```
                                Online C Compiler.
                Code, Compile, Run and Debug C program o
Write your code in this editor and press "Run" button to
*****************************************************************
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

//insertion sort function
void insertionsort(int A[], int n)
{
    int i, key, j;
    for (i = 1; i < n; i++)
    {
        key = A[i];
        j = i - 1;
        while (j >= 0 && A[j] > key)
        {
            A[j + 1] = A[j];
            j = j - 1;
        }
        A[j + 1] = key;
    }
}

//display array
void display(int A[],int n)
{
    int i;
    for(i=0;i<n;i++)
    {
        printf("%d ",A[i]);
    }
}
```

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.c

```c
//display array
void display(int A[],int n)
{
    int i;
    for(i=0;i<n;i++)
    {
        printf("%d ",A[i]);
    }
}

int main()
{
    int A[2000],n,i;
    clock_t start,end;
    double time_taken;

    printf("Enter the size of the array: ");
    scanf("%d",&n);

    for(i=0;i<n;i++)
    {
        A[i]=rand()%200;
    }
    printf("\n\nUnsorted Array:\n");
    display(A,n);

    start = clock();
    insertionsort(A,n);
    end = clock();
    time_taken = ((double)(end-start))/CLOCKS_PER_SEC;
    printf("\n\nArray after Insertion Sort:\n");
    display(A,n);
    printf("\n\nTime taken for Insertion Sort: %lf s",time_taken);

    return 0;
}
```

```
Enter the size of the array: 4


Unsorted Array:
183 86 177 115

Array after Insertion Sort:
86 115 177 183

Time taken for Insertion Sort: 0.000003 s

...Program finished with exit code 0
Press ENTER to exit console.
```