Problem 4.)

Final output → [1,2,1|2,3,1,2,3,4,5,6]

```
struct Node {
    int val;
    Node*  next;
};

Node* llrec(Node* in1, Node* in2)
{
    if(in1 == nullptr) {
        return in2;
    }
    else if(in2 == nullptr) {
        return in1;
    }
    else {
        in1->next = llrec(in2, in1->next);
        return in1;
    }
}
```

in1 = 1,2,3,4
in2 = 5,6

① in1 = 1, in2 = 5,6
② in1 = 2, in2 = 5,6
③ in1 = 3, in2 = 5,6
④ in1 = 4, in2 = 5,6
⑤ in1 = null, in2 = 5,6

in1 → 4 → 5 → 6
|23456
3 → |23456
123|23456
2 → 123|23456
1 → 2 123|23456
12|23|23456

① passes pointer to 1 from in1, and 5 from in2
② iterates through 1, 2, 3, 4 until it hits NULL
③ will execute the first if statement and will return in2, which is [5,6] to the previous iteration
④ will assign in1 → next (which is pointing at 4) to [5,6] so now it will be 4 → 5 → 6
⑤ Returns in1 to previous call which is now 1|23456
⑥ in1 (which is 3 currently) will point to |23456
⑦ returns in1 which is now 3|23456
⑧ in1 is pointing at 2 which now point to 3|23456
⑨ returns in1 as 23|23456
⑩ in1 points at 1 which now points to 23|23456

in1 is now 123|23456

```
struct Node {
    int val;
    Node*  next;
};

Node* llrec(Node* in1, Node* in2)
{
    if(in1 == nullptr) {
        return in2;
    }
    else if(in2 == nullptr) {
        return in1;
    }
    else {
        in1->next = llrec(in2, in1->next);
        return in1;
    }
}
```

in1* points to 1
in1->next points to 2123123456
in1 = 12123123456

in1 = (1,2,3,4) in2 = (5,6)

① in1 → 1, in2 → 5
else
{ in1->next = llrec((5,6), 2) }

② in1 → 2, in2 → 5
else
{ in1->next = llrec((5,6), 3) }

③ in1 → 3, in2 → 5
else
{ in1->next = llrec(5,6), 4) }

④ in1 → 4, in2 → 5
else
{ in1->next = llrec (5,6) nullptr }

⑤ in1 → nullptr, in2 → 5
if(in1 == nullptr) // in1 == nullptr ✓
{ return in2 }
in2 = (5,6)

in1* points to 2
in1->next points to 123123456
in1 = 2123123456

in1* points to 3
in1->next points to [123456]
in1 = 123123456
returns in1 to iteration(2)

in1->next = (5,6)
in1* points to 4,
in1->next = 5,6
at this iteration, in1 = [1,2,3,4,5,6]
returns in1 // in1 = [123456]

Part 4 Question B

```
struct Node {
    int val;
    Node*  next;
};

Node* llrec(Node* in1, Node* in2)
{
    if(in1 == nullptr) {
        return in2;
    }
    else if(in2 == nullptr) {
        return in1;
    }
    else {
        in1->next = llrec(in2, in1->next);
        return in1;
    }
}
```

in1 = nullptr, in2 = 2

function llrec(in1, in2)

⇒ llrec(null, {2})

only {2} is returned