National University of Computer and Emerging Sciences



# Laboratory Manual

*for*

# Data Structures Lab

**Department of Computer Science**

## FAST-NU, Lahore, Pakistan

**Objective:**

In this lab, students will practice:

1. Huffman Codding.

**Question 1:**

Your task is to create a Huffman codes of text file.

* Used the heap data structure (that you create in previous lab and make appropriate changes in it to do this task) for creating tree and find the binary codes of given file.
* Text file are attached.
* Codes are given below for reading file and count frequency of each character in given file.

#include<iostream>

#include <vector>

#include<fstream>

using namespace std;

struct node{

char data;

int frequency;

node \*left;

node \*right;

node()

{

left=NULL;

right=NULL;

}

};

int main()

{

vector<node\*> v;

// opening file and count frequency of each character in file

string text;

ifstream file("abc.txt");

while(getline(file,text))

{

cout<<text;

}

cout<<endl;

file.close();

int len=text.length();

for(int i=0;i<len;i++)

{

bool b=false;

for(int a=0;a<v.size();a++)

{

if(v[a]->data==text[i])

{

v[a]->frequency++;

b=true;

}

}

if(b==false)

{

node \*temp=new node();

temp->data=text[i];

temp->frequency=1;

v.push\_back(temp);

}

}

//printing

for(int a=0;a<v.size();a++)

{

cout<<v[a]->data<<" ";

cout<<v[a]->frequency;

cout<<endl;

}

}