**DSA LAB**

**Lab Assignment number 17**

**Name:** Aamir Ansari  **Batch:** A **Roll no:** 01

**Aim:** To implement Selection sort and Insertion sort

**Program:**

#include <stdio.h>

/\*Array to store the list\*/

int array[100];

/\*Function to swap \*/

void swap(int \*a, int \*b)

{

int temp = \*a;

\*a = \*b;

\*b = temp;

}

/\*Insertion Sort\*/

void insertion\_sort(int n)

{

int i,j,temp,flag;

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

{

temp = array[i];

for (j = i - 1 ; j >= 0; j--)

{

if (array[j] > temp)

{

array[j+1] = array[j];

flag = 1;

}

else

{

break;

}

}

if (flag)

{

array[j+1] = temp;

}

}

}

/\*Selection Sort\*/

void selection\_sort(int n)

{

int i, j, min;

for (i = 0; i < n-1; i++)

{

min = i;

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

{

if (array[j] < array[min])

{

min = j;

}

}

swap(&array[min], &array[i]);

}

}

/\*Print a sorted array\*/

void print\_sorted\_array(int n)

{

int i;

printf("Sorted Array:");

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

{

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

}

}

int main()

{

int n,i, choice;

printf("Enter number of elements\n");

scanf("%d", &n);

printf("Enter %d integers\n", n);

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

{

scanf("%d", &array[i]);

}

printf("Type of sort to perform:\n1.Selection Sort\n2.Insertion Sort\n3.Exit");

printf("Enter the choice to be performed: ");

scanf("%d",&choice);

switch(choice)

{

case 1:

selection\_sort(n);

print\_sorted\_array(n);

break;

case 2:

insertion\_sort(n);

print\_sorted\_array(n);

break;

case 3:

default:

printf("Thank You!!");

}

return 0;

}

**Output:**



