 2, 4, 5, 6, 3, 5, 2, 2, 9, 6, 0, 2	, 8, 8, 0, 8, 6, 4, 5, 7, 2, 0,	8, 8, 0, 8, 6, 4, 5, 7, 2, 0,
1, 2, 9, 7, 8, 3, 1, 6, 0, 2, 2, 7, 8, 9, 3, 4, 5	, 7, 3, 5, 5, 3, 5, 6, 2, 3, 3,	7, 3, 5, 5, 3, 5, 6, 2, 3, 3,
7, 8, 4, 0, 7, 2, 8};	1, 2, 4, 4, 4, 5, 5, 4, 9, 7,	1, 2, 4, 4, 4, 5, 5, 4, 9, 7,
int k = 389;	0, 8, 0, 4, 3, 0, 9, 7, 7, 8,	0, 8, 0, 4, 3, 0, 9, 7, 7, 8,
<pre>LLNode* head = LLNode::createWithIterators(arr,</pre>	1, 3, 7, 1, 5, 4, 7, 6, 3, 8,	1, 3, 7, 1, 5, 4, 7, 6, 3, 8,
<pre>arr + sizeof(arr) / sizeof(int));</pre>	6, 7, 5, 4, 2, 0, 6, 7, 4, 7,	6, 7, 5, 4, 2, 0, 6, 7, 4, 7,
<pre>LLNode::printList(head);</pre>	4, 6, 1, 3, 7, 2, 4, 4, 0, 1,	4, 6, 1, 3, 7, 2, 4, 4, 0, 1,
cout << "\n";	2, 9, 1, 9, 5, 7, 1, 7, 7, 3,	2, 9, 1, 9, 5, 7, 1, 7, 7, 3,
<pre>LLNode* newhead = rotateLinkedList(head, k);</pre>	2, 9, 8, 2, 4, 4, 9, 0, 5, 6,	2, 9, 8, 2, 4, 4, 9, 0, 5, 6,
<pre>LLNode::printList(newhead);</pre>	7, 9, 1, 8, 3, 8, 2, 3, 2, 4,	
	6, 2, 0, 7, 5, 9, 5, 2, 2, 6,	6, 2, 0, 7, 5, 9, 5, 2, 2, 6,
	8, 6, 9, 9, 3, 0, 4, 1, 5, 2,	
	3, 9, 3, 9, 1, 7, 3, 1, 2, 8,	
	2, 0, 4, 1, 1, 8, 4, 8, 2, 0,	
	0, 6, 6, 5, 1, 3, 5, 0, 6, 1,	
	6, 1, 7, 9, 2, 3, 5, 2, 9, 6,	
	8, 3, 6, 9, 4, 1, 0, 8, 7, 2,	
	5, 7, 4, 4, 0, 2, 0, 6, 6, 4,	
	9, 1, 8, 1, 1, 8, 8, 3, 5, 2,	
		5, 5, 5, 1, 8, 3, 7, 8, 8, 1,
		1, 5, 5, 1, 9, 7, 2, 2, 7, 2,
	4, 4, 1, 0, 0, 0, 8, 7, 9, 4,	
	0, 0, 3, 5, 5, 1, 9, 5, 9, 3,	
		7, 5, 9, 0, 9, 8, 2, 7, 2, 0, 5, 2, 5, 1, 6, 0, 8, 5, 2, 4,
		9, 0, 8, 3, 9, 1, 9, 9, 2, 5,
		5, 3, 0, 5, 4, 4, 5, 3, 2, 0,
		2, 4, 3, 5, 1, 9, 3, 0, 8, 1,
	4, 4, 9, 9, 0, 9, 9, 1, 3, 0,	
	1, 1, 9, 6, 9, 2, 4, 4, 2, 5,	
		2, 3, 9, 6, 2, 3, 0, 8, 3, 2,
	8, 8, 3, 0, 5, 1, 8, 8, 2, 9,	
		3, 7, 7, 4, 9, 6, 2, 0, 0, 6,
	8, 4, 6, 7, 7, 8, 0, 7, 7, 5,	
		6, 5, 6, 2, 8, 3, 2, 7, 5, 7,
		4, 0, 0, 2, 2, 6, 7, 8, 5, 9,
		3, 3, 0, 6, 5, 4, 5, 9, 4, 1,
		2, 9, 7, 6, 2, 0, 2, 3, 3, 8,

Test	Expected	Got	
	0, 1, 8, 4, 7, 1, 0, 6, 4, 1,	0, 1, 8, 4, 7, 1, 0, 6, 4, 1,	
	0, 4, 0, 4, 8, 9, 5, 1, 0, 5,	0, 4, 0, 4, 8, 9, 5, 1, 0, 5,	
	2, 4, 5, 6, 3, 5, 2, 2, 9, 6,	2, 4, 5, 6, 3, 5, 2, 2, 9, 6,	
	0, 2, 1, 2, 9, 7, 8, 3, 1, 6,	0, 2, 1, 2, 9, 7, 8, 3, 1, 6,	
	0, 2, 2, 7, 8, 9, 3, 4, 5, 7,	0, 2, 2, 7, 8, 9, 3, 4, 5, 7,	
	8, 4, 0, 7, 2, 8]	8, 4, 0, 7, 2, 8]	
	[6, 3, 8, 6, 7, 5, 4, 2, 0,	[6, 3, 8, 6, 7, 5, 4, 2, 0,	
	6, 7, 4, 7, 4, 6, 1, 3, 7, 2,	6, 7, 4, 7, 4, 6, 1, 3, 7, 2,	
	4, 4, 0, 1, 2, 9, 1, 9, 5, 7,	4, 4, 0, 1, 2, 9, 1, 9, 5, 7,	
	1, 7, 7, 3, 2, 9, 8, 2, 4, 4,	1, 7, 7, 3, 2, 9, 8, 2, 4, 4,	
	9, 0, 5, 6, 7, 9, 1, 8, 3, 8,	9, 0, 5, 6, 7, 9, 1, 8, 3, 8,	
	2, 3, 2, 4, 6, 2, 0, 7, 5, 9,	2, 3, 2, 4, 6, 2, 0, 7, 5, 9,	
	5, 2, 2, 6, 8, 6, 9, 9, 3, 0,	5, 2, 2, 6, 8, 6, 9, 9, 3, 0,	
	4, 1, 5, 2, 3, 9, 3, 9, 1, 7,	4, 1, 5, 2, 3, 9, 3, 9, 1, 7,	
	3, 1, 2, 8, 2, 0, 4, 1, 1, 8,	3, 1, 2, 8, 2, 0, 4, 1, 1, 8,	
	4, 8, 2, 0, 0, 6, 6, 5, 1, 3,	4, 8, 2, 0, 0, 6, 6, 5, 1, 3,	
	5, 0, 6, 1, 6, 1, 7, 9, 2, 3, 5, 2, 9, 6, 8, 3, 6, 9, 4, 1,	5, 0, 6, 1, 6, 1, 7, 9, 2, 3, 5, 2, 9, 6, 8, 3, 6, 9, 4, 1,	
	0, 8, 7, 2, 5, 7, 4, 4, 0, 2,	0, 8, 7, 2, 5, 7, 4, 4, 0, 2,	
	0, 6, 6, 4, 9, 1, 8, 1, 1, 8,	0, 6, 6, 4, 9, 1, 8, 1, 1, 8,	
	8, 3, 5, 2, 5, 5, 5, 1, 8, 3,	8, 3, 5, 2, 5, 5, 5, 1, 8, 3,	
	7, 8, 8, 1, 1, 5, 5, 1, 9, 7,	7, 8, 8, 1, 1, 5, 5, 1, 9, 7,	
	2, 2, 7, 2, 4, 4, 1, 0, 0, 0,	2, 2, 7, 2, 4, 4, 1, 0, 0, 0,	
	8, 7, 9, 4, 0, 0, 3, 5, 5, 1,	8, 7, 9, 4, 0, 0, 3, 5, 5, 1,	
	9, 5, 9, 3, 7, 5, 9, 0, 9, 8,	9, 5, 9, 3, 7, 5, 9, 0, 9, 8,	
	2, 7, 2, 0, 5, 2, 5, 1, 6, 0,	2, 7, 2, 0, 5, 2, 5, 1, 6, 0,	
	8, 5, 2, 4, 9, 0, 8, 3, 9, 1,	8, 5, 2, 4, 9, 0, 8, 3, 9, 1,	
	9, 9, 2, 5, 5, 3, 0, 5, 4, 4,	9, 9, 2, 5, 5, 3, 0, 5, 4, 4,	
	5, 3, 2, 0, 2, 4, 3, 5, 1, 9,	5, 3, 2, 0, 2, 4, 3, 5, 1, 9,	
	3, 0, 8, 1, 4, 4, 9, 9, 0, 9,	3, 0, 8, 1, 4, 4, 9, 9, 0, 9,	
	9, 1, 3, 0, 1, 1, 9, 6, 9, 2,	9, 1, 3, 0, 1, 1, 9, 6, 9, 2,	
	4, 4, 2, 5, 2, 3, 9, 6, 2, 3,	4, 4, 2, 5, 2, 3, 9, 6, 2, 3,	
	0, 8, 3, 2, 8, 8, 3, 0, 5, 1,	0, 8, 3, 2, 8, 8, 3, 0, 5, 1,	
	8, 8, 2, 9, 3, 7, 7, 4, 9, 6,		
	2, 0, 0, 6, 8, 4, 6, 7, 7, 8,		
	0, 7, 7, 5, 6, 5, 6, 2, 8, 3,		
	2, 7, 5, 7, 4, 0, 0, 2, 2, 6,		
	7, 8, 5, 9, 3, 3, 0, 6, 5, 4,		
	5, 9, 4, 1, 2, 9, 7, 6, 2, 0,		
	2, 3, 3, 8, 0, 1, 8, 4, 7, 1,		
	0, 6, 4, 1, 0, 4, 0, 4, 8, 9,		
	5, 1, 0, 5, 2, 4, 5, 6, 3, 5,		
	2, 2, 9, 6, 0, 2, 1, 2, 9, 7,		
	8, 3, 1, 6, 0, 2, 2, 7, 8, 9,		
	3, 4, 5, 7, 8, 4, 0, 7, 2, 8,		
	8, 0, 8, 8, 9, 3, 3, 5, 4, 9,		
	7, 9, 5, 3, 8, 6, 1, 0, 6, 4, 5, 1, 1, 5, 3, 8, 6, 1, 1, 1,		
	, , , , , , , , , , , , , , , , , , , ,	-, -, -, -, -, -, -, -, -, -, -, -,	

Test	Expected	Got	
	0, 1, 4, 9, 0, 1, 8, 0, 2, 7,	0, 1, 4, 9, 0, 1, 8, 0, 2, 7,	
	1, 5, 7, 6, 7, 7, 9, 5, 0, 9,	1, 5, 7, 6, 7, 7, 9, 5, 0, 9,	
	6, 3, 7, 6, 6, 4, 6, 2, 9, 1,	6, 3, 7, 6, 6, 4, 6, 2, 9, 1,	
	5, 0, 8, 6, 0, 8, 6, 3, 0, 3,	5, 0, 8, 6, 0, 8, 6, 3, 0, 3,	
	6, 8, 5, 0, 1, 9, 9, 6, 3, 3,	6, 8, 5, 0, 1, 9, 9, 6, 3, 3,	
	2, 9, 2, 0, 0, 5, 0, 4, 6, 7,	2, 9, 2, 0, 0, 5, 0, 4, 6, 7,	
	2, 6, 5, 2, 8, 8, 7, 1, 0, 9,	2, 6, 5, 2, 8, 8, 7, 1, 0, 9,	
	7, 7, 1, 5, 8, 7, 5, 7, 8, 7,	7, 7, 1, 5, 8, 7, 5, 7, 8, 7,	
	8, 7, 1, 7, 9, 7, 1, 3, 0, 5,	8, 7, 1, 7, 9, 7, 1, 3, 0, 5,	
	5, 1, 0, 2, 1, 0, 1, 5, 3, 7,	5, 1, 0, 2, 1, 0, 1, 5, 3, 7,	
	7, 9, 6, 1, 6, 4, 8, 9, 8, 6,	7, 9, 6, 1, 6, 4, 8, 9, 8, 6,	
	0, 0, 3, 6, 2, 3, 4, 9, 7, 4,	0, 0, 3, 6, 2, 3, 4, 9, 7, 4,	
	2, 2, 9, 7, 7, 4, 9, 9, 7, 5,	2, 2, 9, 7, 7, 4, 9, 9, 7, 5,	
	6, 2, 4, 0, 1, 9, 9, 8, 4, 6,	6, 2, 4, 0, 1, 9, 9, 8, 4, 6,	
	1, 2, 9, 6, 7, 9, 4, 7, 5, 2,	1, 2, 9, 6, 7, 9, 4, 7, 5, 2,	
	9, 4, 2, 5, 9, 4, 1, 6, 0, 0,	9, 4, 2, 5, 9, 4, 1, 6, 0, 0,	
	5, 0, 0, 6, 1, 7, 8, 6, 9, 5,	5, 0, 0, 6, 1, 7, 8, 6, 9, 5,	
	4, 7, 0, 5, 3, 2, 4, 9, 9, 2,	4, 7, 0, 5, 3, 2, 4, 9, 9, 2,	
	3, 4, 4, 1, 8, 2, 4, 4, 6, 2,	3, 4, 4, 1, 8, 2, 4, 4, 6, 2,	
	0, 5, 9, 4, 5, 8, 1, 8, 4, 7,	0, 5, 9, 4, 5, 8, 1, 8, 4, 7,	
	5, 4, 9, 7, 3, 1, 7, 7, 5, 4,	5, 4, 9, 7, 3, 1, 7, 7, 5, 4,	
	5, 6, 2, 1, 7, 5, 9, 7, 4, 8,	5, 6, 2, 1, 7, 5, 9, 7, 4, 8,	
	4, 6, 9, 3, 4, 4, 3, 7, 1, 3,	4, 6, 9, 3, 4, 4, 3, 7, 1, 3,	
	9, 3, 3, 7, 9, 7, 9, 4, 6, 0,	9, 3, 3, 7, 9, 7, 9, 4, 6, 0,	
	5, 5, 5, 6, 2, 5, 5, 9, 0, 2,	5, 5, 5, 6, 2, 5, 5, 9, 0, 2,	
	9, 0, 3, 8, 7, 6, 1, 0, 4, 0, 7, 4, 2, 5, 0, 0, 6, 4, 3, 6,	9, 0, 3, 8, 7, 6, 1, 0, 4, 0,	
	0, 9, 2, 4, 1, 0, 3, 8, 0, 1,	7, 4, 2, 5, 0, 0, 6, 4, 3, 6, 0, 9, 2, 4, 1, 0, 3, 8, 0, 1,	
		7, 3, 8, 9, 0, 5, 3, 2, 8, 4,	
	0, 4, 6, 9, 8, 6, 5, 2, 7, 9,		
	0, 1, 7, 5, 5, 9, 5, 6, 8, 2,		
	8, 6, 7, 4, 5, 9, 0, 2, 6, 8,		
	4, 3, 5, 9, 9, 1, 0, 3, 2, 3,		
	8, 1, 0, 5, 9, 6, 8, 9, 0, 9,		
	9, 4, 7, 5, 1, 7, 0, 3, 8, 9,		
	9, 1, 0, 3, 0, 4, 2, 6, 6, 9,		
	1, 2, 5, 2, 3, 5, 1, 5, 0, 1,	1, 2, 5, 2, 3, 5, 1, 5, 0, 1,	
	6, 4, 8, 8, 4, 9, 5, 6, 5, 4,	6, 4, 8, 8, 4, 9, 5, 6, 5, 4,	
	2, 5, 9, 7, 3, 0, 6, 6, 8, 8,	2, 5, 9, 7, 3, 0, 6, 6, 8, 8,	
	7, 1, 0, 5, 3, 5, 5, 9, 4, 8,	7, 1, 0, 5, 3, 5, 5, 9, 4, 8,	
	4, 6, 9, 3, 8, 3, 4, 9, 6, 8,	4, 6, 9, 3, 8, 3, 4, 9, 6, 8,	
	9, 7, 3, 4, 1, 0, 1, 2, 0, 0,	9, 7, 3, 4, 1, 0, 1, 2, 0, 0,	
	8, 1, 8, 5, 1, 5, 1, 0, 1, 1,	8, 1, 8, 5, 1, 5, 1, 0, 1, 1,	
	4, 0, 8, 7, 2, 8, 0, 0, 9, 6,	4, 0, 8, 7, 2, 8, 0, 0, 9, 6,	
	2, 1, 5, 1, 3, 4, 2, 5, 2, 0,	2, 1, 5, 1, 3, 4, 2, 5, 2, 0,	
	2, 5, 8, 1, 1, 6, 4, 6, 5, 8,	2, 5, 8, 1, 1, 6, 4, 6, 5, 8,	
	5, 9, 5, 8, 1, 8, 5, 4, 2, 0,	5, 9, 5, 8, 1, 8, 5, 4, 2, 0,	
	5, 5, 0, 1, 9, 7, 1, 1, 7, 6,	5, 5, 0, 1, 9, 7, 1, 1, 7, 6,	

Test	Expected	Got
	1, 8, 8, 4, 6, 4, 4, 3, 1, 0,	1, 8, 8, 4, 6, 4, 4, 3, 1, 0,
	3, 3, 7, 9, 7, 9, 5, 1, 5, 1,	3, 3, 7, 9, 7, 9, 5, 1, 5, 1,
	5, 2, 0, 3, 1, 4, 9, 2, 6, 5,	5, 2, 0, 3, 1, 4, 9, 2, 6, 5,
	3, 2, 7, 8, 1, 6, 7, 0, 2, 7,	3, 2, 7, 8, 1, 6, 7, 0, 2, 7,
	6, 1, 5, 8, 3, 5, 0, 4, 7, 9,	6, 1, 5, 8, 3, 5, 0, 4, 7, 9,
	8, 8, 2, 6, 9, 9, 7, 8, 3, 8,	8, 8, 2, 6, 9, 9, 7, 8, 3, 8,
	8, 0, 8, 6, 4, 5, 7, 2, 0, 7,	8, 0, 8, 6, 4, 5, 7, 2, 0, 7,
	3, 5, 5, 3, 5, 6, 2, 3, 3, 1,	3, 5, 5, 3, 5, 6, 2, 3, 3, 1,
	2, 4, 4, 4, 5, 5, 4, 9, 7, 0,	2, 4, 4, 4, 5, 5, 4, 9, 7, 0,
	8, 0, 4, 3, 0, 9, 7, 7, 8, 1,	8, 0, 4, 3, 0, 9, 7, 7, 8, 1,
	3, 7, 1, 5, 4, 7]	3, 7, 1, 5, 4, 7]

 Test	Expected	Got	
int arr[] = {3, 1, 6, 8, 6, 6, 1, 5, 7, 1, 7, 6,	[3, 1, 6, 8, 6, 6, 1, 5, 7,	[3, 1, 6, 8, 6, 6, 1, 5, 7,	~
7, 1, 9, 6, 8, 9, 7, 6, 4, 0, 3, 8, 9, 4, 7, 1, 1,	1, 7, 6, 7, 1, 9, 6, 8, 9, 7,	1, 7, 6, 7, 1, 9, 6, 8, 9, 7,	
6, 9, 3, 8, 8, 0, 4, 9, 7, 4, 7, 6, 3, 4, 9, 9, 6,	6, 4, 0, 3, 8, 9, 4, 7, 1, 1,	6, 4, 0, 3, 8, 9, 4, 7, 1, 1,	
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		Test	Test		Expected	Got
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Test	Expected	Got
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3, 2, 4, 1, 2, 2, 9, 1, 9, 0, 4, 3, 6, 1, 6, 1, 1,	9, 7, 5, 9, 9, 4, 8, 3, 3, 6,	9, 7, 5, 9, 9, 4, 8, 3, 3, 6,
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1, 0, 7, 2, 1, 3, 3, 7, 7, 6, 9, 1, 3, 8, 5, 6, 2,	7, 4, 2, 3, 9, 3, 9, 6, 0, 7,	7, 4, 2, 3, 9, 3, 9, 6, 0, 7,
8, 8, 3, 7, 3, 4, 7, 6, 6, 8, 5, 1, 7, 8, 1, 5, 3,	8, 0, 0, 7, 9, 1, 6, 0, 7, 1,	8, 0, 0, 7, 9, 1, 6, 0, 7, 1,
7, 9, 6, 3, 8, 4, 8, 0, 4, 7, 7, 2, 9, 2, 6, 2, 8,	6, 1, 0, 9, 1, 0, 9, 1, 8, 3,	6, 1, 0, 9, 1, 0, 9, 1, 8, 3,
7, 7, 5, 9, 4, 4, 3, 0, 6, 2, 2, 6, 5, 4, 4, 7, 8,	6, 8, 1, 2, 8, 5, 9, 7, 1, 1,	6, 8, 1, 2, 8, 5, 9, 7, 1, 1,
0, 7, 5, 8, 5, 6, 7, 2, 5, 3, 4, 6, 4, 4};	5, 4, 5, 7, 5, 9, 4, 9, 5, 4,	5, 4, 5, 7, 5, 9, 4, 9, 5, 4,
int k = 1000;	2, 4, 4, 1, 1, 3, 1, 9, 8, 6,	2, 4, 4, 1, 1, 3, 1, 9, 8, 6,
LLNode* head = LLNode::createWithIterators(arr,	4, 1, 2, 2, 4, 2, 9, 8, 2, 4,	4, 1, 2, 2, 4, 2, 9, 8, 2, 4,
<pre>arr + sizeof(arr) / sizeof(int));</pre>	9, 0, 3, 6, 1, 1, 8, 4, 2, 0,	9, 0, 3, 6, 1, 1, 8, 4, 2, 0,
LLNode::printList(head);	7, 6, 7, 3, 9, 7, 0, 9, 8, 6,	7, 6, 7, 3, 9, 7, 0, 9, 8, 6,
cout << "\n";	0, 5, 1, 8, 0, 2, 9, 5, 5, 8,	
<pre>LLNode* newhead = rotateLinkedList(head, k);</pre>	5, 3, 9, 8, 7, 0, 4, 8, 2, 2,	5, 3, 9, 8, 7, 0, 4, 8, 2, 2,
LLNode::printList(newhead);	6, 8, 4, 1, 4, 7, 2, 2, 1, 0,	
	6, 4, 8, 9, 5, 1, 0, 2, 6, 3,	
	9, 1, 2, 0, 1, 3, 6, 4, 7, 0,	
	0, 5, 6, 7, 3, 2, 6, 8, 8, 5,	
	4, 8, 4, 5, 0, 2, 8, 1, 2, 9,	
	9, 5, 1, 4, 8, 8, 1, 3, 9, 2,	
	8, 6, 1, 0, 8, 7, 3, 7, 3, 6,	
	9, 7, 1, 7, 9, 3, 3, 8, 7, 9,	
	1, 9, 1, 9, 4, 1, 1, 0, 3, 6,	
		7, 5, 3, 7, 8, 8, 1, 4, 9, 0,
	3, 9, 9, 6, 4, 8, 2, 6, 7, 9,	
	0, 3, 9, 0, 6, 8, 9, 2, 1, 2,	
		5, 0, 8, 8, 4, 5, 6, 3, 7, 5,
		2, 0, 0, 2, 1, 2, 4, 7, 8, 3,
		0, 8, 2, 1, 4, 5, 1, 7, 6, 4,
		1, 3, 5, 3, 7, 3, 9, 2, 8, 8,
		0, 6, 1, 0, 2, 5, 3, 2, 1, 4,
		4, 1, 6, 2, 8, 7, 2, 8, 1, 4,         7, 0, 6, 0, 5, 5, 0, 9, 6, 0,
		6, 8, 6, 7, 7, 3, 9, 0, 2, 9,
		0, 6, 7, 4, 7, 3, 3, 1, 1, 3,
		7, 0, 3, 2, 4, 1, 6, 4, 2, 9,
		3, 8, 3, 1, 3, 4, 8, 4, 3, 6,
		3, 4, 6, 7, 8, 3, 0, 7, 2, 3,
		3, 9, 6, 8, 3, 0, 3, 1, 2, 2,
		7, 7, 1, 9, 7, 8, 0, 6, 1, 7,
		4, 2, 1, 5, 5, 1, 4, 7, 7, 8,
		6, 3, 2, 4, 7, 4, 3, 5, 0, 4,
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		3, 2, 9, 4, 1, 4, 8, 3, 7, 2,
		3, 3, 4, 5, 9, 0, 1, 0, 8, 5,
		1, 1, 7, 4, 8, 6, 1, 0, 9, 5,

Test	Expected	Got
	5, 3, 9, 8, 0, 0, 8, 1, 0, 8,	5, 3, 9, 8, 0, 0, 8, 1, 0, 8,
	8, 7, 3, 6, 2, 3, 0, 8, 2, 5,	8, 7, 3, 6, 2, 3, 0, 8, 2, 5,
	2, 2, 3, 3, 2, 2, 9, 4, 4, 4,	2, 2, 3, 3, 2, 2, 9, 4, 4, 4,
	1, 0, 8, 3, 4, 8, 9, 1, 1, 0,	1, 0, 8, 3, 4, 8, 9, 1, 1, 0,
	8, 2, 6, 0, 9, 3, 5, 6, 3, 8,	8, 2, 6, 0, 9, 3, 5, 6, 3, 8,
	5, 4, 5, 8, 9, 0, 3, 9, 8, 9,	
	8, 3, 5, 4, 5, 4, 3, 8, 0, 3,	8, 3, 5, 4, 5, 4, 3, 8, 0, 3,
	4, 5, 1, 3, 4, 6, 7, 9, 6, 5,	4, 5, 1, 3, 4, 6, 7, 9, 6, 5,
	4, 1, 1, 6, 5, 2, 0, 7, 5, 3,	4, 1, 1, 6, 5, 2, 0, 7, 5, 3,
	7, 5, 1, 4, 4, 9, 6, 0, 7, 1,	7, 5, 1, 4, 4, 9, 6, 0, 7, 1,
	7, 6, 6, 9, 5, 3, 9, 2, 7, 6,	7, 6, 6, 9, 5, 3, 9, 2, 7, 6,
	8, 5, 5, 3, 7, 2, 4, 7, 5, 4,	8, 5, 5, 3, 7, 2, 4, 7, 5, 4,
	0, 9, 4, 9, 3, 8, 6, 5, 5, 5,	0, 9, 4, 9, 3, 8, 6, 5, 5, 5,
	8, 2, 8, 8, 9, 5, 7, 4, 8, 4,	8, 2, 8, 8, 9, 5, 7, 4, 8, 4,
	9, 3, 2, 2, 6, 0, 6, 4, 4, 5,	9, 3, 2, 2, 6, 0, 6, 4, 4, 5,
	9, 4, 5, 9, 4, 3, 6, 5, 1, 1,	9, 4, 5, 9, 4, 3, 6, 5, 1, 1,
	6, 2, 9, 1, 1, 0, 6, 0, 5, 5,	6, 2, 9, 1, 1, 0, 6, 0, 5, 5,
	8, 5, 7, 4, 9, 6, 3, 5, 7, 8,	8, 5, 7, 4, 9, 6, 3, 5, 7, 8,
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	5, 4, 7, 3, 7, 3, 9, 2, 3, 0,	5, 4, 7, 3, 7, 3, 9, 2, 3, 0,
	5, 1, 9, 9, 1, 3, 0, 0, 8, 8,	5, 1, 9, 9, 1, 3, 0, 0, 8, 8,
	5, 3, 0, 0, 7, 8, 1, 0, 7, 5,	5, 3, 0, 0, 7, 8, 1, 0, 7, 5,
	2, 4, 9, 8, 6, 0, 3, 2, 6, 4,	2, 4, 9, 8, 6, 0, 3, 2, 6, 4,
	0, 5, 1, 4, 2, 5, 6, 9, 2, 1,	0, 5, 1, 4, 2, 5, 6, 9, 2, 1,
	9, 3, 1, 0, 7, 0, 8, 5, 8, 0,	9, 3, 1, 0, 7, 0, 8, 5, 8, 0,
	8, 5, 6, 5, 4, 4, 2, 1, 6, 5,	8, 5, 6, 5, 4, 4, 2, 1, 6, 5,
	5, 4, 7, 0, 3, 6, 2, 0, 8, 8,	5, 4, 7, 0, 3, 6, 2, 0, 8, 8,
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		9, 3, 2, 8, 5, 4, 9, 2, 2, 0,
		5, 1, 8, 3, 6, 7, 2, 7, 7, 0,
		3, 5, 2, 6, 8, 4, 6, 2, 7, 0,
	1, 5, 3, 2, 0, 3, 2, 6, 9, 2,	
	5, 8, 3, 6, 3, 0, 4, 9, 8, 1,	
		2, 4, 9, 6, 3, 3, 2, 7, 2, 8,
	2, 1, 0, 5, 1, 7, 1, 2, 7, 1,	
		5, 4, 2, 5, 4, 3, 0, 2, 9, 3,
		9, 5, 9, 4, 4, 1, 5, 1, 7, 5,
	6, 3, 2, 2, 8, 1, 8, 7, 0, 6,	
	7, 3, 4, 7, 4, 1, 2, 9, 8, 8,	
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		4, 8, 4, 6, 4, 1, 7, 3, 8, 4,
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	4, 3, 0, 7, 8, 1, 2, 6, 8, 4,	
	7, 4, 8, 8, 9, 3, 6, 6, 9, 4,	
		2, 4, 7, 3, 2, 3, 1, 6, 7, 0,
	2, 4, 7, 9, 0, 0, 0, 4, 0, 2,	
		4, 0, 7, 8, 0, 5, 9, 2, 9, 5,

Test	Expected	Got
	3, 3, 3, 5, 0, 9, 8, 7, 5, 9,	3, 3, 3, 5, 0, 9, 8, 7, 5, 9,
	5, 0, 1, 2, 4, 7, 4, 9, 9, 4,	5, 0, 1, 2, 4, 7, 4, 9, 9, 4,
	2, 9, 7, 8, 4, 4, 9, 7, 4, 0,	2, 9, 7, 8, 4, 4, 9, 7, 4, 0,
	8, 3, 2, 8, 0, 8, 7, 1, 9, 4,	8, 3, 2, 8, 0, 8, 7, 1, 9, 4,
	2, 5, 1, 2, 3, 9, 1, 2, 6, 0,	2, 5, 1, 2, 3, 9, 1, 2, 6, 0,
	5, 0, 9, 1, 6, 7, 6, 6, 6, 1,	5, 0, 9, 1, 6, 7, 6, 6, 6, 1,
	3, 8, 4, 1, 6, 7, 6, 3, 4, 3,	3, 8, 4, 1, 6, 7, 6, 3, 4, 3,
	5, 1, 8, 0, 8, 2, 7, 2, 9, 4,	5, 1, 8, 0, 8, 2, 7, 2, 9, 4,
	4, 5, 7, 0, 7, 6, 5, 3, 4, 1,	4, 5, 7, 0, 7, 6, 5, 3, 4, 1,
	0, 4, 8, 2, 2, 0, 6, 4, 4, 0,	0, 4, 8, 2, 2, 0, 6, 4, 4, 0,
	9, 8, 6, 5, 1, 8, 3, 9, 9, 4,	9, 8, 6, 5, 1, 8, 3, 9, 9, 4,
	9, 5, 6, 2, 4, 8, 6, 7, 9, 2,	9, 5, 6, 2, 4, 8, 6, 7, 9, 2,
	7, 7, 5, 4, 6, 2, 0, 6, 2, 3,	7, 7, 5, 4, 6, 2, 0, 6, 2, 3,
	7, 8, 8, 0, 7, 8, 2, 9, 7, 2,	7, 8, 8, 0, 7, 8, 2, 9, 7, 2,
	1, 4, 4, 8, 2, 0, 1, 9, 6, 5,	1, 4, 4, 8, 2, 0, 1, 9, 6, 5,
	7, 5, 9, 6, 4, 4, 0, 7, 9, 7,	7, 5, 9, 6, 4, 4, 0, 7, 9, 7,
	0, 9, 1, 6, 5, 2, 6, 2, 1, 7,	0, 9, 1, 6, 5, 2, 6, 2, 1, 7,
	7, 5, 0, 9, 5, 0, 6, 2, 9, 0,	7, 5, 0, 9, 5, 0, 6, 2, 9, 0,
	1, 4, 5, 4, 5, 7, 8, 9, 6, 7,	1, 4, 5, 4, 5, 7, 8, 9, 6, 7,
	7, 4, 2, 7, 1, 0, 9, 2, 0, 8,	7, 4, 2, 7, 1, 0, 9, 2, 0, 8,
	2, 9, 2, 9, 1, 4, 7, 2, 6, 6,	2, 9, 2, 9, 1, 4, 7, 2, 6, 6,
	7, 4, 4, 4, 8, 5, 3, 7, 2, 7,	7, 4, 4, 4, 8, 5, 3, 7, 2, 7,
	5, 2, 3, 0, 7, 5, 9, 8, 1, 2,	5, 2, 3, 0, 7, 5, 9, 8, 1, 2,
	8, 1, 4, 0, 4, 7, 0, 0, 3, 7,	8, 1, 4, 0, 4, 7, 0, 0, 3, 7,
	0, 6, 6, 3, 3, 7, 0, 4, 7, 4,	0, 6, 6, 3, 3, 7, 0, 4, 7, 4,
	3, 9, 3, 2, 1, 2, 1, 9, 4, 1,	3, 9, 3, 2, 1, 2, 1, 9, 4, 1,
	3, 9, 7, 6, 1, 4, 2, 5, 0, 1,	3, 9, 7, 6, 1, 4, 2, 5, 0, 1,
	8, 7, 4, 2, 6, 7, 1, 8]	8, 7, 4, 2, 6, 7, 1, 8]

V   Int arr[] = (2, 2, 6, 2, 6, 9, 8, 6, 5, 7, 5, 2, 2, 6, 3, 6, 9, 8, 9, 5, 5, 2, 4, 4, 6, 1, 2, 8, 5, 8, 1, 6, 3, 8, 1, 8, 7, 7, 9, 8, 7, 8, 5, 5, 2, 4, 4, 6, 1, 2, 2, 8, 5, 8, 1, 6, 3, 8, 1, 8, 7, 7, 9, 8, 7, 8, 5, 5, 2, 4, 4, 6, 1, 2, 2, 5, 6, 7, 3, 3, 2, 5, 7, 8, 8, 7, 8, 5, 5, 2, 4, 4, 6, 1, 2, 2, 9, 8, 8, 8, 2, 7, 7, 7, 7, 9, 8, 6, 8, 7, 4, 9, 2, 2, 5, 6, 7, 3, 3, 2, 5, 7, 8, 8, 7, 8, 5, 5, 2, 4, 4, 6, 1, 2, 2, 9, 8, 8, 8, 2, 7, 7, 7, 7, 9, 9, 6, 8, 5, 5, 7, 7, 7, 7, 9, 0, 6, 6, 6, 2, 7, 8, 9, 7, 4, 0, 2, 2, 5, 6, 7, 3, 3, 7, 4, 8, 5, 5, 5, 2, 4, 4, 6, 1, 2, 2, 9, 8, 8, 8, 2, 7, 7, 7, 7, 9, 9, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 7, 7, 9, 9, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 1, 7, 7, 9, 9, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 1, 1, 7, 7, 9, 9, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 1, 1, 7, 7, 9, 9, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 1, 1, 7, 7, 9, 9, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 5, 1, 7, 7, 7, 7, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 5, 6, 1, 7, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9,		Test	Expected	Got	
8, 7, 8, 5, 5, 2, 4, 4, 6, 1, 2, 8, 5, 8, 1, 6, 3, 0, 0, 4, 3, 8, 1, 0, 7, 7, 9, 0, 6, 8, 7, 4, 0, 2, 2, 5, 6, 7, 3, 3, 2, 5, 7, 0, 8, 7, 8, 5, 5, 2, 4, 4, 6, 1, 2, 2, 9, 8, 5, 8, 2, 7, 2, 2, 2, 6, 1, 0, 4, 2, 2, 7, 2, 8, 5, 8, 1, 6, 3, 0, 6, 6, 2, 7, 3, 3, 7, 4, 0, 2, 2, 7, 2, 2, 6, 1, 0, 4, 2, 2, 7, 2, 2, 8, 5, 8, 1, 6, 3, 0, 6, 6, 2, 7, 3, 3, 7, 4, 0, 4, 6, 2, 5, 7, 3, 3, 7, 4, 0, 4, 6, 2, 5, 7, 3, 3, 7, 4, 0, 4, 6, 2, 5, 7, 3, 3, 7, 4, 0, 2, 2, 9, 8, 7, 8, 8, 7, 8, 8, 7, 1, 5, 1, 1, 2, 7, 2, 2, 6, 1, 0, 4, 2, 2, 5, 8, 1, 6, 3, 0, 6, 6, 6, 2, 7, 0, 2, 2, 9, 8, 5, 8, 2, 5, 7, 7, 7, 7, 0, 2, 2, 9, 8, 5, 8, 8, 1, 6, 3, 0, 6, 6, 6, 6, 6, 7, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,	~				<b>~</b>
2, 2, 9, 8, 5, 8, 2, 7, 2, 2, 6, 1, 9, 4, 2, 2, 7, 1, 8, 5, 8, 1, 6, 3, 9, 6, 8, 8, 2, 8, 5, 7, 7, 7, 7, 70, 9, 6, 6, 6, 2, 7, 9, 9, 7, 4, 9, 2, 2, 5, 6, 7, 3, 3, 8, 7, 4, 9, 2, 2, 5, 6, 7, 3, 3, 8, 7, 2, 9, 3, 9, 9, 4, 4, 6, 2, 5, 1, 3, 1, 7, 2, 9, 2, 5, 7, 9, 2, 2, 9, 8, 5, 8, 8, 2, 8, 7, 4, 9, 2, 2, 5, 6, 7, 3, 3, 8, 7, 2, 9, 3, 9, 9, 4, 6, 8, 7, 1, 5, 4, 1, 5, 1, 1, 2, 7, 2, 2, 2, 6, 1, 9, 4, 2, 2, 2, 7, 2, 2, 6, 1, 9, 4, 2, 2, 5, 8, 4, 2, 2, 6, 9, 8, 7, 8, 8, 7, 9, 9, 9, 6, 1, 7, 6, 8, 8, 9, 9, 9, 2, 7, 9, 9, 6, 5, 6, 6, 2, 7, 7, 9, 7, 9, 7, 9, 6, 6, 6, 2, 7, 7, 9, 9, 8, 7, 9, 9, 9, 5, 6, 1, 7, 8, 8, 9, 8, 2, 7, 2, 9, 9, 8, 7, 9, 9, 8, 7, 9, 9, 9, 8, 7, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9,					
6, 8, 5, 5, 7, 7, 7, 7, 9, 8, 6, 6, 6, 2, 7, 8, 9, 7, 4, 8, 2, 2, 5, 6, 7, 3, 3, 8, 7, 2, 9, 3, 8, 0, 4, 6, 2, 5, 1, 1, 5, 4, 1, 5, 1, 1, 2, 7, 2, 2, 6, 1, 1, 4, 2, 2, 2, 7, 7, 7, 7, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,		0, 6, 8, 7, 4, 0, 2, 2, 5, 6, 7, 3, 3, 2, 5, 7, 0,	8, 7, 8, 5, 5, 2, 4, 4, 6, 1,	8, 7, 8, 5, 5, 2, 4, 4, 6, 1,	
8, 7, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 3, 1, 7, 2, 0, 2, 5, 7, 0, 2, 2, 9, 8, 5, 8, 9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 5, 1, 1, 2, 7, 2, 2, 6, 1, 0, 4, 2, 2, 5, 8, 4, 2, 2, 6, 1, 0, 1, 8, 5, 5, 7, 7, 7, 0, 7, 6, 9, 9, 1, 8, 8, 9, 0, 1, 9, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,		2, 2, 9, 8, 5, 8, 2, 7, 2, 2, 6, 1, 0, 4, 2, 2, 7,	2, 8, 5, 8, 1, 6, 3, 0, 6, 8,	2, 8, 5, 8, 1, 6, 3, 0, 6, 8,	
9, 8, 4, 8, 5, 3, 7, 8, 8, 7, 1, 5, 4, 1, 5, 1, 1, 2, 7, 2, 2, 6, 1, 8, 4, 2, 2, 2, 7, 2, 2, 6, 1, 8, 4, 2, 2, 2, 8, 8, 4, 2, 2, 6, 8, 7, 8, 6, 7, 9, 9, 9, 6, 5, 6, 1, 7, 8, 8, 9, 8, 9, 8, 2, 6, 9, 3, 7, 3, 7, 4, 9, 1, 9, 2, 7, 8, 2, 8, 2, 7, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 2, 9, 3, 0, 0, 4, 6, 2, 5, 1, 3, 4, 5, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,					
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7, 3, 5, 3, 1, 3, 8, 0, 1, 9, 7, 6, 4, 9, 8, 6,	0, 7, 5, 3, 3, 8, 2, 6, 2, 7, 3,	7, 5, 3, 3, 8, 2, 6, 2, 7, 3,
0, 3, 6, 0, 0, 3, 4, 7, 5, 5, 8, 5, 2, 4, 5, 2,	4, 0, 1, 3, 8, 7, 0, 9, 7, 4, 4,	0, 1, 3, 8, 7, 0, 9, 7, 4, 4,
5, 4, 8, 6, 9, 2, 4, 9, 7, 4, 6, 1, 3, 0, 8, 6,		4, 6, 0, 8, 2, 6, 9, 9, 5, 3,
1, 2, 6, 8, 4, 9, 4, 3, 6, 5, 0, 3, 6, 4, 1, 8,		
7, 2, 3, 6, 2, 8, 4, 3, 1, 7, 8, 2, 4, 0, 7, 7,		
9, 8, 5, 8, 1, 0, 0, 9, 6, 3, 1, 5, 9, 9, 3, 2,		2, 5, 5, 2, 9, 4, 8, 8, 6, 9,
8, 7, 1, 8, 1, 2, 7, 4, 2, 4, 9, 2, 3, 8, 8, 5,		
1, 3, 0, 3, 8, 6, 5, 1, 8, 1, 3, 8, 6, 5, 6, 5,		
8, 3, 2, 3, 5, 0, 1, 9, 0, 9, 2, 3, 5, 3, 0, 4,		
8, 3, 4, 2, 6, 4, 4, 6, 1, 4, 0, 6, 9, 7, 7, 7,		
6, 1, 6, 1, 8, 2, 3, 9, 5, 7, 3, 9, 9, 6, 7, 9,		
6, 7, 7, 9, 2, 0, 7, 1, 6, 7, 8, 3, 8, 8, 4, 6,		
0, 4, 2, 9, 0, 4, 2, 7, 9, 6, 9, 9, 1, 5, 9, 4,		9, 6, 3, 8, 9, 6, 7, 6, 9, 5,
4, 5, 5, 1, 0, 1, 3, 9, 6, 0, 4, 5, 5, 7, 1, 7,		3, 2, 1, 3, 0, 2, 7, 9, 8, 8,
4, 5, 6, 1, 7, 3, 9, 0, 9, 5, 9, 5, 6, 2, 0, 7,		5, 4, 4, 2, 6, 5, 4, 2, 0, 0,
0, 1, 6, 7, 3, 2, 7, 0, 6, 3, 1, 4, 3, 4, 3, 9,		
6, 0, 7, 9, 4, 3, 8, 1, 5, 4, 3, 2, 3, 1, 9, 9,		
1, 6, 9, 8, 1, 6, 2, 8, 4, 6, 8, 6, 5, 6, 9, 4, 2, 1, 2, 2, 3, 4, 0, 7, 1, 0, 7, 9, 1, 2, 9, 6,		
6, 9, 3, 2, 1, 9, 7, 8, 6, 5, 2, 0, 3, 3, 5, 3,		
5, 9, 5, 7, 6, 1, 5, 1, 0, 7, 1, 8, 6, 7, 7, 8,		9, 8, 9, 8, 9, 9, 1, 7, 6, 2,
9, 0, 0, 6, 0, 0, 6, 8, 6, 9, 6, 1, 3, 1, 7, 5,		
5, 8, 3, 5, 8, 6, 1, 5, 6, 2, 2, 4, 6, 0, 2, 6,		
8, 0, 5, 9, 5, 1, 1, 2, 3, 4, 7, 5, 7, 0, 8, 2,		
4, 0, 1, 8, 8, 3, 1, 6, 4, 2, 8, 3, 8, 6, 0, 7,		8, 5, 7, 6, 8, 0, 0, 5, 1, 9,
9, 8, 2, 2, 5, 8, 7, 2, 7, 4, 3, 5, 2, 8, 3, 2,		
5, 1, 5, 1, 7, 7, 3, 5, 2, 1, 8, 1, 0, 5, 0, 2,		
6, 3, 0, 4, 3, 7, 3, 5, 7, 6, 6, 0, 8, 2, 7, 1,		
4, 6, 8, 8, 2, 8, 4, 7, 6, 2, 0, 0, 0, 7, 6, 9,		
4, 7, 3, 1, 1, 7, 0, 3, 4, 5, 6, 9, 0, 5, 5, 9,		1, 9, 9, 2, 7, 4, 9, 9, 0, 6,
1, 1, 3, 5, 5, 0, 9, 9, 6, 4, 7, 3, 9, 3, 5, 1,		3, 1,snip 2, 7, 3,
1, 0, 8, 1, 7, 9, 8, 8, 3, 7, 0, 8, 0, 8, 2, 9,		
1, 0, 8, 2, 9, 7, 2, 1, 1, 7, 6, 1, 4, 6, 2, 0,		
1, 7, 7, 4, 8, 8, 0, 8, 7, 5, 7, 0, 3, 1, 5, 3,	8, 5, 6, 1, 4, 5, 2, 6, 5, 2, 9,	5, 6, 1, 4, 5, 2, 6, 5, 2, 9,
8, 5, 7, 6, 5, 0, 1, 7, 0, 0, 9, 6, 4, 7, 2, 2,	4, 1, 5, 1, 3, 8, 9, 0, 7, 7, 4,	1, 5, 1, 3, 8, 9, 0, 7, 7, 4,
2, 5, 7, 8, 9, 3, 0, 1, 3, 9, 7, 4, 7, 9, 7, 0,	6, 9, 4, 4, 7, 0, 0, 9, 0, 7, 9,	9, 4, 4, 7, 0, 0, 9, 0, 7, 9,
1, 2, 9, 8, 3, 9, 5, 5, 7, 9, 7, 0, 0, 3, 6, 4,	7, 5, 4, 8, 5, 9, 1, 8, 8, 9, 7,	5, 4, 8, 5, 9, 1, 8, 8, 9, 7,
0, 1, 3, 4, 0, 5, 0, 2, 8, 7, 9, 6, 1, 0, 8, 2,	4, 1, 6, 2, 8, 9, 0, 4, 1, 8, 1,	1, 6, 2, 8, 9, 0, 4, 1, 8, 1,
7, 2, 0, 7, 0, 8, 4, 1, 7, 6, 8, 9, 7, 2, 4, 9,	1, 3, 3, 1, 6, 4, 7, 0, 0, 3, 2,	3, 3, 1, 6, 4, 7, 0, 0, 3, 2,
3, 7, 9, 8, 6, 0, 4, 3, 2, 6, 9, 3, 0, 8, 0, 0,	2, 5, 9, 0, 5, 9, 7, 1, 1, 9, 6,	5, 9, 0, 5, 9, 7, 1, 1, 9, 6,

Test	Expected	Got
4, 4, 9, 3, 4, 9, 1, 4, 2, 2, 9, 5, 7, 8, 9, 7, 0,	3, 4, 3, 6, 7, 4, 4, 7, 4, 7,	3, 4, 3, 6, 7, 4, 4, 7, 4, 7,
9, 5, 4, 7, 2, 1, 3, 3, 2, 7, 6, 0, 0, 1, 2, 7, 3,	8, 6, 5, 5, 1, 5, 9, 8, 4, 6,	8, 6, 5, 5, 1, 5, 9, 8, 4, 6,
2, 8, 7, 1, 0, 6, 8, 8, 8, 2, 8, 9, 5, 6, 5, 0, 5,	9, 6, 8, 5, 0, 8, 2, 9, 1, 3,	9, 6, 8, 5, 0, 8, 2, 9, 1, 3,
9, 7, 2, 2, 3, 9, 3, 1, 8, 6, 9, 1, 1, 4, 9, 0, 9,	7, 9, 5, 2, 1, 8, 0, 5, 9, 4,	7, 9, 5, 2, 1, 8, 0, 5, 9, 4,
1, 3, 1, 9, 1, 0, 5, 3, 6, 9, 0, 3, 6, 5, 6, 1, 0,	9, 5, 6, 3, 2, 8, 2, 8, 5, 8,	9, 5, 6, 3, 2, 8, 2, 8, 5, 8,
7, 4, 2, 3, 3, 1, 4, 7, 3, 8, 2, 5, 6, 8, 4, 8, 6,	8, 7, 1, 4, 4, 6, 2, 6, 1, 7,	8, 7, 1, 4, 4, 6, 2, 6, 1, 7,
7, 4, 8, 3, 7, 4, 7, 1, 4, 0, 3, 8, 1, 0, 2, 3, 4,	0, 4, 9, 9, 6, 3, 1, 3, 3, 3,	0, 4, 9, 9, 6, 3, 1, 3, 3, 3,
9, 1, 5, 0, 6, 3, 4, 9, 4, 3, 3, 6, 3, 6, 8, 1, 9,	5, 8, 7, 2, 5, 1, 3, 8, 2, 8,	5, 8, 7, 2, 5, 1, 3, 8, 2, 8,
7, 4, 5, 7, 4, 9, 5, 0, 9, 7, 4, 1, 8, 0, 7, 5, 0,	1, 5, 2, 0, 6, 6, 5, 5, 4, 5,	1, 5, 2, 0, 6, 6, 5, 5, 4, 5,
2, 7, 8, 0, 9, 4, 5, 2, 0, 9, 6, 4, 7, 0};	7, 9, 3, 5, 3, 1, 6, 9, 0, 9,	7, 9, 3, 5, 3, 1, 6, 9, 0, 9,
int k = 990;	5, 8, 8, 4, 6, 0, 9, 4, 0, 8,	5, 8, 8, 4, 6, 0, 9, 4, 0, 8,
LLNode* head = LLNode::createWithIterators(arr,	1, 2, 3, 9, 9, 6, 9, 2, 8, 6,	1, 2, 3, 9, 9, 6, 9, 2, 8, 6,
<pre>arr + sizeof(arr) / sizeof(int));</pre>	5, 4, 9, 2, 4, 2, 3, 1, 8, 6,	
<pre>LLNode::printList(head);</pre>	8, 3, 3, 5, 4, 7, 1, 1, 2, 7,	8, 3, 3, 5, 4, 7, 1, 1, 2, 7,
cout << "\n";	5, 8, 7, 7, 2, 3, 5, 3, 4, 7,	
LLNode* newhead = rotateLinkedList(head, k);	2, 8, 5, 6, 9, 7, 1, 4, 0, 0,	
<pre>LLNode::printList(newhead);</pre>	3, 6, 3, 0, 4, 4, 0, 4, 3, 7,	
	1, 8, 5, 1, 3, 0, 9, 0, 2, 2,	1, 8, 5, 1, 3, 0, 9, 0, 2, 2,
	5, 3, 3, 8, 7, 9, 3, 9, 5, 9,	5, 3, 3, 8, 7, 9, 3, 9, 5, 9,
	0, 7, 7, 0, 2, 9, 8, 4, 0, 6,	0, 7, 7, 0, 2, 9, 8, 4, 0, 6,
	0, 4, 2, 3, 3, 4, 9, 7, 2, 8,	0, 4, 2, 3, 3, 4, 9, 7, 2, 8,
	3, 1, 9, 2, 7, 9, 8, 7, 5, 7,	
	1, 9, 3, 9, 4, 2, 9, 1, 1, 0,	
	4, 6, 3, 8, 6, 9, 3, 9, 5, 1,	
	8, 0, 6, 7, 6, 4, 7, 7, 6, 7,	
	4, 3, 8, 4, 4, 3, 3, 6, 8, 3,	
		7, 4, 5, 4, 7, 7, 5, 1, 6, 8,
	2, 8, 0, 8, 0, 8, 8, 7, 3, 6, 5, 2, 4, 3, 9, 8, 7, 6, 3, 0,	
		4, 4, 6, 2, 3, 5, 6, 0, 9, 2,
		1, 9, 4, 8, 9, 8, 9, 1, 1, 5,
		7, 8, 0, 0, 1, 1, 2, 7, 8, 9,
		7, 2, 3, 2, 8, 9, 5, 1, 8, 9,
		9, 5, 2, 2, 0, 6, 5, 6, 9, 5,
		2, 6, 2, 3, 7, 4, 2, 6, 1, 9,
		8, 0, 0, 4, 7, 2, 1, 6, 1, 8,
		6, 7, 1, 2, 6, 1, 4, 1, 6, 2,
		1, 9, 5, 0, 0, 4, 6, 2, 5, 3,
		3, 0, 5, 0, 2, 2, 7, 6, 1, 1,
		3, 9, 5, 6, 0, 3, 4, 2, 8, 3,
		7, 2, 9, 6, 1, 8, 3, 1, 3, 8,
		5, 1, 9, 0, 0, 4, 3, 4, 6, 4,
	6, 7, 8, 5, 2, 5, 6, 1, 6, 8,	6, 7, 8, 5, 2, 5, 6, 1, 6, 8,
	5, 2, 1, 1, 0, 4, 7, 0, 4, 9,	5, 2, 1, 1, 0, 4, 7, 0, 4, 9,
	1, 4, 2, 1, 4, 4, 5, 7, 2, 1,	1, 4, 2, 1, 4, 4, 5, 7, 2, 1,
	2, 5, 3, 8, 0, 6, 6, 0, 5, 2,	2, 5, 3, 8, 0, 6, 6, 0, 5, 2,
	7, 5, 7, 5, 7, 9, 0, 8, 3, 3,	7, 5, 7, 5, 7, 9, 0, 8, 3, 3,
	4, 0, 3, 8, 4, 1, 4, 0, 8, 4,	4, 0, 3, 8, 4, 1, 4, 0, 8, 4,

Test	Expected	Got
	8, 3, 1, 2, 5, 6, 8, 2, 9, 2, 6, 5, 5, 5, 1, 0, 5, 1, 9, 6,	8, 3, 1, 2, 5, 6, 8, 2, 9, 2, 6, 5, 5, 5, 1, 0, 5, 1, 9, 6,
	2, 2, 3, 0, 7, 6, 8, 7, 7, 8,	2, 2, 3, 0, 7, 6, 8, 7, 7, 8,
	2, 0, 9, 3, 1, 5, 3, 1, 4, 6,	2, 0, 9, 3, 1, 5, 3, 1, 4, 6,
	7, 5, 9, 9, 3, 8, 5, 2, 3, 4,	7, 5, 9, 9, 3, 8, 5, 2, 3, 4,
	0, 5, 9, 1, 7, 2, 9, 8, 2, 0,	0, 5, 9, 1, 7, 2, 9, 8, 2, 0,
	7, 0, 9, 0, 2, 6, 6, 8, 5, 5,	7, 0, 9, 0, 2, 6, 6, 8, 5, 5,
	6, 0, 1, 8, 0, 9, 2, 4, 9, 8,	6, 0, 1, 8, 0, 9, 2, 4, 9, 8,
	3, 6, 3, 9, 2, 2, 6, 5, 7, 3,	3, 6, 3, 9, 2, 2, 6, 5, 7, 3,
	5, 0, 6, 6, 8, 4, 6, 7, 8, 6,	5, 0, 6, 6, 8, 4, 6, 7, 8, 6,
	9, 4, 1, 3, 2, 1, 8, 0, 0, 7,	9, 4, 1, 3, 2, 1, 8, 0, 0, 7,
	2, 1, 5, 3, 4, 3, 2, 4, 1, 3,	2, 1, 5, 3, 4, 3, 2, 4, 1, 3,
	0, 3, 9, 8, 6, 3, 5, 5, 9, 9,	0, 3, 9, 8, 6, 3, 5, 5, 9, 9,
	3, 1, 2, 4, 7, 4, 0, 3, 7, 8,	3, 1, 2, 4, 7, 4, 0, 3, 7, 8,
	4, 3, 4, 4, 3, 0, 5, 8, 0, 8, 2, 6, 0, 4, 0, 3, 4, 4, 8, 1,	4, 3, 4, 4, 3, 0, 5, 8, 0, 8, 2, 6, 0, 4, 0, 3, 4, 4, 8, 1,
	2, 0, 0, 0, 1, 9, 2, 4, 6, 6,	2, 0, 0, 0, 1, 9, 2, 4, 6, 6,
	9, 4, 8, 9, 5, 2, 2, 4, 9, 8,	9, 4, 8, 9, 5, 2, 2, 4, 9, 8,
	6, 8, 5, 9, 5, 8, 1, 0, 5, 1,	6, 8, 5, 9, 5, 8, 1, 0, 5, 1,
	4, 4, 6, 3, 6, 5, 2, 6, 2, 0,	4, 4, 6, 3, 6, 5, 2, 6, 2, 0,
	7, 4, 1, 2, 7, 3, 4, 4, 9, 3,	7, 4, 1, 2, 7, 3, 4, 4, 9, 3,
	9, 2, 9, 1, 3, 0, 4, 1, 0, 2,	9, 2, 9, 1, 3, 0, 4, 1, 0, 2,
	4, 9, 3, 3, 1, 3, 0, 8, 8, 7,	4, 9, 3, 3, 1, 3, 0, 8, 8, 7,
	4, 5, 9, 9, 9, 6, 6, 4, 4, 2,	4, 5, 9, 9, 9, 6, 6, 4, 4, 2,
	5, 0, 1, 0, 8, 9, 0, 4, 8, 5,	5, 0, 1, 0, 8, 9, 0, 4, 8, 5,
	6, 8, 1, 0, 9, 1, 8, 2, 6, 1,	6, 8, 1, 0, 9, 1, 8, 2, 6, 1,
	0, 9, 9, 2, 5, 9, 4, 1, 7, 5,	0, 9, 9, 2, 5, 9, 4, 1, 7, 5,
	6, 5, 4, 3, 9, 3, 9, 4, 1, 6, 7, 6, 3, 1, 6, 6, 5, 2, 5, 9,	
	7, 6, 9, 3, 1, 0, 6, 3, 2, 3, 9, 7, 6, 9, 3, 3, 1, 2, 5, 0, 2,	
	5, 6, 7, 2, 3, 0, 7, 9, 0, 2,	
	2, 9, 5, 9, 1, 9, 6, 1, 7, 4,	
	1, 6, 7, 0, 5, 9, 8, 1, 2, 2,	
	5, 6, 3, 3, 4, 8, 8, 1, 0, 5,	
	2, 7, 1, 6, 7, 3, 1, 1, 8, 9,	
	7, 6, 3, 3, 4, 0, 0, 9, 2, 6,	7, 6, 3, 3, 4, 0, 0, 9, 2, 6,
	2, 4, 2, 2, 1, 3, 6, 6, 6, 8,	2, 4, 2, 2, 1, 3, 6, 6, 6, 8,
	5, 8, 8, 1, 3, 6, 9, 6, 5, 2,	5, 8, 8, 1, 3, 6, 9, 6, 5, 2,
	3, 0, 2, 2, 1, 0, 1, 9, 1, 4,	3, 0, 2, 2, 1, 0, 1, 9, 1, 4,
	4, 9, 3, 2, 3, 4, 0, 3, 4, 5,	
	8, 3, 6, 3, 5, 6, 8, 4, 1, 1,	
	5, 1, 2, 8, 2, 5, 0, 2, 8, 9,	
	1, 2, 5, 4, 9, 2, 7, 0, 5, 1,	
	5, 6, 2, 2, 9, 3, 9, 3, 9, 6, 9, 8, 3, 3, 1, 8, 8, 5, 4, 3,	
	5, 7, 5, 8, 5, 5, 8, 0, 2, 5,	
	4, 0, 7, 8, 9, 0, 2, 6, 4, 4,	
	2, 3, 8, 3, 0, 3, 8, 4, 2, 6,	

Test	Expected	Got
	6, 6, 4, 2, 3, 0, 2, 6, 9, 2,	6, 6, 4, 2, 3, 0, 2, 6, 9, 2,
	8, 3, 8, 0, 6, 8, 3, 5, 0, 9,	8, 3, 8, 0, 6, 8, 3, 5, 0, 9,
	6, 0, 7, 2, 5, 0, 3, 2, 8, 8,	6, 0, 7, 2, 5, 0, 3, 2, 8, 8,
	2, 5, 5, 3, 6, 9, 4, 9, 2, 2,	2, 5, 5, 3, 6, 9, 4, 9, 2, 2,
	9, 6, 6, 7, 5, 7, 4, 6, 9, 8,	9, 6, 6, 7, 5, 7, 4, 6, 9, 8,
	9, 7, 9, 2, 7, 0, 4, 9, 0, 6,	9, 7, 9, 2, 7, 0, 4, 9, 0, 6,
	2, 8, 1, 3, 0, 3, 4, 7, 0, 7,	2, 8, 1, 3, 0, 3, 4, 7, 0, 7,
	2, 1, 7, 4, 2, 0, 6, 5, 6, 3,	2, 1, 7, 4, 2, 0, 6, 5, 6, 3,
	6, 6, 9, 1, 3, 0, 8, 4, 9, 7,	6, 6, 9, 1, 3, 0, 8, 4, 9, 7,
	1, 6, 8, 4, 9, 8, 3, 4, 0, 2,	1, 6, 8, 4, 9, 8, 3, 4, 0, 2,
	2, 4, 6, 2, 7, 9, 0, 3, 8, 0,	2, 4, 6, 2, 7, 9, 0, 3, 8, 0,
	6, 0, 6, 7, 7, 9, 6, 0, 4, 7,	6, 0, 6, 7, 7, 9, 6, 0, 4, 7,
	8, 4, 4, 2, 7, 0, 0, 8, 0, 8,	8, 4, 4, 2, 7, 0, 0, 8, 0, 8,
	8, 5, 7, 6, 2, 8, 5, 5, 3, 7,	8, 5, 7, 6, 2, 8, 5, 5, 3, 7,
	1, 2, 8, 8, 4, 1, 8, 1, 8, 7,	1, 2, 8, 8, 4, 1, 8, 1, 8, 7,
	8, 4, 0, 1, 6, 3, 0, 2, 3, 6,	8, 4, 0, 1, 6, 3, 0, 2, 3, 6,
	0, 8, 2, 0, 7, 8, 7, 1, 3, 3,	0, 8, 2, 0, 7, 8, 7, 1, 3, 3,
	5, 0, 0, 1, 5, 2, 7, 5, 2, 5,	5, 0, 0, 1, 5, 2, 7, 5, 2, 5,
	1, 6, 4, 9, 9, 7, 2, 1, 3, 3,	1, 6, 4, 9, 9, 7, 2, 1, 3, 3,
	3, 2, 2, 5, 9, 0, 7, 0, 0, 1,	3, 2, 2, 5, 9, 0, 7, 0, 0, 1,
	0, 6, 2, 1, 1, 9, 4, 3, 3, 4,	0, 6, 2, 1, 1, 9, 4, 3, 3, 4,
	9, 9, 5, 7, 2, 3, 7, 8, 4, 2,	9, 9, 5, 7, 2, 3, 7, 8, 4, 2,
	4, 0, 0, 7, 5, 7, 1, 9, 5, 7,	4, 0, 0, 7, 5, 7, 1, 9, 5, 7,
	7, 6, 0, 6, 7, 8, 5, 9, 9, 4,	7, 6, 0, 6, 7, 8, 5, 9, 9, 4,
	9, 2, 6, 8, 4, 1, 1, 8, 1, 0,	9, 2, 6, 8, 4, 1, 1, 8, 1, 0,
	2, 4, 6, 3, 0, 8, 9, 1, 6, 6,	2, 4, 6, 3, 0, 8, 9, 1, 6, 6,
	2, 3, 6, 6, 3, 9, 8, 7, 5, 5,	2, 3, 6, 6, 3, 9, 8, 7, 5, 5,
	8, 3, 8, 4, 1, 6, 6, 6]	8, 3, 8, 4, 1, 6, 6, 6]

Test	Expected	Got	
int arr[] = {9, 9, 7, 1, 0, 8, 1, 7, 1, 6, 9, 1,	[9, 9, 7, 1, 0, 8, 1, 7, 1,	[9, 9, 7, 1, 0, 8, 1, 7, 1,	T
8, 4, 3, 4, 8, 5, 7, 0, 0, 0, 2, 1, 9, 5, 5, 3, 3,	6, 9, 1, 8, 4, 3, 4, 8, 5, 7,	6, 9, 1, 8, 4, 3, 4, 8, 5, 7,	
4, 2, 0, 1, 4, 6, 2, 9, 0, 9, 9, 0, 2, 7, 3, 5, 9,	0, 0, 0, 2, 1, 9, 5, 5, 3, 3,	0, 0, 0, 2, 1, 9, 5, 5, 3, 3,	
8, 2, 5, 4, 3, 4, 6, 3, 8, 1, 2, 0, 3, 3, 9, 6, 3,	4, 2, 0, 1, 4, 6, 2, 9, 0, 9,	4, 2, 0, 1, 4, 6, 2, 9, 0, 9,	
4, 5, 4, 9, 3, 6, 5, 2, 5, 0, 1, 3, 3, 0, 5, 9, 2,	9, 0, 2, 7, 3, 5, 9, 8, 2, 5,	9, 0, 2, 7, 3, 5, 9, 8, 2, 5,	
6, 5, 4, 9, 6, 4, 7, 5, 0, 3, 4, 3, 9, 2, 7, 5, 5,	4, 3, 4, 6, 3, 8, 1, 2, 0, 3,	4, 3, 4, 6, 3, 8, 1, 2, 0, 3,	
5, 2, 7, 5, 3, 4, 9, 3, 5, 1, 1, 4, 1, 9, 9, 0, 8,	3, 9, 6, 3, 4, 5, 4, 9, 3, 6,	3, 9, 6, 3, 4, 5, 4, 9, 3, 6,	
4, 6, 4, 2, 1, 0, 5, 4, 0, 4, 4, 0, 0, 8, 4, 5, 3,	5, 2, 5, 0, 1, 3, 3, 0, 5, 9,	5, 2, 5, 0, 1, 3, 3, 0, 5, 9,	
7, 0, 7, 1, 6, 0, 2, 8, 6, 8, 1, 6, 5, 6, 5, 7, 7,	2, 6, 5, 4, 9, 6, 4, 7, 5, 0,	2, 6, 5, 4, 9, 6, 4, 7, 5, 0,	
8, 1, 7, 3, 1, 7, 1, 9, 2, 4, 6, 2, 1, 8, 8, 4, 0,	3, 4, 3, 9, 2, 7, 5, 5, 5, 2,	3, 4, 3, 9, 2, 7, 5, 5, 5, 2,	
9, 0, 8, 8, 6, 6, 8, 8, 2, 2, 1, 2, 2, 8, 7, 8, 4,	7, 5, 3, 4, 9, 3, 5, 1, 1, 4,	7, 5, 3, 4, 9, 3, 5, 1, 1, 4,	
3, 6, 4, 1, 0, 9, 1, 4, 0, 6, 1, 6, 1, 7, 6, 1, 9,	1, 9, 9, 0, 8, 4, 6, 4, 2, 1,	1, 9, 9, 0, 8, 4, 6, 4, 2, 1,	
6, 5, 5, 9, 4, 7, 8, 8, 5, 4, 9, 2, 7, 1, 1, 6, 9,	0, 5, 4, 0, 4, 4, 0, 0, 8, 4,	0, 5, 4, 0, 4, 4, 0, 0, 8, 4,	
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Test	Expected	Got
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5, 8, 7, 4, 3, 4, 6, 7, 9, 9, 8, 2, 5, 9, 6, 5, 0,	4, 4, 5, 6, 0, 0, 6, 2, 2, 4,	4, 4, 5, 6, 0, 0, 6, 2, 2, 4,
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2, 5, 7, 0, 4, 2, 3, 0, 9, 1, 9, 3, 7, 8, 4, 7, 0,	8, 7, 7, 0, 2, 8, 4, 2, 2, 7,	8, 7, 7, 0, 2, 8, 4, 2, 2, 7,
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2, 4, 8, 5, 0, 5, 4, 9, 4, 1, 6, 8, 9, 0, 8, 0, 0,	9, 2, 0, 9, 0, 4, 9, 2, 3, 0,	
1, 7, 0, 4, 7, 2, 4, 2, 6, 5, 3, 1, 4, 3, 8, 8, 9,		
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Test	Expected	Got
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1, 3, 6, 7, 6, 0, 9, 3, 5, 3, 6, 5, 4, 8, 9, 9, 0,	1, 7, 8, 4, 0, 6, 4, 9, 5, 4,	1, 7, 8, 4, 0, 6, 4, 9, 5, 4,
9, 6, 8, 9, 6, 2, 6, 2, 3, 5, 0, 7, 3, 5, 1, 8, 6,	5, 3, 7, 3, 3, 7, 2, 1, 6, 3,	5, 3, 7, 3, 3, 7, 2, 1, 6, 3,
9, 4, 5, 9, 6, 8, 6, 1, 2, 0, 6, 5, 1, 0, 8, 5, 5,	4, 6, 3, 1, 5, 9, 7, 3, 6, 2,	4, 6, 3, 1, 5, 9, 7, 3, 6, 2,
6, 6, 8, 5, 0, 4, 5, 4, 0, 5, 6, 4, 0, 5, 5, 0, 1,	0, 9, 7, 0, 0, 3, 1, 5, 6, 3,	0, 9, 7, 0, 0, 3, 1, 5, 6, 3,
1, 6, 2, 9, 6, 1, 4, 0, 9, 8, 6, 7, 3, 0, 3, 7, 2,	8, 2, 1, 6, 3, 4, 8, 9, 2, 3,	8, 2, 1, 6, 3, 4, 8, 9, 2, 3,
8, 5, 6, 0, 8, 4, 2, 9, 9, 4, 8, 7, 8, 4, 7, 1, 3,	5, 9, 1, 4, 6, 9, 5, 8, 6, 6,	5, 9, 1, 4, 6, 9, 5, 8, 6, 6,
7, 0, 8, 3, 9, 3, 1, 0, 8, 7, 8, 4, 5, 2, 7, 4, 9,	3, 4, 7, 2, 3, 7, 0, 2, 2, 7,	3, 4, 7, 2, 3, 7, 0, 2, 2, 7,
9, 6, 0, 0, 9, 2, 3, 2, 2, 3, 3, 5, 7, 6, 8, 7, 6,	6, 8, 9, 9, 7, 2, 0, 9, 0, 3,	6, 8, 9, 9, 7, 2, 0, 9, 0, 3,
0, 1, 3, 6, 1, 3, 6, 5, 1, 7, 1, 7, 6, 3, 6, 8, 0,	9, 6, 5, 9, 4, 3, 6, 8, 4, 3,	9, 6, 5, 9, 4, 3, 6, 8, 4, 3,
5, 4, 2, 2, 2, 8, 3, 9, 8, 7, 8, 5, 2, 6, 5, 3, 2,	1, 0, 7, 2, 7, 3, 9, 3, 2, 0,	1, 0, 7, 2, 7, 3, 9, 3, 2, 0,
1, 0, 8, 7, 4, 4, 8, 9, 7, 9, 4, 1, 4, 6, 5, 3, 2,	1, 9, 2, 3, 9, 1, 3, 3, 6, 5,	1, 9, 2, 3, 9, 1, 3, 3, 6, 5,
8, 6, 8, 8, 2, 0, 1, 5, 3, 8, 5, 9, 8, 0, 3, 5, 8,	6, 5, 5, 5, 9, 1, 4, 6, 5, 4,	6, 5, 5, 5, 9, 1, 4, 6, 5, 4,
4, 6, 5, 0, 4, 0, 6, 6, 0, 1, 5, 0, 2, 4, 6, 8, 9,	3, 2, 8, 7, 0, 1, 4, 4, 8, 9,	3, 2, 8, 7, 0, 1, 4, 4, 8, 9,
7, 9, 4, 3, 9, 3, 6, 9, 3, 7, 2, 3, 2, 5, 8, 8, 0,	7, 4, 1, 1, 9, 4, 1, 0, 9, 5,	7, 4, 1, 1, 9, 4, 1, 0, 9, 5,
5, 2, 4, 2, 9, 2, 6, 4, 4, 1, 2, 1, 6, 7, 3, 7, 1,	8, 6, 6, 9, 1, 5, 6, 0, 8, 0,	8, 6, 6, 9, 1, 5, 6, 0, 8, 0,
7, 8, 9, 7, 6, 2, 8, 7, 8, 3, 2, 6, 3, 7, 0, 2, 5,	3, 3,snip 3, 0, 7,	3, 3,snip 3, 0, 7,
5, 1, 4, 1, 6, 2, 9, 5, 9, 4, 3, 2, 8, 7, 4, 8, 5,	6, 6, 4, 1, 7, 5, 1, 2, 9, 2,	6, 6, 4, 1, 7, 5, 1, 2, 9, 2,
1, 2, 9, 5, 0, 7, 3, 1, 7, 0, 8, 3, 6, 5, 8, 5, 2,	6, 3, 8, 7, 6, 7, 2, 9, 1, 3,	6, 3, 8, 7, 6, 7, 2, 9, 1, 3,
7, 5, 0, 3, 0, 7, 3, 0, 6, 1, 5, 5, 5, 1, 5, 8, 2,	0, 2, 5, 8, 1, 1, 8, 9, 9, 7,	0, 2, 5, 8, 1, 1, 8, 9, 9, 7,
3, 2, 3, 6, 0, 1, 5, 1, 2, 2, 3, 6, 0, 4, 1, 9, 1,	5, 9, 9, 4, 7, 5, 1, 5, 2, 0,	5, 9, 9, 4, 7, 5, 1, 5, 2, 0,
4, 1, 7, 6, 4, 6, 6, 5, 7, 5, 4, 1, 1, 0, 4, 7, 6,	0, 5, 9, 8, 0, 4, 1, 1, 1, 6,	0, 5, 9, 8, 0, 4, 1, 1, 1, 6,
1, 6, 8, 9, 6, 3, 2, 1, 5, 1, 0, 2, 8, 6, 6, 6, 2,	7, 5, 6, 3, 4, 0, 5, 9, 8, 4,	7, 5, 6, 3, 4, 0, 5, 9, 8, 4,
3, 5, 2, 6, 7, 1, 9, 9, 2, 2, 6, 5, 8, 0, 4, 3, 1,	0, 9, 8, 8, 8, 2, 3, 7, 5, 5,	0, 9, 8, 8, 8, 2, 3, 7, 5, 5,
9, 6, 8, 7, 4, 0, 3, 3, 7, 1, 3, 0, 2, 9, 1, 5, 7,	5, 5, 7, 2, 6, 1, 0, 2, 3, 1,	5, 5, 7, 2, 6, 1, 0, 2, 3, 1,
	1, 9, 5, 1, 4, 5, 9, 1, 9, 6,	1 0 5 1 4 5 0 1 0 6

Singly Linked List. Aem işi iam iam initi   BK-LiviS					
Test	Expected	Got			
3, 2, 1, 1, 9, 8, 9, 1, 6, 7, 8, 4, 6, 1, 7, 5, 1,	5, 1, 7, 4, 1, 3, 0, 7, 6, 6,	5, 1, 7, 4, 1, 3, 0, 7, 6, 6,			
9, 3, 0, 5, 1, 1, 4, 2, 5, 1, 5, 2, 7, 4, 7, 9, 8,	3, 8, 8, 9, 3, 8, 6, 5, 4, 1,	3, 8, 8, 9, 3, 8, 6, 5, 4, 1,			
9, 2, 0, 2, 9, 9, 6, 8, 4, 0, 9, 5, 6, 0, 8, 7, 1,	7, 3, 5, 8, 0, 9, 8, 5, 3, 2,	7, 3, 5, 8, 0, 9, 8, 5, 3, 2,			
3, 1, 3, 1, 7, 3, 5, 2, 7, 2, 4, 2, 4, 4, 3, 7, 0,	6, 4, 4, 1, 6, 3, 1, 5, 9, 9,	6, 4, 4, 1, 6, 3, 1, 5, 9, 9,			
8, 2, 1, 2, 0, 5, 6, 3, 6, 9, 6, 4, 7, 1, 7, 2, 1,	7, 9, 4, 4, 2, 8, 3, 6, 0, 9,	7, 9, 4, 4, 2, 8, 3, 6, 0, 9,			
7, 6, 7, 0, 1, 6, 8, 6, 5, 1, 6, 0, 8, 5, 7, 4, 9,					
5, 9, 2, 6, 4, 9, 3, 4, 4, 6, 7, 6, 6, 6, 5, 0, 4,					
9, 4, 3, 9, 2, 6, 3, 0, 7, 6, 5, 6, 8, 8, 7, 6, 4,					
5, 1, 8, 1, 4, 4, 3, 5, 6, 2, 2, 8, 8, 8, 0, 5, 8,		1, 5, 8, 7, 9, 9, 1, 7, 3, 1,			
9, 0, 9, 0, 7, 0, 2, 6, 2, 3, 8, 1, 6, 5};	3, 5, 4, 4, 5, 4, 4, 8, 2, 1,				
int k = 11111;					
LLNode* head = LLNode::createWithIterators(arr,	3, 7, 8, 1, 5, 5, 0, 4, 5, 2,				
<pre>arr + sizeof(arr) / sizeof(int));</pre>		7, 7, 0, 8, 0, 4, 1, 9, 2, 0,			
LLNode::printList(head);	1, 6, 3, 9, 8, 3, 8, 3, 7, 1,				
cout << "\n";		2, 5, 9, 1, 2, 9, 7, 4, 2, 4,			
LLNode* newhead = rotateLinkedList(head, k);	5, 5, 7, 9, 6, 9, 0, 6, 8, 0,				
LLNode::printList(newhead);	5, 3, 9, 1, 9, 9, 5, 6, 1, 0,				
LENouepi inclise(newneau);					
		6, 2, 0, 8, 1, 1, 2, 3, 5, 6,			
		8, 6, 6, 4, 8, 7, 5, 4, 2, 7,			
		6, 8, 0, 9, 2, 9, 5, 3, 3, 0,			
	6, 4, 8, 8, 1, 6, 0, 5, 8, 6,				
		6, 1, 1, 0, 3, 7, 4, 3, 0, 0,			
	3, 4, 0, 7, 0, 7, 1, 3, 7, 5,				
		7, 5, 8, 9, 3, 5, 8, 8, 8, 4,			
	5, 1, 2, 8, 6, 9, 6, 9, 2, 7,				
		6, 9, 9, 4, 0, 8, 0, 4, 3, 5,			
		2, 0, 3, 2, 6, 5, 8, 5, 2, 9,			
		8, 6, 9, 8, 1, 7, 4, 9, 0, 2,			
		6, 8, 1, 9, 9, 1, 3, 4, 5, 4,			
		1, 1, 7, 5, 2, 0, 4, 3, 5, 3,			
		1, 4, 0, 7, 7, 9, 1, 8, 6, 3,			
		9, 0, 7, 7, 4, 7, 4, 3, 8, 2,			
	6, 4, 0, 5, 8, 8, 7, 2, 7, 3,	6, 4, 0, 5, 8, 8, 7, 2, 7, 3,			
		2, 3, 8, 7, 1, 3, 3, 7, 2, 2,			
		1, 6, 3, 4, 6, 5, 3, 4, 0, 2,			
		1, 2, 5, 1, 2, 6, 9, 6, 8, 0,			
	9, 7, 7, 8, 8, 6, 9, 7, 8, 1,	9, 7, 7, 8, 8, 6, 9, 7, 8, 1,			
	5, 3, 3, 8, 8, 4, 7, 6, 2, 2,	5, 3, 3, 8, 8, 4, 7, 6, 2, 2,			
		7, 0, 6, 8, 1, 5, 2, 5, 6, 2,			
		1, 2, 4, 9, 2, 6, 0, 2, 8, 0,			
		9, 9, 4, 7, 5, 4, 6, 6, 5, 2,			
		3, 9, 2, 7, 0, 6, 7, 1, 5, 4,			
	9, 8, 3, 2, 1, 4, 7, 9, 9, 6,	9, 8, 3, 2, 1, 4, 7, 9, 9, 6,			
		9, 6, 6, 6, 0, 9, 8, 5, 7, 3,			
	4, 8, 0, 4, 1, 1, 0, 9, 8, 4,	4, 8, 0, 4, 1, 1, 0, 9, 8, 4,			
	1, 7, 3, 1, 1, 2, 5, 4, 4, 6,	1, 7, 3, 1, 1, 2, 5, 4, 4, 6,			
	2, 7, 4, 5, 8, 5, 3, 0, 7, 1,	2, 7, 4, 5, 8, 5, 3, 0, 7, 1,			
	7, 3, 8, 5, 1, 1, 7, 2, 2, 4,	7, 3, 8, 5, 1, 1, 7, 2, 2, 4,			

Test	Expected	Got
	3, 4, 5, 4, 3, 0, 3, 7, 2, 0,	3, 4, 5, 4, 3, 0, 3, 7, 2, 0,
	9, 3, 4, 2, 4, 3, 5, 7, 8, 4,	9, 3, 4, 2, 4, 3, 5, 7, 8, 4,
	7, 4, 9, 5, 6, 4, 5, 0, 5, 2,	7, 4, 9, 5, 6, 4, 5, 0, 5, 2,
	9, 6, 9, 3, 5, 6, 9, 9, 0, 5,	9, 6, 9, 3, 5, 6, 9, 9, 0, 5,
	2, 1, 0, 4, 6, 1, 1, 7, 8, 8,	2, 1, 0, 4, 6, 1, 1, 7, 8, 8,
	5, 3, 5, 8, 1, 1, 2, 6, 8, 1,	5, 3, 5, 8, 1, 1, 2, 6, 8, 1,
	8, 2, 3, 9, 3, 0, 5, 8, 0, 0,	8, 2, 3, 9, 3, 0, 5, 8, 0, 0,
	6, 2, 4, 0, 2, 6, 2, 2, 8, 7,	6, 2, 4, 0, 2, 6, 2, 2, 8, 7,
	1, 8, 6, 8, 2, 7, 9, 3, 6, 3,	1, 8, 6, 8, 2, 7, 9, 3, 6, 3,
	5, 7, 1, 7, 0, 8, 6, 6, 6, 5,	5, 7, 1, 7, 0, 8, 6, 6, 6, 5,
	2, 6, 3, 2, 6, 3, 5, 6, 5, 2,	2, 6, 3, 2, 6, 3, 5, 6, 5, 2,
	3, 1, 7, 0, 2, 3, 2, 3, 3, 0,	3, 1, 7, 0, 2, 3, 2, 3, 3, 0,
	6, 1, 5, 1, 1, 0, 2, 1, 7, 8,	6, 1, 5, 1, 1, 0, 2, 1, 7, 8,
	8, 6, 7, 2, 9, 6, 1, 0, 1, 2,	8, 6, 7, 2, 9, 6, 1, 0, 1, 2,
	5, 0, 0, 6, 5, 7, 7, 4, 6, 4,	5, 0, 0, 6, 5, 7, 7, 4, 6, 4,
	7, 4, 1, 5, 6, 3, 1, 7, 5, 6, 4 4 2 8 5 7 6 2 8 1	7, 4, 1, 5, 6, 3, 1, 7, 5, 6,
	4, 4, 2, 8, 5, 7, 6, 2, 8, 1,	4, 4, 2, 8, 5, 7, 6, 2, 8, 1, 2, 2, 0, 8, 9, 3, 5, 6, 4, 3,
	2, 2, 0, 8, 9, 3, 5, 6, 4, 3, 4, 0, 9, 7, 7, 0, 0, 9, 8, 8,	4, 0, 9, 7, 7, 0, 0, 9, 8, 8,
	9, 6, 4, 6, 6, 4, 8, 0, 8, 2,	9, 6, 4, 6, 6, 4, 8, 0, 8, 2,
	8, 0, 0, 4, 1, 3, 0, 2, 9, 7,	8, 0, 0, 4, 1, 3, 0, 2, 9, 7,
	3, 3, 0, 5, 9, 0, 1, 4, 7, 1,	3, 3, 0, 5, 9, 0, 1, 4, 7, 1,
	6, 4, 4, 1, 4, 8, 9, 7, 5, 9,	6, 4, 4, 1, 4, 8, 9, 7, 5, 9,
	1, 9, 6, 5, 3, 4, 5, 3, 6, 1,	1, 9, 6, 5, 3, 4, 5, 3, 6, 1,
	0, 4, 3, 0, 9, 3, 8, 8, 9, 7,	0, 4, 3, 0, 9, 3, 8, 8, 9, 7,
	3, 0, 4, 2, 4, 9, 7, 4, 3, 2,	3, 0, 4, 2, 4, 9, 7, 4, 3, 2,
	2, 8, 9, 2, 5, 0, 9, 3, 2, 1,	2, 8, 9, 2, 5, 0, 9, 3, 2, 1,
	9, 3, 2, 3, 2, 8, 0, 2, 5, 1,	9, 3, 2, 3, 2, 8, 0, 2, 5, 1,
	6, 8, 3, 1, 7, 8, 2, 6, 2, 0,	
	2, 7, 2, 6, 7, 3, 6, 1, 5, 6,	
	3, 0, 4, 6, 4, 4, 2, 4, 1, 6,	
	0, 5, 5, 9, 3, 8, 4, 3, 4, 9,	
	6, 2, 0, 4, 6, 0, 5, 0, 9, 0,	
	9, 7, 6, 8, 7, 0, 7, 3, 6, 1,	
	8, 4, 2, 8, 7, 0, 2, 5, 4, 0,	
	5, 7, 4, 8, 5, 1, 2, 2, 1, 6,	
	5, 0, 9, 4, 6, 2, 7, 7, 4, 2,	
	9, 7, 6, 7, 5, 0, 5, 5, 2, 8,	
	8, 8, 8, 2, 0, 6, 2, 1, 8, 9,	8, 8, 8, 2, 0, 6, 2, 1, 8, 9,
	5, 1, 2, 8, 1, 5, 5, 7, 2, 8,	5, 1, 2, 8, 1, 5, 5, 7, 2, 8,
	6, 1, 9, 6, 9, 4, 1, 0, 0, 9,	
	4, 1, 1, 3, 9, 8, 1, 0, 4, 3,	4, 1, 1, 3, 9, 8, 1, 0, 4, 3,
	2, 6, 5, 9, 8, 3, 7, 9, 4, 0,	2, 6, 5, 9, 8, 3, 7, 9, 4, 0,
	6, 8, 8, 4, 1, 5, 0, 5, 6, 3,	
	3, 1, 0, 9, 3, 7, 6, 8, 7, 8,	
	1, 1, 0, 3, 1, 8, 9, 7, 9, 1,	
	8, 5, 8, 3, 3, 0, 7, 2, 3, 8,	
	9, 5, 0, 9, 4, 7, 7, 5, 6, 2,	

Test	Expected	Got
	2, 2, 6, 5, 3, 1, 9, 5, 1, 4,	2, 2, 6, 5, 3, 1, 9, 5, 1, 4,
	7, 7, 4, 6, 6, 1, 6, 0, 6, 3	7, 7, 4, 6, 6, 1, 6, 0, 6, 3,
	8, 0, 4, 2, 2, 0, 5, 3, 9, 8,	8, 0, 4, 2, 2, 0, 5, 3, 9, 8,
	7, 6, 3, 5, 1, 9, 4, 5, 0, 7,	7, 6, 3, 5, 1, 9, 4, 5, 0, 7,
	9, 1, 9, 1, 3, 6, 3, 2, 3, 9,	9, 1, 9, 1, 3, 6, 3, 2, 3, 9,
	2, 5, 6, 0, 2, 7, 2, 7, 9, 1,	2, 5, 6, 0, 2, 7, 2, 7, 9, 1,
	5, 1, 4, 3, 9, 8, 6, 2, 1, 9,	5, 1, 4, 3, 9, 8, 6, 2, 1, 9,
	0, 2, 8, 1, 9, 3, 5, 2, 7, 7,	0, 2, 8, 1, 9, 3, 5, 2, 7, 7,
	9, 9, 9, 6, 6, 6, 7, 6, 1, 2,	9, 9, 9, 6, 6, 6, 7, 6, 1, 2,
	7, 6, 4, 0, 9, 5, 6, 7, 5, 1,	7, 6, 4, 0, 9, 5, 6, 7, 5, 1,
	3, 7, 7, 8, 1, 6, 8, 4, 5, 4	3, 7, 7, 8, 1, 6, 8, 4, 5, 4,
	7, 2, 4, 0, 1, 4, 8, 1, 2, 3,	7, 2, 4, 0, 1, 4, 8, 1, 2, 3,
	0, 8, 8, 0, 5, 0, 5, 8, 4, 7,	0, 8, 8, 0, 5, 0, 5, 8, 4, 7,
	8, 7, 0, 0, 0, 5, 0, 1, 0, 0,	8, 7, 0, 0, 0, 5, 0, 1, 0, 0,
	1, 5, 5, 1, 4, 5, 7, 6, 8, 4	1, 5, 5, 1, 4, 5, 7, 6, 8, 4,
	9, 9, 6, 5, 6, 5, 2, 9, 2, 7,	9, 9, 6, 5, 6, 5, 2, 9, 2, 7,
	6, 3, 5, 5, 0, 5, 9, 0, 4, 7,	6, 3, 5, 5, 0, 5, 9, 0, 4, 7,
	1, 7, 9, 8, 1, 5, 5, 1, 5, 4	1, 7, 9, 8, 1, 5, 5, 1, 5, 4,
	5, 9, 6, 6, 8, 8, 7, 0, 7, 2,	5, 9, 6, 6, 8, 8, 7, 0, 7, 2,
	4, 4, 4, 3, 1, 4, 5, 9, 8, 0,	4, 4, 4, 3, 1, 4, 5, 9, 8, 0,
	8, 4, 9, 2, 4, 1, 9, 9, 1, 9	8, 4, 9, 2, 4, 1, 9, 9, 1, 9,
	5, 3, 3, 1, 9, 2, 6, 0, 3, 3,	5, 3, 3, 1, 9, 2, 6, 0, 3, 3,
	3, 0, 3, 9, 1, 2, 4, 5, 3, 5,	3, 0, 3, 9, 1, 2, 4, 5, 3, 5,
	7, 9, 7, 7, 4, 6, 9, 7, 5, 9	7, 9, 7, 7, 4, 6, 9, 7, 5, 9,
	9, 5, 2, 5, 9, 7, 0, 4, 3, 1,	9, 5, 2, 5, 9, 7, 0, 4, 3, 1,
	4, 3, 6, 1, 8, 5, 8, 8, 3, 7,	4, 3, 6, 1, 8, 5, 8, 8, 3, 7,
	1, 5, 3, 5, 0, 3, 4, 3, 7, 9	1, 5, 3, 5, 0, 3, 4, 3, 7, 9,
	6, 9, 6, 9, 6, 6, 4, 7]	6, 9, 6, 9, 6, 6, 4, 7]

	Test	Expected	Got	
•	int arr[] = {4, 3, 0, 1, 8, 3, 3, 8, 6, 8, 6, 6,	[4, 3, 0, 1, 8, 3, 3, 8, 6,	[4, 3, 0, 1, 8, 3, 3, 8, 6,	~
	4, 4, 9, 4, 6, 0, 6, 5, 2, 2, 9, 9, 1, 6, 2, 8, 1,	8, 6, 6, 4, 4, 9, 4, 6, 0, 6,	8, 6, 6, 4, 4, 9, 4, 6, 0, 6,	
	5, 8, 6, 5, 4, 0, 9, 9, 6, 2, 8, 1, 7, 2, 6, 4, 9,	5, 2, 2, 9, 9, 1, 6, 2, 8, 1,	5, 2, 2, 9, 9, 1, 6, 2, 8, 1,	
	8, 1, 7, 6, 6, 2, 4, 5, 5, 0, 6, 8, 9, 3, 6, 2, 7,	5, 8, 6, 5, 4, 0, 9, 9, 6, 2,	5, 8, 6, 5, 4, 0, 9, 9, 6, 2,	
	3, 0, 2, 6, 8, 9, 9, 6, 8, 2, 5, 0, 8, 0, 9, 7, 5,	8, 1, 7, 2, 6, 4, 9, 8, 1, 7,	8, 1, 7, 2, 6, 4, 9, 8, 1, 7,	
	6, 4, 5, 3, 1, 5, 5, 1, 4, 4, 9, 1, 0, 2, 3, 5, 4,	6, 6, 2, 4, 5, 5, 0, 6, 8, 9,	6, 6, 2, 4, 5, 5, 0, 6, 8, 9,	
	9, 3, 2, 2, 3, 9, 7, 8, 6, 7, 7, 4, 4, 8, 0, 6, 6,	3, 6, 2, 7, 3, 0, 2, 6, 8, 9,	3, 6, 2, 7, 3, 0, 2, 6, 8, 9,	
	2, 5, 8, 7, 6, 8, 7, 1, 7, 6, 1, 9, 2, 0, 3, 7, 1,	9, 6, 8, 2, 5, 0, 8, 0, 9, 7,	9, 6, 8, 2, 5, 0, 8, 0, 9, 7,	
	0, 0, 4, 5, 4, 4, 2, 9, 4, 6, 4, 5, 0, 8, 3, 9, 8,	5, 6, 4, 5, 3, 1, 5, 5, 1, 4,	5, 6, 4, 5, 3, 1, 5, 5, 1, 4,	
	2, 4, 9, 2, 4, 2, 6, 5, 2, 3, 5, 3, 8, 7, 6, 1, 2,	4, 9, 1, 0, 2, 3, 5, 4, 9, 3,	4, 9, 1, 0, 2, 3, 5, 4, 9, 3,	
	7, 9, 8, 7, 4, 8, 5, 4, 3, 1, 6, 0, 6, 6, 9, 4, 0,	2, 2, 3, 9, 7, 8, 6, 7, 7, 4,	2, 2, 3, 9, 7, 8, 6, 7, 7, 4,	
	4, 0, 0, 7, 8, 9, 4, 6, 7, 4, 3, 3, 7, 8, 7, 5, 7,	4, 8, 0, 6, 6, 2, 5, 8, 7, 6,	4, 8, 0, 6, 6, 2, 5, 8, 7, 6,	
	7, 9, 6, 1, 9, 4, 4, 1, 0, 9, 1, 2, 4, 8, 3, 1, 1,	8, 7, 1, 7, 6, 1, 9, 2, 0, 3,	8, 7, 1, 7, 6, 1, 9, 2, 0, 3,	
	7, 1, 7, 5, 5, 7, 1, 1, 1, 0, 0, 6, 7, 2, 3, 6, 6,	7, 1, 0, 0, 4, 5, 4, 4, 2, 9,	7, 1, 0, 0, 4, 5, 4, 4, 2, 9,	
	1, 4, 6, 8, 9, 7, 0, 8, 7, 8, 8, 0, 9, 0, 0, 2, 0,	4, 6, 4, 5, 0, 8, 3, 9, 8, 2,	4, 6, 4, 5, 0, 8, 3, 9, 8, 2,	
	5, 4, 6, 2, 3, 2, 1, 7, 5, 5, 7, 6, 3, 4, 2, 0, 1,	4, 9, 2, 4, 2, 6, 5, 2, 3, 5,	4, 9, 2, 4, 2, 6, 5, 2, 3, 5,	
	7, 7, 0, 5, 9, 3, 0, 6, 6, 1, 0, 2, 1, 6, 2, 4, 9,	3, 8, 7, 6, 1, 2, 7, 9, 8, 7,	3, 8, 7, 6, 1, 2, 7, 9, 8, 7,	
	8, 5, 4, 5, 3, 2, 9, 9, 8, 4, 0, 0, 7, 3, 1, 2, 0,	4, 8, 5, 4, 3, 1, 6, 0, 6, 6,	4, 8, 5, 4, 3, 1, 6, 0, 6, 6,	
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Test	Expected	Got
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31/24, 9:44 AM	

Test	Expected	Got	
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		4, 4, 5, 0, 1, 7, 9, 2, 6, 0,	

Tes	t	Expected	Got
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		0, 2, 5, 5, 8, 3, 2, 4, 9, 2,	0, 2, 5, 5, 8, 3, 2, 4, 9, 2,
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		7, 7, 2, 1, 0, 6, 9, 6]	7, 7, 2, 1, 0, 6, 9, 6]

Passed all tests! 🗸



Marks for this submission: 1,00/1,00.