**Week 4(Lab manual)**

**Mosa. Rabeya**

**I’d: 191-15-12145**

**Bubble sort 01:**

#include <stdio.h>

void main ()

{

int i, j, temp, n;

printf("Enter array size:");

scanf("%d", &n);

int a[n];

printf("Enter Data\n");

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

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

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

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

if (a[i] < a[j]){

temp= a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

printf("Descending order\n");

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

printf("%d\n", a[i]);

}

return 0;

}

**Bubble sort 02:**

#include<stdio.h>

void main()

{

int i,j,temp,n,sum=0;

printf("Enter array size:");

scanf("%d", &n);

int a[n];

printf("Enter Data\n");

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

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

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

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

if(a[j]>a[j+1]){

temp=a[j];

a[j]=a[j+1];

a[j+1]=temp;

}

}

}

printf("Ascending order\n");

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

printf("%d\n", a[i]);

}

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

sum=sum+a[i];

}

printf("Sum is = %d\n",sum);

return 0;

}

**Insertion sort 01:**

#include <stdio.h>

void main ()

{

int i,j,n,temp;

printf("Enter array size:\n");

scanf("%d", &n);

int a[n];

printf("Enter data \n");

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

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

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

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

if (a[i] < a[j]){

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

printf("Descending order:\n");

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

printf("%d\n", a[i]);

}

return 0;

}

**Insertion sort 02:**

#include<stdio.h>

int main()

{

int i,j,n,k;

printf("Enter Array Size: ");

scanf("%d",&n);

int a[n];

printf("Enter Data: ");

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

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

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

int x=a[i];

j=i;

while(j>0 && a[j-1]>x){

a[j]=a[j-1];

j--;

}

a[j]=x;

}

printf("Ascending Order: ");

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

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

printf("\n");

printf("Difference btwn max-min= %d\n",a[n-1]-a[0]);

return 0;

}

**Insertion sort 03:**

#include <stdio.h>

int main()

{

int i,j,n,temp;

double sum=0;

printf("Enter array size:\n");

scanf("%d",&n);

int a[n];

printf("Enter data:\n");

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

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

sum+=a[i];

}

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

j = i;

while(j>0){

if(a[j-1] > a[j]){

temp = a[j-1];

a[j-1] = a[j];

a[j] = temp;

}

else{

break;

}

j--;

}

}

printf("Ascending Order:\n");

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

printf(" %d\n",a[i]);

printf("\n");

printf("Avg %lf\n",sum/n);

return 0;

}