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Report: hw3

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Description:

How do you finish this homework?

隨機產生答案並將其存入answer[]

將輸入的猜測存入guess[]

比較answer[]與guess[]得出H與X

H等於位置數時結束遊戲

What did you learned from this homework?

如何利用function簡化程式碼並增加可讀性

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

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

#include <ctype.h>

#include <string.h>

int i, j;

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

{

int n=\*argv[1]-48, p=\*argv[2]-48;

int answer[p], guess[p];

int h=0, x, digit\_count;

char temp[50];

if(n<p){

printf("\nINVALID INPUT\n\n\n");

return 0;

}

printf("\n\n\n");

printf("-------------MASTERMIND-------------\n");

printf("------TYPE \"answer\" FOR ANSWER------\n");

printf("------TYPE \"exit\" TO... EXIT------\n\n");

rand\_ans(n, p, answer);

while(h!=p)

{

h=0, x=0;

printf("GUESS %d NUMBERS FROM 1 TO %d : \n", p, n);

scanf("%s", &temp);

if(!strcmp("answer", temp)){

print\_answer(p, answer);

continue;

}

if(!strcmp("exit", temp))

break;

digit\_count = scan\_digits(temp, guess);

if(digit\_count<p){

printf("NOT ENOUGH DIGITS\n\n\n");

continue;

}

if(digit\_count>p){

printf("TOO MANY DIGITS\n\n\n");

continue;

}

h = calc\_h\_x(n, p, answer, guess, h, x);

}

//the main part of the game

if(h==p)

printf("===========CONGRATULATION===========\n\n\n");

else

printf("\n\n=========THANKS FOR PLAYING=========\n\n\n");

return 0;

}

int rand\_ans(int n, int p, int answer[])

{

srand(time(0));

//uses time as the seed of rand()

//does not generate the same set of rand()

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

do{

answer[i]=rand()%n+1;

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

if (answer[i]==answer[j]){

answer[i]=0;

break;

}

}

}while(answer[i]==0);

}

//generates the answer randomly

//numbers do not repeat

}

int print\_answer(int p, int answer[])

{

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

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

printf("\n\n\n");

}

int scan\_digits(char temp[], int guess[])

{

for(i=0, j=0; i<strlen(temp); i++){

if(isdigit(temp[i])){

guess[j]=temp[i]-48;

j++;

}

}

//scans the digits in the temp[]

//put the digits in the guess[]

return j;

}

int calc\_h\_x(int n, int p, int answer[], int guess[], int h, int x)

{

int a\_count[n+1], g\_count[n+1];

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

if(guess[i]==answer[i])

h++;

//calculates the number of H

for(i=1; i<=n; i++){

a\_count[i]=0;

g\_count[i]=0;

for(j=0; j<p; j++){

if(i==answer[j])

a\_count[i]++;

if(i==guess[j])

g\_count[i]++;

}

if(a\_count[i]>g\_count[i])

x+=g\_count[i];

else

x+=a\_count[i];

}

x-=h;

//calculates the number of X

printf("%dH%2dX\n\n\n", h, x);

return h;

}

Compilation:

gcc -o hw3 hw3.c

Execution:

./hw3 (N) (P)

Output:

-------------MASTERMIND-------------

------TYPE "answer" FOR ANSWER------

------TYPE "exit" TO... EXIT------

GUESS 3 NUMBERS FROM 1 TO 7 :

answer

631

GUESS 3 NUMBERS FROM 1 TO 7 :

123

0H 2X

GUESS 3 NUMBERS FROM 1 TO 7 :

631

3H 0X

===========CONGRATULATION===========