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CS27

1. Find Crossover Points

Consider a list of points on a cartesian plan of the form (x, y),where
$x_0 < x_1 < x_2 < ... < x_n$
$y_1 < y_1 < y_2 < ... < y_n$
$x_0 > y_0$
$x_n < y_n$

A crossover point i in the list is defined where
$x_i > y_i$
$x_{i+1} < y_{i+1}$

Find all crossover points.

Source Code

```
#include <stdio.h>

struct CORD{
        int x,y;
};
typedef struct CORD CORD;

void find_crossover(CORD* list , int length){
        for(int i=0;i<length;i++)
                if( list[i].x>list[i].y && list[i+1].x<list[i+1].y )
                        printf("\nCrossover at %d",i);
}

int main(){
        int length;
        CORD list[20];

        printf("Enter the number of points : ");
        scanf("%d",&length);
        printf("Enter the points : \n");
        for(int i=0;i<length;i++){
                scanf("%d%d",&list[i].x,&list[i].y);
                printf("\n");
        }

        printf("\nIndex : ");
        for(int i=0;i<length;i++)
                printf("%d  ",i);
        printf("\n  X   : ");
        for(int i=0;i<length;i++)
                printf("%d  ",list[i].x);
        printf("\n  Y   : ");
```

```
        for(int i=0;i<length;i++)
                printf("%d  ",list[i].y);

        find_crossover(list, length);

        return 0;
}
```

Output

```
Enter the number of points : 8
Enter the points :
1
0

2
3

5
4

6
5

7
8

8
10

10
12

12
13


Index : 0  1  2  3  4  5  6  7
  X   : 1  2  5  6  7  8  10  12
  Y   : 0  3  4  5  8  10  12  13
Crossover at 0
Crossover at 3
```