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Report: HW5

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Description:

This program is a game called Master Mind : a guess number game.

giveanswer函式用來呼叫產生題目

同樣的將input變數丟進giveanswer即亂數產生答案

ansmatch函式用來核對後者答案是否與前者符合(若第一次猜1H3X，而後答案必須都與第一次為1H3X才有可能是正確答案)

countH、countX函式用來呼叫對照幾H和幾X

用match1.2檢查這個數字是否已經算為H，若是，則不能拿來算x。

若P=9，且N=8或9時，將會花費幾分鐘時間猜測。N=P=8及以下都很快。

I have learn:

更熟悉recursive function

Error message:

[Error] ld returned 1 exit status

[Error] invalid conversion from 'int' to 'int\*' [-fpermissive]

其餘沒什麼大問題，幾乎是造成無限迴圈卡住。

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

int giveanswer(short int ans[],int P,int N);

int countH(short int input[],short int ans[],int\* H,short int match1[],short int match2[],int N);

int countX(int N,int\* X,short input[],short ans[],short match1[],short match2[]);

int ansmatch(short ans[],short input[],short num[],int count,int N,int P,short match1[],short match2[],short int answer[]);

short hisans[50][10]={0}; //用來儲存題目及猜過的數

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

{

int N=0 , P=0 , H=0 , X=0 , count=-1 , tag=0;

int i=0,j=0,k=0;

//count用來儲存猜過幾次答案，第一次時count為0

N = \*argv[1] - '0';

P = \*argv[2] - '0';

if(N>9||N<1||P>9||P<1||N>P) //檢查範圍是否輸入錯誤

{

printf("the input should make 1<=N<=9 , 1<=P<=9 , N>=P\n");

return 0;

system("PAUSE");

}

short num[100]; //用來儲存每次的幾H幾X結果

short answer[10]; //從hisans拿取此次核對需要的數字組

short input[10]; //儲存電腦亂數猜的答案

short match1[10]; //檢查是否被算過H、X

short match2[10]; //檢查是否被算過H、X

srand((unsigned)time(NULL));

giveanswer(answer,P,N); //產生題目

printf("answer="); //印出答案

for(i=0;i<N;i++)

printf("%d",answer[i]);

printf("\n");

for(i=0;i<N;i++) //將題目存在hisans第0列

hisans[0][i]=answer[i];

//猜答案 猜到全H為止

do{

do{

giveanswer(input,P,N); //猜答案

tag = ansmatch(answer,input,num,count,N,P,match1,match2,answer); //與歷史答案核對，與歷史答案皆符合時ansmatch會return 1

}while(tag==0);

H=X=0;

//前面ansmatch確定好可以猜這組答案後，印出

printf("Computer guuee\_%d=",count+2);

for(i=0;i<N;i++){

printf("%d",input[i]);}

printf("\t");

//與正確的題目再做一次配對

countH(input,answer,&H,match1,match2,N);

countX(N,&X,input,answer,match1,match2);

for(i=0;i<N;i++){

match1[i]=0;

match2[i]=0;

}

count++; //猜過一次count就+1

num[2\*count]=H; //將幾H幾X存進num矩陣

num[2\*count+1]=X;

printf("%dH%dX\n",H,X);

for(i=0;i<N;i++) //將本次所猜存進hisans

hisans[count+1][i]=input[i];

}while(H!=N);

printf("Congratulation!! The answer is right\n");

return 0;

}

//隨機產生題目、答案

int giveanswer(short int ans[],int P,int N)

{

int i,j,x,k;

do{

x=0;

for (i=0;i<N;i++)

ans[i] = rand()% P + 1;

for(j=0;j<P-1;j++) //確保題目沒有相同數字

for(k=j+1;k<N;k++)

if(ans[j]==ans[k])

x=1;

}while(x==1);

}

//計算有幾個H，若有配對match標記會+1

int countH(short int input[],short int ans[],int\* H,short int match1[],short int match2[],int N)

{

int i;

for(i=0;i<N;i++)

if(input[i]==ans[i]){

\*H=\*H+1;

match1[i]++;

match2[i]++;

}

}

//計算有幾個X，若有配對match標記會+1

int countX(int N,int\* X,short input[],short ans[],short match1[],short match2[])

{

int i,j;

for(i=0;i<N;i++)

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

if(input[i]==ans[j] && match1[i]==0 && match2[j]==0){

\*X = \*X+1;

match1[i]++;

match2[j]++;}

}

//與歷史答案做核對

int ansmatch(short ans[],short input[],short num[],int count,int N,int P,short match1[],short match2[],short int answer[])

{

int i;

int H=0,X=0;//初始化所有變數

for(i=0;i<N;i++){

match1[i]=0;

match2[i]=0;

}

for(i=0;i<N;i++)//本次需要與第count+1次的答案做核對

answer[i]=hisans[count+1][i];

//計算幾H幾X

countH(input,answer,&H,match1,match2,N);

countX(N,&X,input,answer,match1,match2);

for(i=0;i<N;i++){

match1[i]=0;

match2[i]=0;

}

if(count==-1) return 1;//count==-1時，即全部核對完畢

//else if 與當初猜的幾H幾X符合時，往前一次猜的答案做核對。

else if(num[2\*count]==H&&num[2\*count+1]==X)

{ansmatch(answer,input,num,count-1,N,P,match1,match2,answer);}

else {return 0;}//還沒核對完，但與某次歷史答案配對錯誤，這組答案不可能是正確答案，return 0讓迴圈重跑。

}

Compilation:

gcc -o hw5 hw5.c

Execution:

./hw5 [the length of number] [the max number want to guess]

Output:

C14031162@c-2015-1:~/hw5> ./hw5 8 8

answer=53842761

Computer guuee\_1=24637518 0H8X

Computer guuee\_2=71842356 3H5X

Computer guuee\_3=71453286 0H8X

Computer guuee\_4=58742361 5H3X

Computer guuee\_5=87542361 4H4X

Computer guuee\_6=53842761 8H0X

Congratulation!! The answer is right.

C14031162@c-2015-1:~/hw5> ./hw5 9 9

answer=127356489

Computer guuee\_1=746351829 3H6X

Computer guuee\_2=873461529 1H8X

Computer guuee\_3=749281365 0H9X

Computer guuee\_4=456318927 1H8X

Computer guuee\_5=967154823 2H7X

Computer guuee\_6=672359814 2H7X

Computer guuee\_7=561372849 2H7X

Computer guuee\_8=396452871 1H8X

Computer guuee\_9=127356489 9H0X

Congratulation!! The answer is right.