

Part 2 – Searching

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Searches

Beatles

searching for: Beatles

Binary search comparisons: 13

Loop comparisons: 337

Total comparisons: 350

Theoretical complexity ($\log_2 N$): 13.36

Santana

searching for: Santana

Binary search comparisons: 3

Loop comparisons: 114

Total comparisons: 117

Theoretical complexity ($\log_2 N$): 13.36

Arlo

searching for: Arlo

Binary search comparisons: 14

Loop comparisons: 6

Total comparisons: 20

Theoretical complexity ($\log_2 N$): 13.36

A

searching for: A

Binary search comparisons: 13

Loop comparisons: 582

Total comparisons: 595

Theoretical complexity ($\log_2 N$): 13.36

Z
searching for: Z
Binary search comparisons: 14
Loop comparisons: 141
Total comparisons: 155
Theoretical complexity (log2 N): 13.36

X
searching for: X
Binary search comparisons: 14
Loop comparisons: 2
Total comparisons: 16
Theoretical complexity (log2 N): 13.36

Task 2 Unit test output from SongCollection

Total songs
10514, first songs:
Aerosmith, "Adam's Apple"
Aerosmith, "Ain't Enough"
Aerosmith, "Ain't that a Bitch"
Aerosmith, "All Your Love"

Aerosmith, "Amazing"

Aerosmith, "Angel"

Aerosmith, "Angel's Eye"

Aerosmith, "Animal Crackers"

Aerosmith, "Attitude Adjustment"

Aerosmith, "Avant Garden"

BUILD SUCCESSFUL (total time: 0 seconds)

3. The $O(K + \log_2 N)$ Goal

This search method does meet that goal since binary search as implemented in the Java Arrays.binarySearch method has a worst case big O of $\log_2 N$ in the worst case scenario. When you combine that with while loops for adjacent elements now that you're in the neighborhood, you find that you will always conduct K number of operations if K is the number of songs that have that prefix. This gives us a big O notation of $O(K + \log_2 N)$

Task 3 output GUI Test

Song Search

Song Search

Browse

Artist

Title

Lyrics Words

Lyrics Phrase

153 results found. Your search took 0.008 seconds

Pink Floyd, "A New Machine (Part II)"
Pink Floyd, "A Pillow Of Winds"
Pink Floyd, "A Saucerful Of Secrets"
Pink Floyd, "A Spanish Piece"
Pink Floyd, "Absolutely Curtains"
Pink Floyd, "Alan's Psychedelic Breakfast"
Pink Floyd, "Another Brick In The Wall (Part I)"
Pink Floyd, "Another Brick In The Wall (Part II)"
Pink Floyd, "Another Brick In The Wall (Part III)"
Pink Floyd, "Any Colour You Like"
Pink Floyd, "Apples And Oranges"
Pink Floyd, "Arnold Layne"
Pink Floyd, "Astronomy Domine"
Pink Floyd, "Atom Heart Mother Suite"
Pink Floyd, "Biding My Time"
Pink Floyd, "Bike"
Pink Floyd, "Brain Damage"
Pink Floyd, "Breathe"
Pink Floyd, "Breathe (Reprise)"
Pink Floyd, "Bring The Boys Back Home"
Pink Floyd, "Burnin' Bridges"

Lyrics

We don't need no education
We don't need no thought control
No dark sarcasm in the classroom
Teachers leave them kids alone
Hey! Teachers! Leave them kids alone!
All in all it's just another brick in the wall
All in all you're just another brick in the wall
We don't need no education
We dont need no thought control
No dark sarcasm in the classroom
Teachers leave them kids alone
Hey! Teachers! Leave us kids alone!
All in all you're just another brick in the wall
All in all you're just another brick in the wall
"Wrong, do it again!"
"If you don't eat your meat, you can't have any pudding. How can you have any pudding if you don't eat your meat?"
"You! Yes, you behind the bikesheds, stand still laddy!"

Incomplete parts: None

Known bugs: None