#include <iostream>

#include <cstdio>

#include <string>

#include <cstring>

#include <map>

#include <bits/stdc++.h>

using namespace std;

int cp=0;//产品数量

int ac=1;

map<int,int >ys;//id 映射

map<int,int >fys;//id 反映射

map<int,string >date;//先对时间转换为绝对时间

map<string,int >fdate;//绝对时间转换为相对时间

class customer{

public:

void add(){

int m, n, i;

cout<<"Please input the account number:"<<endl;

cin>>n;

for(i = 0; code[i+1] != 0; i++) {

if(n == code[i]){

cout<<"The account has existed!"<<endl;

    break;

}

else{

cout<<"Please input the money:"<<endl;

cin>>m;

cout<<"Success!"<<endl;

for(i = 0; code[i+1] != 0; i++){

if(code[i] == 0){

code[i] = n;

money[i] = m;

break;

}

}

}

}

}

//加入一个产品

void add(int id,float m){

code[bj]=id;

money[bj]=m;

bj++;

}

void del(){

int n, i, j;

cout<<"Please input the number of account:"<<endl;

cin>>n;

for(i = 0; code[i] != 0; i++) {

if(n == code[i]){

cout<<"The account has been deleted!"<<endl;

for(j = i; code[j+1] != 0;j++)

  { code[j] = code[j+1];

  money[j] = money [j+1];}

    break;

}

else

cout<<"Please input the right number!"<<endl;

}

}

//在用户class中删除product并且返回投资金额

float del(int id){

for(int i=0;i<bj;i++)

if(id==code[i]){

code[i]=-1;

float t=money[i];

money[i]=0;

return t;

}

return 0;

}

void dis(){

cout<<"id="<<id<<endl;

cout<<"name="<<name<<endl;

cout<<"address="<<address<<endl;

cout<<"emplyee="<<employee<<endl;

cout<<"rank="<<rank<<endl;

cout<<"idcard="<<card<<endl;

cout<<"phone="<<phone<<endl;

display();

}

void display(){

int i;

cout<<"The code and money is:"<<endl;

for(i = 0; code[i] <bj; i++){

if(money[i]!=0)

cout<<code[i]<<"  "<<money[i]<<endl;

}

}

void edit(int id,string name,string address,string employee,char rank,long long card,long long phone){

this->id=id;

this->name=name;

this->address=address;

this->employee=employee;

this->rank=rank;

this->card=card;

this->phone=phone;

}

int get\_id(){

return id;

}

string get\_name(){

return  name;

}

char get\_rank(){

return rank;

}

int get\_bj(){

return bj;

}

int code[100];

double money[100];

private:

//string account;

int id;

int bj;

string name;

string address;

string employee;

char rank;

long long card;

long long phone;

};

class product {

public:

product (){}

product(int id,char fk,int mb,int me,int cb,int ce,float profit ){

this->id=id;

this->fk=fk;

this->mb=mb;

this->me=me;

this->cb=cb;

this->ce=ce;

this->profit=profit;

}

void edit(int id,char fk,int mb,int me,int cb,int ce,float profit ){

this->id=id;

this->fk=fk;

this->mb=mb;

this->me=me;

this->cb=cb;

this->ce=ce;

this->profit=profit;

}

int get\_id(){

return id;

}

void display(){

cout<<"产品代码: "<<id<<endl;

cout<<"风控等级: "<<fk<<endl;

cout<<"募集启始时间，募集结束时间: "<<mb<<",   "<<me<<endl;

cout<<"储蓄启始时间，储蓄结束时间: "<<cb<<",   "<<ce<<endl;

cout<<"年化利润: "<<profit<<endl;

}

char get\_fk(){

return fk;

}

int get\_mb(){

return mb;

}

int get\_me(){

return me;

}

int get\_cb(){

return cb;

}

int get\_ce(){

return ce;

}

float get\_profit(){

return profit;

}

private:

int id;//产品代码

char fk;//风控等级

int mb,me;//募集启始时间，募集结束时间

int cb,ce;//储蓄启始时间，储蓄结束时间

float profit;//利润

};

class Bank{

public:

int day;

void dis(){

cout<<"当前日期： "<<date[day]<<endl;

cout<<"待还用户本金： "<<hb<<endl;

cout<<"待换用户利息： "<<hl<<endl;

cout<<"已收用户本金： "<<sb<<endl;

}

void edit\_hb(float x){

hb+=x;

}

void edit\_hl(float x){

hl+=x;

}

void edit\_sb(float x){

sb+=x;

}

private: float hb,hl,sb;//还本，还利，收本

};

Bank bank[1000];

product  p[100000];

customer c[10000];

void creat\_customer (){

int id;

string name;

string address;

string employee;

char rank;

//int code[100];

//double money[100];

long long card;

long long phone;

cout<<"输入id，姓名，地址，工作，风控等级，身份证号码，电话号码： "<<endl;

cin>>id>>name>>address>>employee >>rank>>card>>phone;

if(c[id].get\_id()==id){

cout<<"this accounts has exist, you can't creat it"<<endl;

return ;

}

c[id].edit(id,name,address,employee,rank,card,phone);

}

void creat\_profit(){

int id;//产品代码

char fk;//风控等级

int mb,me;//募集启始时间，募集结束时间

int cb,ce;//储蓄启始时间，储蓄结束时间

float profit;//利润

cout<<"请输入产品代码,风控等级，募集启始时间，募集结束时间，储蓄启始时间，储蓄结束时间，年化利润："<<endl;

cin>>id>>fk>>mb>>me>>cb>>ce>>profit;

if(p[ys[id]].get\_profit()!=0){

cout<<"this product has exist, you can't creat it!"<<endl;

return ;

}

ys[id]=cp;//id映射；

fys[cp]=id;

cp++;

// p[ys[id]].edit(id,fk,mb,me,cb,ce,profit);

p[ys[id]].edit(id,fk,mb,me,cb,ce,profit);

//product

}

void buy(int day){

cout<<"购买id，产品id，购买金额"<<endl;

int bid,pid;

float m;

cin>>bid>>pid>>m;

pid=ys[pid];

//cout<<c[bid].get\_rank()<<p[pid].get\_fk()<<endl;

if(c[bid].get\_rank()<p[pid].get\_fk()){

cout<<"rank:can't buy it "<<endl;

return ;

}

if(day<p[pid].get\_mb()||day>p[pid].get\_me()){

cout<<"day:can't buy it "<<endl;

return ;

}

c[bid].add(pid,m);

for(int i=day;i<=p[pid].get\_ce();i++)

bank[i].edit\_sb(m);

for(int i=p[pid].get\_ce()-3;i<=p[pid].get\_ce();i++){

bank[i].edit\_hb(m);

bank[i].edit\_hl(m\*p[pid].get\_profit()\*(p[pid].get\_cb()-p[pid].get\_ce()+1)/365);}

}

int day=1;

int convert(int year,int mouth,int day)

{

int date=0,i,j=0;

int a[12];

int b[12]={31,29,31,30,31,30,31,31,30,31,30,31};

int c[12]={31,28,31,30,31,30,31,31,30,31,30,31};

if(((year%4==0)&&(year%100!=0))||(year%400==0))

{

for(j=0;j<12;j++)

a[j]=b[j];

}

else

{

for(j=0;j<12;j++)

a[j]=c[j];

}

j=0;

date=(year-2018)\*365;

for(i=0;i<mouth-1;i++)

{

j=j+a[i];

}

date=date+j+day;

return date;

}

void del(int bid,int pid,int day){

pid=ys[pid];

float m;

for(int i=0;i<c[bid].get\_bj();i++)if(pid==c[bid].code[i]){

m=-c[bid].money[i];break;

}

if(m==0){cout<<"you haven't buy it !"<<endl;

return ;}

for(int i=day;i<=p[pid].get\_ce();i++)

bank[i].edit\_sb(m);

for(int i=p[pid].get\_ce()-3;i<=p[pid].get\_ce();i++){

bank[i].edit\_hb(m);

bank[i].edit\_hl(m\*p[pid].get\_profit()\*(p[pid].get\_cb()-p[pid].get\_ce()+1)/365);}

}

int main(int argc, char \*argv[]) {

int d=1;

int b[12]={31,29,31,30,31,30,31,31,30,31,30,31};

for(int i=2018;i<=2020;i++)

for (int j=1;j<=12;j++) {

for(int k=1;k<=b[j];k++){

date[convert(i,j,k)]=to\_string(i)+":"+to\_string(j)+":"+to\_string(k);

fdate[to\_string(i)+":"+to\_string(j)+":"+to\_string(k)]=convert(i,j,k);

}

}

for(int i=0;i<1000;i++)bank[i].day=i;

//product  p(1,'A',1,1,1,1,1);

//xxp.display();

//c[1].edit(1, "cy","ls","xs", 'D', 440, 156);

//p[1].edit(1, 'A', 1, 2, 3, 5, 0.1);

//1 cy ls stu A 440 156

//1 A 1 2 3 5 0.2

cout<<"welcome to use bank administrate system"<<endl;

while(1){

char st;

cout<<"++++++++++++++++++++++++++++++++++"<<endl;

cout<<"input A:creat a account"<<endl;

cout<<"input B:buy a profot"<<endl;

cout<<"input S:delete a profit "<<endl;

cout<<"input C:creat a product"<<endl;

cout<<"input D:display bank's information "<<endl;

cout<<"input N:enter next day"<<endl;

cin>>st;

if(st=='A'){

creat\_customer();

ac++;

}

if(st=='B'){

buy(day);

}

if(st=='C'){

creat\_profit();

}

if(st=='D'){

cout<<"input B :display bank's information"<<endl;

cout<<"input P :display product's information"<<endl;

cout<<"input A :display accounts's information"<<endl;

cin>>st;

if(st=='B')bank[day].dis();

if(st=='P')for(int i=0;i<cp;i++)p[i].display();

if(st=='A')for(int i=1;i<ac;i++)c[i].dis();

// cout<<"++++++++++++++++++++++++++++++++++"<<endl;

}

if(st=='N'){

day++;

}

if(st=='S'){

cout<<"输入用户id，产品id";

int bid,pid;

cin>>bid>>pid;

del(bid,pid,day);

}

}

return 0;

}