**EXP NO 1 :- IMPLEMENT INSERTION SORT**

CODE:-

#include <math.h>

#include <stdio.h>

void insertionSort(int arr[], int n)

{

int i, key, j;

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

{

key = arr[i];

j = i - 1;

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 arr[] = {12, 11, 13, 5, 6};

int n = sizeof(arr) / sizeof(arr[0]);

insertionSort(arr, n);

printArray(arr, n);

return 0;

}

OUTPUT:-



**EXP NO 2 :- IMPLEMENT SELECTION SORT**

CODE:-

#include <stdio.h>

void swap(int \*xp, int \*yp)

{

int temp = \*xp;

\*xp = \*yp;

\*yp = temp;

}

void selectionSort(int arr[], int n)

{

int i, j, min\_idx;

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

{

min\_idx = i;

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

if (arr[j] < arr[min\_idx])

min\_idx = j;

if(min\_idx != i)

swap(&arr[min\_idx], &arr[i]);

}

}

void printArray(int arr[], int size)

{

int i;

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

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

printf("\n");

}

int main()

{

int arr[] = {64, 25, 12, 22, 11};

int n = sizeof(arr)/sizeof(arr[0]);

selectionSort(arr, n);

printf("Sorted array: \n");

printArray(arr, n);

return 0;

}

OUTPUT:-

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**EXP NO 4:- IMPLEMENT BINARY SORT**

CODE:-

#include <stdio.h>

int binarySearch(int arr[], int l, int r, int x)

{

while (l <= r) {

int m = l + (r - l) / 2;

if (arr[m] == x)

return m;

if (arr[m] < x)

l = m + 1;

else

r = m - 1;

}

return -1;

}

int main(void)

{

int arr[] = { 2, 3, 4, 10, 40 };

int n = sizeof(arr) / sizeof(arr[0]);

int x = 10;

int result = binarySearch(arr, 0, n - 1, x);

(result == -1) ? printf("Element is not present"

" in array")

: printf("Element is present at "

"index %d",

result);

return 0;

}

OUTPUT:-



**EXP NO 5:- IMPLEMENT QUICK SORT**

Input:-

#include <stdio.h>

void swap(int \*a, int \*b)https://learn.onlinegdb.com/ {

int t = \*a; +

\*a = \*b;

\*b = t;

}

int partition(int array[], int low, int high) {

int pivot = array[high];

int i = (low - 1);

for (int j = low; j < high; j++) {

if (array[j] <= pivot) {

i++;

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

}

}

swap(&array[i + 1], &array[high]);

return (i + 1);

}

void quickSort(int array[], int low, int high) {

if (low < high) {

int pi = partition(array, low, high);

quickSort(array, low, pi - 1);

quickSort(array, pi + 1, high);

}

}

void printArray(int array[], int size) {

for (int i = 0; i < size; ++i) {

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

}

printf("\n");

}

int main() {

int data[] = {8, 7, 2, 1, 0, 9, 6};

int n = sizeof(data) / sizeof(data[0]);

printf("Unsorted Array\n");

printArray(data, n);

quickSort(data, 0, n - 1);

printf("Sorted array in ascending order: \n");

printArray(data, n);

}

Output:-

