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Report: hw5

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Description:

How do you finish this homework?

將先前的猜測數據(猜測、H、X)存入陣列

並以此過濾下次猜測

What did you learned from this homework?

遞迴陣列的基本應用

divide and conquer的概念

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Code:

```
/************************************************
*            1A2B (COM PLAYER)                  *
* PURPOSE :                                     *
* GET THE ANSWER WITH MINIMUM GUESSES.          *
* SOLUTION :                                    *
* STORE GUESSES AND RESULTS                     *
* USE THEM AS FILTERS FOR THE NEXT GUESS        *
* FLAWS :                                       *
* PROCESS TIME IS PROLONGED WITH EACH GUESS.    *
* (MORE FILTERS -> HARGER TO GET THROUGH)       *
************************************************/
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int i, j, k;
//loop variables

int main(int argc, char *argv[])
{
	int n=atoi(argv[1]), p=atoi(argv[2]);
	int tri=0, cnc=n*10, z=0;
	int h[cnc+1], x[cnc+1], gue[cnc+1][p], ans[p];
	//n->range  p->positions  cnc->chances
```

```
        //h[], x[], g[][]->storage for guess data
        //ans[]->storage for answer

        srand(time(0));

        if(n<1 || p<1 || n<p) return 0;
        //exit when inputs are invalid

        gnr_rnd(n, p, ans);
        print_ans(z, p, ans);
        //generate answer

        do{
                tri++;
                print_try(tri);
                guess(n, p, tri, gue, h, x);
                cmp_ans_gue(p, tri, ans, gue, h, x);
        }while(h[tri]!=p);
        //main part of the game

        printf("\n\n");
        return 0;
}

int gnr_rnd(int n, int p, int a[])
{
        for(i=0; i<p; i++)
        {
                a[i]=rand()%n+1;
                for(j=0; j<i; j++)
                        if(a[i]==a[j])
                        {
                                i--;
                                break;
                        }
        }
}
//generate random, non-repetitive array
```

```
int print_ans(int z, int p, int ans[])
{
      if(z==0) printf("\n  ANSWER  :");
      if(z==p) return;
      printf("%3d", ans[z++]);
      print_ans(z, p, ans);
}

int print_try(int tri)
{
      printf("\n%2d", tri);
      switch(tri%10)
      {
            case 1: printf("st"); break;
            case 2: printf("nd"); break;
            case 3: printf("rd"); break;
            default: printf("th"); break;
      }
      printf(" guess :");
}

int guess(int n, int p, int tri, int gue[][p], int h[], int
x[])
{
      int dif, H, X;

      do{
            dif=0;
            gnr_rnd(n, p, gue[tri]);
            //random guess

            for(i=1; i<tri; i++)
            {
                  H=0; X=0;
                  for(j=0; j<p; j++)
                  {
                        if(gue[tri][j]==gue[i][j])
```

```
                    H++;
                for(k=0; k<p; k++)
                    if(gue[tri][j]==gue[i][k]
&& j!=k)
                        X++;
            }
            if(H!=h[i] || X!=x[i])
            {
                dif++;
                break;
            }
        }
        //use previous guess, h, x to filter
    }while(dif!=0);

    for(i=0; i<p; i++)
        printf("%3d", gue[tri][i]);
}
//generate guess

int cmp_ans_gue(int p, int tri, int ans[], int gue[][p], int
h[], int x[])
{
    h[tri]=0; x[tri]=0;
    for(i=0; i<p; i++)
    {
        if(gue[tri][i]==ans[i])
            h[tri]++;
        for(j=0; j<p; j++)
            if(gue[tri][i]==ans[j] && i!=j)
                x[tri]++;
    }
    printf("\t%3dH%3dX", h[tri], x[tri]);
}
//calculate and store h, x
```

Compilation:

```
    gcc -o hw5 hw5.c
```

```
Execution:
      ./hw5 (N) (P)

Output:
   ANSWER  :  5  4  3  8  6
 1st guess :  1  5  9  8  7      1H  1X
 2nd guess :  3  6  9  4  1      0H  3X
 3rd guess :  9  2  3  8  4      2H  1X
 4th guess :  8  5  3  6  4      1H  4X
 5th guess :  5  3  6  8  4      2H  3X
 6th guess :  5  4  3  8  6      5H  0X
```

```
/tmp/ccnGAJI3.o: In function `main':
hw5.c:(.text+0x338): undefined reference to `gnr_rnd'
/tmp/ccnGAJI3.o: In function `guess':
hw5.c:(.text+0x6b2): undefined reference to `gnr_rnd'
collect2: error: ld returned 1 exit status
```

```
hw5.c: In function ‘main’:
hw5.c:47:2: error: expected ‘;’ before ‘printf’
  printf("\n\n");
  ^
```

```
hw5.c: In function ‘gnr_rnd’:
hw5.c:131:1: error: expected declaration or statement at end
of input
 }
 ^
```