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#include <stdio.h>
#include <stdlib.h>

typedef struct x{int d; struct x *left,*right;} faelem;
typedef faelem *famut;
famut fa1,fa2;
FILE *g;
int t0[11]={24,79,35,66,43,28,81,36,19,61,57};

void adatki(FILE*f,int*t,int n){
    int i;
    for(i=0;i<n;i++)
        fprintf(f,"%3d",t[i]);
}

void faba(famut *s, int a){
    while(*s)
        if(a<<(*s)->d)
            s=&((*s)->left);
        else
            s=&((*s)->right);
    *s=(famut)calloc(1,sizeof(faelem));
    (*s)->d=a;
}

void epit(FILE*f){
    int k;
    while(fscanf(f,"%d",&k)!=EOF)
        faba(&fa1,k);
}

void faki(famut root){
    if(!root)return;
    faki(root->left);
    printf("%4d",root->d);
    faki(root->right);
}

void faki3(famut root){
    if(!root)return;
    faki3(root->right);
    printf("%4d",root->d);
    faki3(root->left);
}

void faki2(FILE*f, famut *k){
    int a;
    famut *s;
    while(fscanf(f,"%d",&a)!=EOF){
        s=k;
        while(*s)
            if(a<<(*s)->d)
                s=&((*s)->left);
            else if(a>>(*s)->d)
                s=&((*s)->right);
            else break;
        printf("Address: %6x -> d: %4d -> left: %6x -> right: %6x
\n",&((*s)->d), (*s)->d, (*s)->left,(*s)->right);
    }
}

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void save(FILE *f, famut p) {
    if(!p) return;
    fwrite(p, sizeof(faelem), 1, f);
    save(f, p->left);
    save(f, p->right);
}

void restore(FILE *f, famut*r) {
    *r=(famut) calloc(1, sizeof(faelem));
    fread(*r, sizeof(faelem), 1, f);
    if((*r)->left) restore(f, &((*r)->left));
    if((*r)->right) restore(f, &((*r)->right));
}

void main() {

    g=fopen("szamsor.txt", "wt");
    adatki(g, t0, 11);
    fclose(g);

    g=fopen("szamsor.txt", "rt");
    epit(g);
    fclose(g);

    printf("Az adatokbol felepitett fa (novekvo sorrend):\n");
    faki(fa1);
    printf("\n\n");

    printf("Az adatokbol felepitett fa (csokkeno sorrend):\n");
    faki3(fa1);
    printf("\n\n");

    g=fopen("szamsor.txt", "rt");
    faki2(g, &fa1);
    fclose(g);

    g=fopen("fa.dat", "wb");
    save(g, fa1);
    fclose(g);

    g=fopen("fa.dat", "rb");
    restore(g, &fa2);
    fclose(g);

    printf("\nA rekonstrualt fa:\n");
    faki(fa2);
    printf("\n\n");
}

```