Laboratory practice No.4 : BINARY TREES

David Calle Gonzales
Universidad Eafit
Medellín, Colombia
dcalleg@eafit.edu.co

Julian Ramirez Giraldo
Universidad Eafit
Medellín, Colombia
jramirezg@eafit.edu.co

3) Practice for final project defense presentation

2.1)

3.1 A search tree was not used, what was done was to implement a HashTable or a HashMap to make searches more efficient since they are performed in O (1) instead of O (n)

3.3 the implementation of this algorithm was quite simple, basically we created a binary tree with the pre-ordered values and then printed them recursively so they would be in pos-order.

3.4 and 3.5 the complexity of creating the tree is O(1), the complexity of adding items is Log(n), n is the number of elements in the tree. And the complexity of printing the tree is O(n) since it recursively reaches each node, n is the number of elements in the tree as well

2.2 (OPC))

3.3 the string is received and a node is created with the number of the root node, them we separate the string in 2 parts for each node left and right, and that is done recursively to create a tree and returns the root node of the tree. finally we sum all the possible paths recursively and we find out whether the number entered is the sum of any path in the tree or not.

3.4 and 3.5, the creation of the tree is T(n) = 2*T(n/2), and acording to wolfram alpha, that would be O(n.The recursion to sum would be O(n^2) for the creation of the tree the n is the length of the initial String, and for the recursion n would be the number of generations in the tree

PhD. Mauricio Toro Bermúdez
Professor | School of Engineering | Informatics and Systems
Email: mtorobe@eafit.edu.co | Office: Building 19 – 627
Phone: (+57) (4) 261 95 00 Ext. 9473

4) Practice for midterms

4.1)

a) altura(raiz.izq)+1
b) altura(raiz.der)+1

4.2) a) 3
4.3)

a) false
b) suma - (a.dato)
c) a.izq , suma - a.dato
d) a.der, suma - a.dato

4.4)

4.4.3) d) Wilkenson, Joaquina, Eustaquia, Florinda, Eustaquio, Jovin, Sufranio, Piolina, Wilberta, Piolin, Usnavy
4.4.4) a) Cambiar orden de linas 03,04,05 por 05,04,03

4.5)

b) toInsert>p.dato

4.6)

4.6.1) c
4.6.2) return 0
4.6.3) != 0

4.7)

4.7.1) a) 0,2,1,7,5,10,13,11,9,4
4.8.2) b) 2

4.8)
4.9) a) 5,3,6,1,7,4,8,0,2
4.10) a) Si
4.11)

4.11.1) b) 2,3,4,0,5,7,6
4.11.2) a) 5
4.11.3) a) Si

4.12)

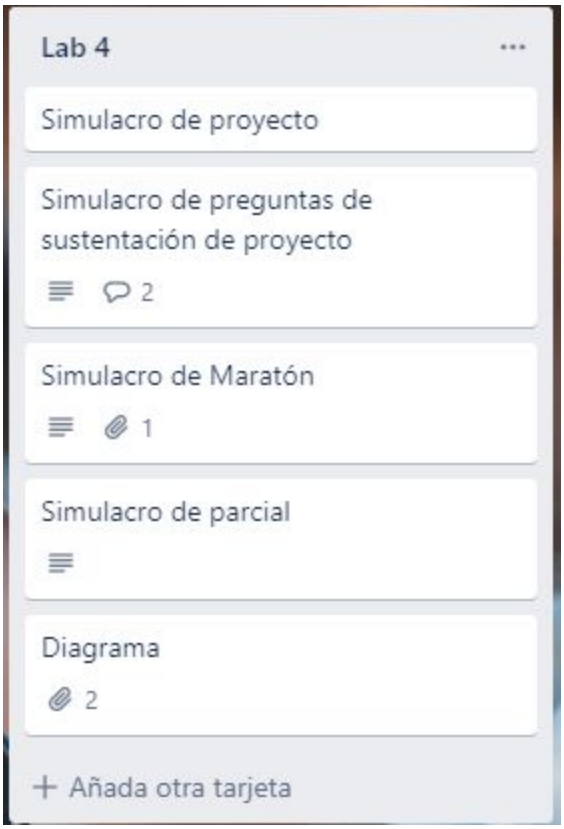
4.12.1) i) A=1,B=2,C=3,D=4,E=5,F=6,G=7,H=8,I=9,J=10
4.12.2) b) A,B,C,D,E,F,G,H,I,J
4.12.3) a) O(n)

4.13)

PhD. Mauricio Toro Bermúdez
Professor | School of Engineering | Informatics and Systems
Email: mtorobe@eafit.edu.co | Office: Building 19 – 627
Phone: (+57) (4) 261 95 00 Ext. 9473

4.13.1) raiz.id
4.13.2) d) T(n) = nT(n-1)+c, que es O(n!)

6) Team work and gradual progress (optional)



PhD. Mauricio Toro Bermúdez
Professor | School of Engineering | Informatics and Systems
Email: mtorobe@eafit.edu.co | Office: Building 19 – 627
Phone: (+57) (4) 261 95 00 Ext. 9473