Merge_LinkList

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pa

Lc

pc

Head -> 1 -> 4 -> 7 -> 8 -> NULL

Lb   pb

---

pa->data > pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pa

Lc

Head -> 1 -> 4 -> 7 -> 8 -> NULL

Lb   pc   pb

---

pa->data < pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pc   pa

Lc

Head -> 1 -> 4 -> 7 -> 8 -> NULL

Lb   pb

---

pa->data > pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pa

Lc

Head -> 1 -> 4 -> 7 -> 8 -> NULL

Lb   pc   pb

---

pa->data == pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pc   pa

Lc

Head -> 1 -> 4 -> ~~7~~ -> 8 -> NULL

Lb   pb

pa->data > pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pa

Lc

Head -> 1 -> 4 -> ~~7~~ -> 8 -> NULL

Lb   pc pb

---

pa->data < pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pc   pa

Lc

Head -> 1 -> 4 -> ~~7~~ -> 8 -> NULL

Lb   pb

---

pa->data < pb->data

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pc   pa

Lc

Head -> 1 -> 4 -> ~~7~~ -> 8 -> NULL

Lb   pb

---

pa == NULL

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pc   pa

Lc

Head -> 1 -> 4 -> ~~7~~ -> 8 -> NULL

Lb   pb

---

free(Lb)

Head -> 3 -> 7 -> 10 -> 23 -> NULL

La   pc   pa

Lc

~~Head~~ -> 1 -> 4 -> ~~7~~ -> 8 -> NULL

Lb   pb

Lc = Head->1->3->4->7->8->10->23->NULL

circular_LinkList

Head
p

Head => NULL
p

Head => 1 => NULL
p   q

Head => 1 => NULL
        p
        q

Head => 1 => 2 => NULL
        p   q

Head => 1 => 2 => NULL
              p
              q

Head => 1 => 2 => 3 => NULL
              p   q

Head => 1 => 2 => 3 => NULL
                    p
                    q

Head => 1 => 2 => 3 => 4 => NULL
                    p   q

Head => 1 => 2 => 3 => 4 => NULL
                          p
                          q

Head => 1 => 2 => 3 => 4 => Head
                          p
                          q

Delete_LinkList

```
Head => 1 => 2 => 3 => 4 => Head
p        q
```

key = 3
```
Head => 1 => 2 => 3 => 4 => Head
        p     q
```

```
Head => 1 => 2 => 3 => 4 => Head
            p     q
```

q == 3
```
Head => 1 => 2 => 3 => 4 => Head
            p     q
```

```
Head => 1 => 2 => 4 => Head
            p
```

create_Dul_LinkList

```
NULL <- Head -> NULL
         p
```

```
NULL <- Head <=> 1 -> NULL
         p         q
```

```
NULL <- Head <=> 1 -> NULL
                   q
                   p
```

```
NULL <- Head <=> 1 <=> 2 -> NULL
                   p      q
```

```
NULL <- Head <=> 1 <=> 2 -> NULL
                        q
                        p
```

```
NULL <- Head <=> 1 <=> 2 <=> 3 -> NULL
                        p      q
```

```
NULL <- Head <=> 1 <=> 2 <=> 3 -> NULL
                             q
                             p
```

NULL <- Head <=> 1 <=> 2 <=> 3 <=> 4 -> NULL

                            p   q

NULL <- Head <=> 1 <=> 2 <=> 3 <=> 4 -> NULL

                                 q

                                 p

NULL <- Head <=> 1 <=> 2 <=> 3 <=> 4 -> NULL

                               q

                               p

Delete_Dul_LinkList

key = 12

NULL <- Head <=> 11 <=> 12 <=> 13 <=> 14 -> NULL

        q   p

---

while p->next != NULL && p->data != key

NULL <- Head <=> 11 <=> 12 <=> 13 <=> 14 -> NULL

                p

                q

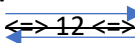NULL <- Head <=> 11 <=> 12 <=> 13 <=> 14 -> NULL

              q   p

---

p->next != NULL && p->data == key

NULL <- Head <=> 11 <=> 12 <=> 13 <=> 14 -> NULL

              q   p

LinkedList-7.c

p	float coef	int expn
p.a[0]	1	0
p.a[1]	2	1
p.a[2]	3	2
p.a[p.len-1] = *4 - 1 = 3*	4	3
q		
q.a[0]	5	0
q.a[1]	6	1
q.a[2]	7	2
q.a[3]	8	3
q.a[q.len-1] = *5 - 1 = 4*	9	4

p coef + q coef

float coef	int expn
1 + 5	0
2 + 6	1
3 + 7	2
4 + 8	3

Output:
6*x^0 + 8*x^1 + 10*x^2 + 12*x^3 + 9*x^4

add_ploy

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3
    Lc   pa
    pc
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
        pb

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3
    Lc   pa
    pc
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
        pb
x = 1 + 5 = 6

La = Head -> 6^0 -> 2^1 -> 3^2 -> 4^3
    Lc   pa
    pc
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
        pb

La = **Head -> 6^0** -> 2^1 -> 3^2 -> 4^3
    Lc   pc   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
        ptr   pb
x = 2 + 6 = 8

La = **Head -> 6^0** -> 8^1 -> 3^2 -> 4^3
    Lc   pc   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
        ptr   pb

La = **Head -> 6^0 -> 8^1** -> 3^2 -> 4^3
    Lc   pc   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
          ptr   pb

La = **Head -> 6^0 -> 8^1** -> 3^2 -> 4^3
    Lc   pc   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
                       ptr   pb

$x = 3 + -3 = 0$

La = **Head -> 6^0 -> 8^1** -> 3^2 -> 4^3
    Lc   pc   ptr   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
                       ptr   pb

La = **Head -> 6^0 -> 8^1** -> 3^2 -> 4^3
    Lc   pc   ptr   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4
                       ptr   pb

$x = 4 + -4 = 0$

La = **Head -> 6^0 -> 8^1** -> 3^2 -> 4^3 -> NULL
    Lc   pc   ptr   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                             ptr   pb

La = **Head -> 6^0 -> 8^1** -> 3^2 -> 4^3 -> NULL
    Lc   pc   ptr   pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                             ptr   pb

Lc = Head -> 6^0 -> 8^1 -> 9^4 -> NULL

LinkedList-9 add_ploy

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
            pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
            pb
Lc, pc = Head

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
             pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
            pb
Lc, pc = Head
$x = 1 + 5 = 6$

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
               pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
               pb
Lc = Head -> 6^0 -> NULL
           p
           pc

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
                          pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                          pb
Lc = Head -> 6^0 -> NULL
                  p
                  pc
x = 2 + 6 = 8

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
                               pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                               pb
Lc = Head -> 6^0 -> 8^1 -> NULL
                   p
                   pc

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
                          pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                               pb
Lc = Head -> 6^0 -> 8^1 -> NULL
                      p
                      pc
x = 3 + -3 = 0

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
                                    pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                                       pb
Lc = Head -> 6^0 -> 8^1 -> NULL
                   p
                   pc

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL
                                    pa
Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL
                                       pb
Lc = Head -> 6^0 -> 8^1 -> NULL
                      p
                      pc
x = 4 + -4 = 0

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL

                                       pa

Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL

                                                   pb

Lc = Head -> 6^0 -> 8^1 -> NULL

                  p

                  pc

La = Head -> 1^0 -> 2^1 -> 3^2 -> 4^3 -> NULL

                                       pa

Lb = Head -> 5^0 -> 6^1 -> -3^2 -> -4^3 -> 9^4 -> NULL

                                                   pb

Lc = Head -> 6^0 -> 8^1 -> 9^4 -> NULL

                    p

                    pc

Lc = Head -> 6^0 -> 8^1 -> 9^4 -> NULL