program -5

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

void Insertion\_sort(int arr[],int n)

{

int j,temp,i,key;

for(i=1;i<=n;i++)

{

j=i-1;

key=arr[i];

while (j >= 0 && arr[j] > key)

{

arr[j + 1] = arr[j];

j = j - 1;

}

arr[j+1] = key;

}

}

void printArray(int arr[], int n)

{

int i;

for (i = 0; i < n; i++)

printf("%d ", arr[i]);

printf("\n");

}

int main()

{

int i,n,arr[1000];

double time;

clock\_t start,end;

printf("Enter the total number of elements to be sorted:");

scanf("%d",&n);

printf("The elements to be sorted are:\n");

for(i=0;i<n;i++)

{

arr[i] = rand()%100;

printf("%d\t",arr[i]);

}

printf("\nThe sorted array is:\n");

start=clock();

Insertion\_sort(arr, n);

end=clock();

printArray(arr, n);

time = ((double)(end - start))/CLOCKS\_PER\_SEC;

printf("\nTime taken to sort the array by using Selection Sort is:%lf\n",time);

}

output:

hilpa@shilpa-linux ~]$ cd Desktop

[shilpa@shilpa-linux Desktop]$ cd ADA\_LAB-PROG-main

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ gcc -o Insertion\_sort Insertion\_sort.c

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./Insertion

bash: ./Insertion: No such file or directory

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./Insertion\_sort

Enter the total number of elements to be sorted:50

The elements to be sorted are:

83 86 77 15 93 35 86 92 49 21 62 27 90 59 63 26 40 26 72 36 11 68 67 29 82 30 62 23 67 35 29 2 22 58 69 67 93 56 11 42 29 73 21 19 84 37 98 24 15 70

The sorted array is:

1 2 11 11 15 15 19 21 21 22 23 24 26 26 27 29 29 29 30 35 35 36 37 40 42 49 56 58 59 62 62 63 67 67 67 68 69 70 72 73 77 82 83 84 86 86 90 92 93 93

Time taken to sort the array by using Selection Sort is:0.000020

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./Insertion\_sort

Enter the total number of elements to be sorted:100

The elements to be sorted are:

83 86 77 15 93 35 86 92 49 21 62 27 90 59 63 26 40 26 72 36 11 68 67 29 82 30 62 23 67 35 29 2 22 58 69 67 93 56 11 42 29 73 21 19 84 37 98 24 15 70 13 26 91 80 56 73 62 70 96 81 525 84 27 36 5 46 29 13 57 24 95 82 45 14 67 34 64 43 50 87 876 78 88 84 3 51 54 99 32 60 76 68 39 12 26 86 94 39

The sorted array is:

0 2 3 5 5 8 11 11 12 13 13 14 15 15 19 21 21 22 23 24 24 25 26 26 26 26 27 27 29 29 29 29 30 32 34 35 35 36 36 37 39 39 40 42 43 45 46 49 50 51 54 56 56 57 58 59 60 62 62 62 63 64 67 67 67 67 68 68 69 70 70 72 73 73 76 76 77 78 80 81 82 82 83 84 84 84 86 86 86 87 88 90 91 92 93 93 94 95 96 98

Time taken to sort the array by using Selection Sort is:0.000052