CSC 323-32: Project 3.1 <Radix Sort> (C++)

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Due date: Oct. 20, 2016

\*\*\*\* Algorithm steps for radix sort:

Step 0: inFile <-- open the input file

0.1: Top <-- create a new stack

Step 1: data <-- read a data from the input file

     1.1: newNode <-- create a new listNode for the data

1.2: push (Top, newNode) <-- push newNode onto the top of the stack

1.3: longestStringLength <-- you need to keep tract of string length of the data here

Step 2: repeat step 1 until file is empty

Step 3: print the stack

Step 4: create hashTable[2][tableSize]

Step 5: currentDigit <-- 0

5.1: currentTable <-- 0

Step 6: node <-- pop from the stack

6.1: padString (node)

6.2: val <-- getVal (node, currentDigit)

6.3: hashIndex <-- hashIndex (val)

6.4: addTail (hashTable[currentTable][ hashIndex])

Step 7: repeat step 6 until stack is empty

Step 8:  printTable (HashTable[currentTable]

Step 9: currentDigit++

9.1: currentTable <-- 1

9.2: previousTable <-- 0

9.3: currentQueue <-- 0

Step 10: node <-- deleteHead from the currentQueue in

10.1: hashTable[previousTable][currentQueue]

10.2: val <-- getVal (node, currentDigit)

10.3: hashIndex <-- hashIndex (val)

10.4: addTail (hashTable[currentTable][ hashIndex])

Step 11:  repeat steps 10 until the currentQueue is empty

Step 12: currentQueue ++

Step 13: repeat step 10 to step 12 until currentQueue >= tableSize – 1

Step 14: temp <-- currentTable

14.1: currentTable <-- previousTable

14.2: previousTable <-- temp

14.3: currentQueue <-- 0

Step 15: repeat step 9 to 14 until currentDigit >= longestStringLength

Step 16: print currentTable

INPUT

ccaabb bbaa a aabb zxc

rafael sebastain

jiaxin huan

stacy manuel adolfas

yat casablanca

yishi

zuoping oliver ahmar maaz

angelo ryan philip stefan lawrence

anthony

changjie joe kar kun

edward teng

xiao

OUTPUT

Table [0][97]: casablanca, a, bbaa

Table [0][98]: aabb, ccaabb

Table [0][99]: zxc

Table [0][100]: edward

Table [0][101]: joe, changjie, lawrence

Table [0][103]: teng, zuoping

Table [0][105]: yishi

Table [0][108]: manuel, rafael

Table [0][110]: kun, stefan, ryan, huan, jiaxin, sebastain

Table [0][111]: xiao, angelo

Table [0][112]: philip

Table [0][114]: kar, ahmar, oliver

Table [0][115]: adolfas

Table [0][116]: yat

Table [0][121]: anthony, stacy

Table [0][122]: maaz

Table [1][32]: a

Table [1][97]: bbaa, stefan, ryan, huan, xiao, kar, ahmar, adolfas, yat, maaz

Table [1][98]: aabb, ccaabb

Table [1][99]: casablanca, lawrence, stacy

Table [1][101]: manuel, rafael, oliver

Table [1][104]: yishi

Table [1][105]: changjie, jiaxin, sebastain, philip

Table [1][108]: angelo

Table [1][110]: teng, zuoping, anthony

Table [1][111]: joe

Table [1][114]: edward

Table [1][117]: kun

Table [1][120]: zxc

Table [0][32]: a

Table [0][97]: maaz, aabb, ccaabb, stacy, rafael, sebastain, edward

Table [0][98]: bbaa

Table [0][101]: angelo, teng

Table [0][102]: stefan, adolfas

Table [0][105]: xiao, zuoping

Table [0][106]: changjie, joe

Table [0][107]: kar, kun

Table [0][108]: philip

Table [0][109]: ahmar

Table [0][110]: casablanca, lawrence

Table [0][111]: anthony

Table [0][115]: yishi

Table [0][117]: huan, manuel

Table [0][118]: oliver

Table [0][120]: jiaxin

Table [0][121]: ryan, yat

Table [0][122]: zxc

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