Liste in C (Liste_C.c)

```c
#include <stdio.h>
#include <string.h>
#include <malloc.h>

typedef struct item_type {
        char *c;                /* Daten */
} item_type;

typedef struct list {
        item_type item;        /* data item */
        struct list *next;    /* point to successor */
} list;

int equal(item_type *i1, item_type *i2) {
        if(i1==NULL && i2==NULL) return 1;
        if(i1==NULL || i2==NULL) return 0;
        if(i1->c==NULL && i2->c==NULL) return 1;
        if(i1->c==NULL || i2->c==NULL) return 0;
        if(!strcmp(i1->c, i2->c)) return 1;
        return 0;
}

list *search_list(list *l, item_type x) {
        if (l == NULL) return(NULL);
        if (equal(&(l->item), &x))
                return l;
        return search_list(l->next, x);
}

void insert_list(list **l, item_type x) {
        list *p;
        p = (list *)malloc( sizeof(list) );
        p->item = x;
        p->next = *l;
        *l = p;
}

void delete_list(list **l, item_type x) {
        list *p;                        /* item pointer */
        list *last = NULL;        /* predecessor pointer */
        p = *l;
        /* find item to delete */
        while (!equal(&(p->item), &x)) {
                last = p;
                p = p->next;
        }
        if (last == NULL)            /* splice out of the list */
                *l = p->next;
        else
                last->next = p->next;
        free(p);                        /* return memory used by the node */
}
```

```c
void show(list *l) {
      printf("show list\n");
      while(l){
            printf("data item = %s\n", l->item);
            l=l->next;
      }
      printf("end of list\n");
}

void delete_list_all(list **l) {
      list *p = *l;
      while(p){
            p = p->next;
            free(*l);
            *l = p;
      }
      printf("empty list\n");
}

unsigned long long anz(list *l) {
      unsigned long long n=0ULL;
      while(l)
            l=l->next,n++;
      return n;
}

int main(){
      list *start = NULL;
      item_type p;
      p.c = "HTW Dresden";
      insert_list(&start, p);

      p.c = "Palucca Hochschule";
      insert_list(&start, p);

      p.c=0;
      insert_list(&start, p);
      printf("Anzahl Listenelemente %dULL\n", anz(start));
      show(start);

      p.c=0;
      delete_list(&start, p);
      show(start);

      delete_list_all(&start);
      show(start);

      getc(stdin);
      return 0;
}
```

```
/*
Anzahl Listenelemente 3ULL
show list
data item = (null)
data item = Palucca Hochschule
data item = HTW Dresden
end of list
show list
data item = Palucca Hochschule
data item = HTW Dresden
end of list
empty list
show list
end of list
*/
```