二叉查找树（4）
--使用

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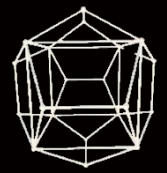


任务

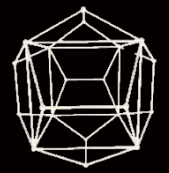
宠物俱乐部管理

向俱乐部成员花名册添加宠物、显示成员列表、报告成员数量、核实成员及退出

设计思想

每个功能由一个函数完成

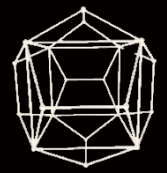
main函数根据用户的选择执行相应的函数



main函数

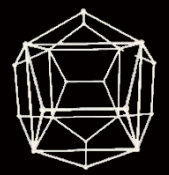
```
/* petclub.c -- 使用二叉查找数 */
#include <stdio.h>
#include <string.h>
#include <ctype.h>

#include "tree.h"
char menu(void);
void addpet(Tree * pt);
void droppet(Tree * pt);
void showpets(const Tree * pt);
void findpet(const Tree * pt);
void printitem(Item item);
void uppercase(char * str);
char * s_gets(char * st, int n);
```

```
int main(void)
{
        Tree pets;
        char choice;

        InitializeTree(&pets);
        while ((choice = menu()) != 'q')  {
                switch (choice)  {
                        case 'a': addpet(&pets); break;
                        case 'l': showpets(&pets); break;
                        case 'f': findpet(&pets); break;
                        case 'n': printf("%d pets in club\n", TreeItemCount(&pets));
                                  break;
                        case 'd': droppet(&pets); break;
                        default: puts("Switching error");
                }
        }
        DeleteAll(&pets);
        puts("Bye.");

        return 0;
}
```



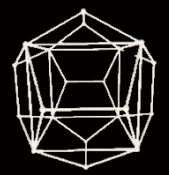
显示菜单，接受用户的选择函数manu


```
char menu(void)
{
        int ch;

        puts("Nerfville Pet Club Membership Program");
        puts("Enter the letter corresponding to your choice:");
        puts("a) add a pet l) show list of pets");
        puts("n) number of pets f) find pets");
        puts("d) delete a pet q) quit");
        while ((ch = getchar()) != EOF)  {
                while (getchar() != '\n')  continue;
                ch = tolower(ch);
                if (strchr("alrfndq", ch) == NULL)
                        puts("Please enter an a, l, f, n, d, or q:");
                else   break;
        }
        if (ch == EOF)   ch = 'q';

        return ch;
}
```



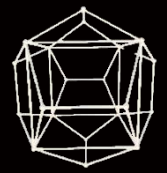
添加宠物函数addpet


```
void addpet(Tree * pt)
{
        Item temp;

        if (TreeIsFull(pt))
                puts("No room in the club!");
        else  {
                puts("Please enter name of pet:");
                s_gets(temp.petname, SLEN);
                puts("Please enter pet kind:");
                s_gets(temp.petkind, SLEN);
                uppercase(temp.petname);
                uppercase(temp.petkind);
                AddItem(&temp, pt);
        }
}
```



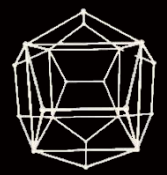
显示所有宠物的信息函数showpets


```
void showpets(const Tree * pt)
{
        if (TreeIsEmpty(pt))
                puts("No entries!");
        else
                Traverse(pt, printitem);
}


void printitem(Item item)
{
       printf("Pet: %-19s Kind: %-19s\n",  item.petname,  item.petkind );
}
```



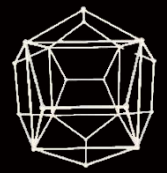
查找宠物函数findpet


```
void findpet(const Tree * pt)
{
        Item temp;
        if (TreeIsEmpty(pt))  {
                puts("No entries!");
                return; /*
        }
        puts("Please enter name of pet you wish to find:");
        s_gets( temp.petname, SLEN);
        puts("Please enter pet kind:");
        s_gets( temp.petkind, SLEN);
        uppercase(temp.petname);
        uppercase(temp.petkind);
        printf("%s the %s ",  temp.petname, temp.petkind );
        if (InTree(&temp, pt))
                printf("is a member.\n");
        else
                printf("is not a member.\n");
}
```



删除宠物函数droppet


```
void droppet(Tree * pt)
{
        Item temp;
        if ( TreeIsEmpty(pt))  {
                puts("No entries!");
                return; /* 如果树为空，则退出该函数 */
        }
        puts("Please enter name of pet you wish to delete:");
        s_gets( temp.petname,  SLEN );
        puts("Please enter pet kind:");
        s_gets( temp.petkind, SLEN );
        uppercase( temp.petname );
        uppercase( temp.petkind );
        printf("%s the %s ",  temp.petname,  temp.petkind );
        if (DeleteItem(&temp, pt))
                printf("is dropped from the club.\n");
        else
                printf("is not a member.\n");
}
```



运行实例

Nerfville Pet Club Membership Program
Enter the letter corresponding to your choice:
a) add a pet l) show list of pets
n) number of pets f) find pets
d)delete a pet q) quit
a
Please enter name of pet:
Quincy
Please enter pet kind:
pig
Nerfville Pet Club Membership Program
Enter the letter corresponding to your choice:
a) add a pet l) show list of pets
n) number of pets f) find pets
q) quit
a
Please enter name of pet:
Bennie Haha
Please enter pet kind:
parrot
Nerfville Pet Club Membership Program
Enter the letter corresponding to your choice:
a) add a pet l) show list of pets
n) number of pets f) find pets
d) delete a pet q) quit
a
Please enter name of pet:
Hiram Jinx
Please enter pet kind:
domestic cat
Nerfville Pet Club Membership Program
Enter the letter corresponding to your choice:
a) add a pet l) show list of pets
n) number of pets f) find pets
q) quit
n
3 pets in club
Nerfville Pet Club Membership Program
Enter the letter corresponding to your choice:
a) add a pet l) show list of pets
n) number of pets f) find pets
q) quit
l
Pet: BENNIE HAHA Kind: PARROT
Pet: HIRAM JINX Kind: DOMESTIC CAT
Pet: QUINCY Kind: PIG
Nerfville Pet Club Membership Program
Enter the letter corresponding to your choice:
a) add a pet l) show list of pets
n) number of pets f) find pets
q) quit
q
Bye.