Program_9

Design and implement C/C++ Program to sort a given set of n integer elements using Selection Sort method and compute its time complexity. Run the program for varied values of n> 5000 and record the time taken to sort. Plot a graph of the time taken versus n. The elements can be read from a file or can be generated using the random number generator.

```
#include<stdio.h>
#include<stdlib.h>
#include<time.h>
void selectionsort(int A[],int n)
{
	int i,j,min;
	for(i=0;i<n-1;i++)
	{
		min=i;
		for(j=i+1;j<n;j++)
		{
			if(A[j]<A[min])
			{
				min=j;
			}
		}
		if(min!=i)
		{
			int temp=A[j];
			A[j]=A[min];
			A[min]=A[j];
		}
	}
}
int main()
{
	srandom(time(NULL));
	int n=30000,i;
	int elements[n];
	for(int i=0;i<n;i++)
	{
		elements[i]=rand()%1000;
	}
	for(int size=5000;size<=n;size+=2000)
	{
		int arr[size];
		for(int i=0;i<size;i++)
		{
			arr[i]=elements[i];
		}
		clock_t start=clock();
		selectionsort(arr,size);
		clock_t stop=clock();
```

```
        double time_taken=((double)(stop-start)/CLOCKS_PER_SEC);
        printf("Timen taken to sort %d elements is %f seconds\n",size,time_taken);
    }
    return 0;
}
```

Output: