Bahria University,

Karachi Campus



COURSE: CSC-221 DATA STRUCTURES AND ALGORITHM

TERM: FALL 2020, CLASS: BSE- 3 (A)

Submitted By:

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Enrollment #:02-131192-082

Submitted To:

Engr. Dr. Farah/ Engr. Ramshaa

Signed Remarks: Score:

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| --- | --- | --- | --- | --- |
| SNO | DATE | LAB NO | LAB OBJECTIVE | SIGN |
| 01 | 1-10-2020 | 01 | ONE AND TWO DIMENSIONAL ARRAY |  |
| 02 | 09-10-20 | 02 | Linear Search & Sorting Algorithms |  |
| 03 | 13-10-20 | 03 | Recusrion |  |
| 04 | 30/10/20 | 04 | Binary search algorithm |  |
| 05 | 30/10/20 | 05 | Merge sort |  |
| 06 | 28/10/20 | 06 | Quick sort |  |
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LAB EXPERIMENT NO.

\_\_\_06\_\_\_\_

LIST OF TASKS

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| --- | --- |
| TASK NO | OBJECTIVE |
| 1 | **Implement Quick Sort Algorithm on char array using left value as first pivoting value** |
| 2 | **Implement Quick Sort Algorithm and design Windows Form Application in which you have to sort user input values in ascending and descending order as user requires, take right value as first pivoting value and show all the pivot values in a sequence they are selected.** |
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Submitted On:

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(Date: 28/10/20)

**Task No. 1: Implement Quick Sort Algorithm on char array using left value as first pivoting value**

**Solution:**

static int partition(char[] array, int strat, int end)

{

int pivot = array[end];//selecting the pivot

int pindex = strat;

char temp = '0';

// char c = (char)temp;

for (int i = strat; i <= end - 1; i++)

{

if (array[i] <= pivot)

{

temp = array[i];

array[i] = array[pindex];

array[pindex] = temp;

pindex++;

}

}

temp = array[end];

array[end] = array[pindex];

array[pindex] = temp;

//for (int i = 0; i <array.Length; i++)

//{

// Console.WriteLine(pivot = array[i]);

//}

return pindex;

}

static char[] quicksort(char[] array, int strat, int end)

{

if (strat < end)

{

int pindex = partition(array, strat, end);

quicksort(array, strat, pindex - 1);

quicksort(array, pindex + 1, end);

}

return array;

}

static void Main(string[] args)

{

char[] a = { 'a', 'c', 'g','e','f','k'};

//char[] a = { 10, 2,4,3, 7, 8, 6 ,11,15,21,78};

char[] b = new char[a.Length];

b= quicksort(a, 0, 5);

Console.WriteLine("=====Quick Sort====");

for (int i = 0; i <a.Length; i++)

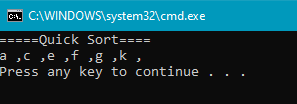
{

Console.Write("{0} ,",b[i]);

}

Console.WriteLine();

**OUTPUT**:



**Task No. 2:Implement Quick Sort Algorithm and design Windows Form Application in which you have to sort user input values in ascending and descending order as user requires, take right value as first pivoting value and show all the pivot values in a sequence they are selected.**

**Solution:**

public partial class Form1 : Form

{

public Form1()

{

InitializeComponent();

}

static int partition(char[] array, int strat, int end)

{

int pivot = array[end];//selecting the pivot

int pindex = strat;

char temp = '0';

for (int i = strat; i <= end - 1; i++)

{

if (array[i] <= pivot)

{

temp = array[i];

array[i] = array[pindex];

array[pindex] = temp;

pindex++;

}

}

temp = array[end];

array[end] = array[pindex];

array[pindex] = temp;

return pindex;

}

static char[] quicksort(char[] array, int strat, int end)

{

if (strat < end)

{

int pindex = partition(array, strat, end);

quicksort(array, strat, pindex - 1);

quicksort(array, pindex + 1, end);

}

return array;

}

private void label1\_Click(object sender, EventArgs e)

{

}

private void textBox1\_TextChanged(object sender, EventArgs e)

{

}

private void button2\_Click(object sender, EventArgs e)

{

richTextBox1.Text = label5.Text = String.Empty;

textBox1.Text = comboBox1.Text = String.Empty;

}

private void button1\_Click(object sender, EventArgs e)

{

try

{

if (comboBox1.Text == "Ascending")

{

char[]a=textBox1.Text.ToCharArray();

quicksort(a, 0, (a.Length - 1));

for (int i = 0; i < a.Length; i++)

{

richTextBox1.AppendText(a[i] + "\n");

}

}

else if (comboBox1.Text=="Desending")

{

char[] a = textBox1.Text.ToCharArray();

quicksort(a, 0, (a.Length - 1));

Array.Reverse(a);

for (int i = 0; i < a.Length; i++)

{

richTextBox1.AppendText(a[i] + "\n");

}

}

else

{

MessageBox.Show("Select Order");

}

}

catch(Exception)

{

MessageBox.Show("An Occured !!!!");

}

}

private void button3\_Click(object sender, EventArgs e)

{

Application.Exit();

}

}

}

**OUTPUT**:

