

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

int main(void)
{
    // open file with numbers
    FILE *fp;
    fp = fopen("random_numbers.txt", "r");

    int array[50000], temp;

    // copy numbers into an array
    for (int i = 0; i < 50000; i++)
    {
        fscanf(fp, "%d", &array[i]);
    }

    fclose(fp);
    // file closed

    //interchange sort
    for (int i = 0; i < 49999; i++)
    {
        for (int j = i + 1; j < 50000; j++)
        {
            if (array[j] < array[i])
            {
                // swap the numbers
                temp = array[i];
                array[i] = array[j];
                array[j] = temp;
            }
        }
    }

    // print the sorted array
    for (int i = 0; i < 50000; i++)
    {
        printf("%d\n", array[i]);
    }

    getch();
    return 0;
}
```

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

int main(void)
{
    // open file with numbers
    FILE *fp;
    fp = fopen("random_numbers.txt", "r");

    int array[50000], k, temp;

    // copy numbers into an array
    for (int i = 0; i < 50000; i++)
    {
        fscanf(fp, "%d", &array[i]);
    }

    fclose(fp);
    // file closed

    // selection sort
    for (int i = 0; i < 49999; i++)
    {
        // assume ith element to be the smallest
        k = i;

        for (int j = i + 1; j < 50000; j++)
        {
            // compare every element to the right and find the smallest
            if(array[j] < array[i])
            {
                k = j;
            }
        }

        // swap the numbers
        temp = array[i];
        array[i] = array[k];
        array[k] = temp;
    }

    // print the sorted array
    for (int i = 0; i < 50000; i++)
    {
        printf("%d\n", array[i]);
    }

    getch();
    return 0;
}
```

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

int main(void)
{
    // open file with numbers
    FILE *fp;
    fp = fopen("random_numbers.txt", "r");

    int array[50000], k, temp;

    // copy numbers into an array
    for (int i = 0; i < 50000; i++)
    {
        fscanf(fp, "%d", &array[i]);
    }

    fclose(fp);
    // file closed

    // selection sort
    for (int i = 0; i < 49999; i++)
    {
        // assume ith element to be the smallest
        k = i;

        for (int j = i + 1; j < 50000; j++)
        {
            // compare every element to the right and find the smallest
            if(array[j] < array[i])
            {
                k = j;
            }
        }

        // swap the numbers with condition
        if (i != k)
        {
            temp = array[i];
            array[i] = array[k];
            array[k] = temp;
        }
    }

    // print the sorted array
    for (int i = 0; i < 50000; i++)
    {
        printf("%d\n", array[i]);
    }

    getch();
    return 0;
}
```

Sorting Algorithm

Time

Interchange sorting

31 s

Selection sorting

15 s

Selection sorting with
conditional swapping

16 s