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5/25/2014

CS 3240

**Program #3**

#include <iostream>

#include <fstream>

#include <iomanip> // set()

#include <new>

#include <stdlib.h> // ext()

#include <string.h>

using namespace std;

struct mdata {

int acct;

char name[25];

float baln;

};

struct tdata {

int acct;

char name[25];

float tran;

};

struct node {

node \*blink;

mdata info;

node \*flink;

};

node \*const nill = (node\*)0; // global const

node \*head, \*tail; // the only global vars

int main()

{

void newerr();

void makelist(const char \* ), showlist( const char \* ), updatefile( const char \* );

set\_new\_handler(newerr);

makelist( "masfil" );

showlist( "\n\nordered master list:\n\n\n" );

cout << "\n";

updatefile( "tranfil" );

showlist( "updated master list:\n\n\n" );

return 0;

}

void

addnode( node \*p, mdata & mrec ){

void append( mdata & ), insertat( node \*, mdata & );

if ( p == nill )

append(mrec);

else

insertat(p, mrec);

}

void

append( mdata & mrec ) {

void newnode (node \*&, mdata & );

node \*p;

newnode(p, mrec);

p->blink = tail;

p->flink = nill;

if ( tail == nill )

head = p;

else

tail->flink = p;

tail = p;

}

void

drawline(){

int i;

for ( i = 48 ; i-- ; )

cout << '.';

cout << '\n';

}

int

found( int acc, node \*&p ){

p = head;

while ( 1 ){

if ( p == nill ) {

return (0);

} else{

if ( p->info.acct < acc ) // put node in right place

p = p->flink;

else

return ( p->info.acct == acc );

}

}

}

void

insertat( node \*p, mdata & mrec ){

void newnode( node \*&, mdata & ), prefix( mdata & );

node \*q;

if ( p == head )

prefix( mrec );

else { // create the new node and insert in right place

newnode( q, mrec );

q->blink = p->blink;

q->flink = p;

p->blink->flink = q;

p->blink = q;

}

}

void

makelist( const char \*masn ){

int found( int, node \*& );

void addnode( node \*, mdata & ), drawline( void ), showmrec( mdata & );

ifstream f;

mdata mrec;

node \*p;

f.open( masn, ios::in );

if ( f.fail() ){

cout << "\*\* can't open " << masn << " \*\*\n";

exit ( 1 );

}

cout << "original master file:\n\n\n";

head = tail = nill;

while ( f.read((char \*)&mrec, sizeof( mdata )) ){

showmrec( mrec ); // display data

if ( found( mrec.acct, p ) ){

cout << "\*\* duplicate account number\n";

break;

}

addnode( p, mrec ); // create the new nodes

}

f.close();

drawline();

}

void

newacct( node \*p, tdata & trec ){ // create the account from the master record's data

void addnode( node \*, mdata & );

mdata mrec;

mrec.acct = trec.acct;

strcpy( mrec.name, trec.name);

mrec.baln = trec.tran;

addnode( p, mrec );

}

void

newnode( node \* & p, mdata & mrec ){

p = new node;

p->info = mrec;

}

void

newerr() {

cout << "\*\* new has failed \*\*\n";

exit(1);

}

void

prefix( mdata & mrec ){

void newnode( node \*&, mdata & );

node \*p;

newnode( p, mrec );

p->blink = nill;

p->flink = head;

if ( head == nill )

tail = p;

else

head->blink = p;

head = p;

}

void

remove( node \*p ){

if ( p == head ) // is p head?

head = p->flink; // head is now p's forward link

else

p->blink->flink = p->flink; // make node before p link to p's forward link

if ( p == tail ) // is p tail?

tail = p->blink; // tail is now p's before link

else

p->flink->blink = p->blink; // make node after p link it's before link to p's before link

delete p;

}

void

showlist( const char \*s ){

void drawline( void ), showmrec( mdata & );

node \*p;

cout << s;

p = head;

while ( p != nill ){

showmrec( p->info );

p = p->flink;

}

drawline();

}

void

showmrec( mdata & mrec ){

cout << setw(10) << (mrec).acct << " ";

cout.setf( ios::left,ios::adjustfield );

cout << setw(26) << (mrec).name;

cout.setf( ios::right, ios::adjustfield );

cout.setf( ios::fixed, ios::floatfield );

cout.setf( ios::showpoint );

cout.precision(2);

cout << setw(10) << (mrec).baln << '\n';

}

void

showtrec( tdata & trec ){

cout << setw(10) << (trec).acct << " ";

cout.setf( ios::left, ios::adjustfield );

cout << setw(26) << (trec).name;

cout.setf( ios::right, ios::adjustfield );

cout.setf( ios::fixed, ios::floatfield );

cout.setf( ios::showpoint );

cout.precision(2);

cout << setw(10) << (trec).tran << "\n\n";

}

void

updatefile( const char \*trann ){

int found( int, node \*& );

void newacct( node \*, tdata & ), showlist( const char \* ), showtrec( tdata & ), updaterec( node \*, float & );

ifstream f;

node \*p;

tdata trec;

f.open( trann, ios::in );

if ( f.fail() ){

cout << "\*\* can't open " << trann << " \*\*\n";

exit( 1 );

}

while ( f.read((char\*)&trec, sizeof(tdata)) ){

showtrec( trec );

if ( found( trec.acct, p ) ) // if the account exists then update the balance

updaterec( p, trec.tran );

else

newacct( p, trec ); // this is a new account so create it

showlist("");

cout << '\n';

}

f.close();

}

void updaterec( node \*p, float & tran ){

void remove( node \* );

if ( (p->info.baln += tran) < 0.01 ) // remove the account if the balance is 0 or negative

remove(p);

}

**Results**

**mmac:cs3240 mlmartinez85$ g++ updatefiles.cpp -o updatefiles**

**mmac:cs3240 mlmartinez85$ ./updatefiles**

original master file:

27183 Hun, Attila The 1234.56

12345 Dooright, Dudley 211.22

31416 Whiplash, Snidely 1200.00

14142 Jekyll, Doctor 1500.00

31623 Hyde, Mister 1500.00

10203 Bear, Smokey The 2000.00

20103 Dumpty, Humpty 3000.00

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

22345 Snowman, Abominable 2496.24

................................................

ordered master list:

10203 Bear, Smokey The 2000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 1500.00

20103 Dumpty, Humpty 3000.00

22345 Snowman, Abominable 2496.24

27183 Hun, Attila The 1234.56

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1200.00

31623 Hyde, Mister 1500.00

................................................

31623 Hyde, Mister -1500.00

10203 Bear, Smokey The 2000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 1500.00

20103 Dumpty, Humpty 3000.00

22345 Snowman, Abominable 2496.24

27183 Hun, Attila The 1234.56

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1200.00

................................................

20301 Tin, Rin Tin 500.00

10203 Bear, Smokey The 2000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 1500.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

27183 Hun, Attila The 1234.56

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1200.00

................................................

31416 Whiplash, Snidely 100.00

10203 Bear, Smokey The 2000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 1500.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

27183 Hun, Attila The 1234.56

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1300.00

................................................

10203 Bear, Smokey The -2000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 1500.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

27183 Hun, Attila The 1234.56

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1300.00

................................................

14142 Jekyll, Doctor 1500.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

27183 Hun, Attila The 1234.56

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1300.00

................................................

27183 Hun, Attila The -1234.56

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1300.00

................................................

10101 Jim, Jungle 1000.00

10101 Jim, Jungle 1000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1300.00

................................................

31416 Whiplash, Snidely 100.00

10101 Jim, Jungle 1000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1400.00

................................................

32123 Kid, Billy The 900.00

10101 Jim, Jungle 1000.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1400.00

32123 Kid, Billy The 900.00

................................................

10101 Jim, Jungle -200.00

10101 Jim, Jungle 800.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1400.00

32123 Kid, Billy The 900.00

................................................

22222 Rooter, Roto 2750.00

10101 Jim, Jungle 800.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22222 Rooter, Roto 2750.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1400.00

32123 Kid, Billy The 900.00

................................................

updated master list:

10101 Jim, Jungle 800.00

12345 Dooright, Dudley 211.22

14142 Jekyll, Doctor 3000.00

20103 Dumpty, Humpty 3000.00

20301 Tin, Rin Tin 500.00

22222 Rooter, Roto 2750.00

22345 Snowman, Abominable 2496.24

30102 Woman, Wonder 3824.36

30201 Hulnk, Incredible 9646.75

31416 Whiplash, Snidely 1400.00

32123 Kid, Billy The 900.00

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