
Report: HW5_1

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Class: 化工 (甲班)

Code:

```
#include<stdio.h>
```

```
#define fib 10
```

```
int Fib_R(int n);
```

```
int Fib_L(int n);
```

```
int Fib_comb(int n,int start,int a[]);
```

```
int main(){
```

```
    int base[4]={0};
```

```
    printf("%d ",Fib_R(fib));
```

```
    printf("%d ",Fib_L(fib));
```

```
    Fib_comb(fib,1,base);
```

```
    printf("%d ",base[3]);
```

```
}
```

```
int Fib_R(int n){
```

```
    if(n==0)return 0;
```

```
    else if(n==1)return 1;
```

```
    else if(n==2)return 2;
```

```
    else return Fib_R(n-1)+Fib_R(n-2)+Fib_R(n-3);
```

```
}
```

```
int Fib_L(int n){
```

```
    int a=0,b=1,c=2,sum;
```

```
    if(n==0){return 0;}
```

```
    else if(n==1){return 1;}
```

```
    else if(n==2){return 2;}
```

```
    for(n-=2;n>0;n--){
```

```
        sum=a+b+c;
```

```
        a=b;b=c;c=sum;
```

```
    }return sum;
```

```
}
```

```
int Fib_comb(int n,int start,int a[]){
```

```
    if(n<start){return a[3];}
```

```

        if(start==2){a[2]=2;a[3]=a[0]+a[1]+a[2];Fib_comb(n,
start+1,a);}
        else
if(start==1){a[1]=1;a[3]=a[0]+a[1]+a[2];Fib_comb(n,start+
1,a);}
        else{
                a[3]=a[0]+a[1]+a[2];
                a[0]=a[1];a[1]=a[2];a[2]=a[3];
                Fib_comb(n,start+1,a);
        }

```

}Compilation:

```
gcc -o hw5_1 hw5_1.c
```

Execution:

```
./hw5_1
```

Output:

```
230 230 230
```

```
*****
```

Report: HW5_2

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Class: 化工 (甲班)

```
*****
```

Code:

```
#include<stdio.h>
```

```
void range(int input[][2]);
```

```
void range2(int a[][2]);
```

```
void push_a(int a[][2],int o[]);
```

```
int main(){
```

```
        int input[4][2]={30,80      ,20,50 ,70,90 ,25,58};
```

```
        range(input);
```

```
        range2(input);
```

```
        return 0;
```

```
}
```

```
void range(int input[][2]){
```

```
        int output[8];
```

```
        int v=30;
```

```
        int j=0,i=0;
```

```
        for(i=0;i<4;i++){
```

```

        if(input[i][0]<=v&&input[i][1]>=v){

            output[j++]=input[i][0];output[j++]=input[i][1];}
    }
    for(int i=0;i<j/2;i++){

printf("lower:%d,higher:%d\n",output[i],output[i+1]);
    }
}
void range2(int a[][2]){
    int j=0,tmp,pos;
    int output[8];
    push_a(a,output);
    int smallest;
    for(int i=0;i<8;i++){
        pos=i;smallest=output[i];
        for(int j=i;j<8;j++){

            if(smallest>output[j]){smallest=output[j];pos=j;}

        }

        tmp=output[i];output[i]=output[pos];output[pos]=tmp
    ;

        }for(int
i=-1;i<8;i++){i==-1?printf("T="):i==7?printf("%d",output[
i]):printf("%d,",output[i]);}
    }
void push_a(int a[][2],int o[]){
    int j=0;
    for(int i=0;i<4;i++){
        o[j++]=a[i][0];o[j++]=a[i][1];
    }
}

```

Compilation:

```
gcc -o hw5_2 hw5_2.c
```

Execution:

```
./hw5_2
```

Output:

lower:30,higher:80
lower:80,higher:20
lower:20,higher:50

Report: HW5_3

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Class: 化工 (甲班)

Code:

```
#include<stdio.h>
#define SIZE 16
void recur(int a[],int start);
void liter(int a[]);
void prt(int a[]);

int main(){
    int a[SIZE] = {15,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15};
    recur(a,1);
    prt(a);
    printf("\n\n");
    liter(a);
    prt(a);
    return 0;
}

void recur(int a[],int start){
    int i=0;
    int tmp;
    if(start>=4){
    }else {
        for(int i=0;i<((1<<(start))/2);i++){
            tmp=a[(1<<start)+i];
            a[(1<<start)+i]=a[(1<<(start+1))-1-i];
            a[(1<<(start+1))-1-i]=tmp;
        }    recur(a,start+1);
    }
}

void liter(int a[]){
```

```

    int tmp;
    for(int i=1;i<4;i++){
        for(int j=0;j<(1<<i)/2;j++){
            tmp=a[(1<<i)+j];
            a[(1<<i)+j]=a[(1<<(i+1))-1-j];
            a[(1<<(i+1))-1-j]=tmp;
        }
    }
}

void prt(int a[]){printf("{");
for(int
i=0;i<15;i++){printf("%d,",a[i]);}printf("%d}",a[15]);pri
ntf("\n");
}

```

Compilation:

```
gcc -o hw5_3 hw5_3.c
```

Execution:

```
./hw5_3
```

Output:

```
{15,1,3,2,7,6,5,4,15,14,13,12,11,10,9,8}
```

```
{15,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15}
```

```
*****
```

Report: HW5_4

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Class: 化工 (甲班)

```
*****
```

Code:

```

#include<stdio.h>
#include<math.h>
void tobit(int a[]);
void prt(int a[][8]);
void todot(int a[]);
int main(){
    int a[4]={129,160,96,1};
    int
b[32]={1,0,0,0,0,0,0,1,1,0,1,0,0,0,0,0,0,1,1,0,0,0,0,0,0,
0,0,0,0,0,0,1};

```

```

    tobit(a);
    todot(b);
    return 0;
}
void tobit(int a[]){
    int output[32]={0};
    int k=0,l=1;
    for(int i=0;i<4;i++){
        for(int j=0;j<8;j++){
            output[k++]=a[3-i]&l<<j?1:0;
        }
    }
    for(int i=0;i<32;i++){
        printf("%d",output[31-i]);
    }
}
void todot(int a[]){
    int output[4]={0};
    int ip[4][8];
    int k=1;
    for(int i=0;i<4;i++){
        for(int j=0;j<8;j++){
            ip[i][j]=a[8*i+j];
        }
    }
    for(int i=0;i<4;i++){
        for(int j=0;j<8;j++){
            if(ip[i][j])output[i]+=pow(2,7-j);
        }
    }
    for(int
i=0;i<3;i++)printf("%d,",output[i]);printf("%d",output[3]
);
}

```

Compilation:

```
gcc -o hw5_4 hw5_4.c -lm
```

Execution:

./hw5_4

Output:

10000001101000000110000000000001

129,160,96,1

Report: HW5_5

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Class: 化工 (甲班)

Code:

```
#include <stdio.h>
```

```
#define N 4
```

```
int boolfunc(int m,int n);
```

```
int recursivebool(int n,int *k);
```

```
void combinations(int a[],int n,int k);
```

```
int var[20];
```

```
int main()
```

```
{
```

```
    int A[4]={4,1,2,3};
```

```
    int n=4,k=2;
```

```
    combinations(A,n,k);
```

```
}
```

```
void combinations(int a[],int n,int k){
```

```
    recursivebool(N,a);
```

```
}
```

```
int boolfunc(int m,int n)
```

```
{
```

```
    int result=0, i;
```

```
    for (i=1; i<m+1-n; i++) result += (1 & var[m-i]);
```

```
// printf("-%d-\n",result);
```

```
    return result;
```

```
}
```

```
int recursivebool(int n,int *k)
```

```
{
```

```
    int localvar[20], i, j;
```

```
    if (n == 1){
```

```

    if(boolfunc(k[0],1)==2){
        for(i=1; i<k[0]; i++) if(1&var[i])printf("%d ",k[i]);
    printf("\n");}
    // for(i=1; i<k[0]; i++) printf("var%d ",var[i]);
    // printf("last:~%d~\n", boolfunc(k[0],n));
    // printf("\n");
    return 0;
}
    if(boolfunc(k[0],n)==4 ){
// printf("end:%d\n", boolfunc(k[0],n));
        recursivebool(1,k);
    }else{
        for (j=0; j<=1; j++) {
// printf("%d\n", boolfunc(k[0],n));
            var[n-1] = j;
            recursivebool(n - 1,k);
        }}}

```

Compilation:

```
gcc -o hw5_5 hw5_5.c
```

Execution:

```
./hw5_5
```

Output:

```
1 2
```

```
1 3
```

```
2 3
```

```
*****
```

Report: HW5_6

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Class: 化工 (甲班)

```
*****
```

Code:

```
#include<stdio.h>
```

```
int determinant(int f[][10],int x);
```

```
int main(){
```

```
    int f[10][10]={
```

```
1,0,0,0,0,0,0,0,0,0,
```

```
0,1,0,0,0,0,0,0,0,0,
```

```
0,0,1,0,0,0,0,0,0,0,
```



```

0,0,0,1,0,0,0,0,0,0,
0,0,0,0,1,0,0,0,0,0,
0,0,0,0,0,1,0,0,0,0,
0,0,0,0,0,0,1,0,0,0,
0,0,0,0,0,0,0,1,0,0,
0,0,0,0,0,0,0,0,1,0,0,
0,0,0,0,0,0,0,0,0,1,0,
0,0,0,0,0,0,0,0,0,0,1};
    printf("determinant=%d\n",determinant(f,9));
}

```

```

int determinant(int f[][10],int x)
{
    int pr=1, c[10], d=0, b[10][10], j, p, q, t;
    if(x==2) return (f[1][1]*f[2][2] - f[1][2]*f[2][1]);
    for (j=1; j<=x; j++){
        int r=1,s=1;
        for (p=1; p<=x; p++) {
            for (q=1; q<=x; q++) {
                if (p!=1 && q!=j) {
                    b[r][s]=f[p][q];
                    s++;
                }
                if(s > x-1) { r++; s=1; }
            }
        }
        for(t=1,pr=1;t<=(1+j);t++) pr=(-1)*pr;
        c[j] = pr*determinant(b,x-1);
    }
    for(j=1,d=0;j<=x;j++) d += (f[1][j]*c[j]);
    return(d);
}

```

Compilation:

```
gcc -o hw5_6 hw5_6.c
```

Execution:

```
./hw5_6
```

Output:

```
determinant=1
```