Marmara University

Faculty of Engineering

Data Structures

Project1 Report

Zahide Gür Taştan
150119827
Computer Engineering

A) In the A part of project, I build a BST with the key “Word” with alphabetic comparison. Then I construct a binary search tree with given input.txt file. Here is my binary search tree output within LNR traversal.

algorithm
ankara
bag
board
book
bus
car
city
class
clock
club
compiler
computer
country
department
dubai
economics
excel
faculty
game
grade
group
head
kitchen
lab
library
meeting
memory
mouse
name
new york
news
pencil
people
plane
population
professor
room
society
software

sports
student
teacher
team
television
text
traffic
university
visit
window

B) After construct a binary search tree with given data, I calculated the Total Access Time with assume that the number of accesses of word is directly the frequency of the word.

Total Access Time of binary search tree for given input: 18995

C) In the c part of question, I construct a Binary Tree to keep these records as to minimize the total access time. Here is my binary tree output within LNR traversal.

plane
ankara
university
class
teacher
club
society
professor
memory
pencil
grade
lab
faculty
board
team
television
mouse
sports
city
book
group
window
software
bag
country

student
computer
meeting
people
department
economics
visit
library
head
news
text
population
name
clock
game
new york
excel
room
algorithm
dubai
compiler
kitchen
car
bus
traffic

D) Total Access Time of binary tree: 11361

E) In the d part of question I construct a Binary Tree to keep these records as to minimize the total access time. For this purpose, I create an array with given records and sort it descending order to put high frequency words in lower depth level of the tree. From root to leaf, frequency number is decreasing. Thanks to this algorithm, I can decrease the Total Access time. But in the b part of project, I take the first line of input as a root. Higher depth level number with higher frequency caused the higher total access time.