

## Ομάδα

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Link GitHub Repository:

Ctrl + click on link doesn't work, it needs copy and paste to browser in order to work correctly.

<https://github.com/BouzampalidisVasileiosIoannis/InformationRetrieval>

Readme:

### SongInformationSearchEngine

This project is implemented by the undergraduate students:

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For the Information Retrieval course MYE003 of the Undergraduate Program in Computer Science And Engineering course of the University of Ioannina.

#### *Description*

This project is an application that allows the user to search for song titles, lyrics and artists using Lucene.

#### *Data Format*

The loaded data for our application will be in .csv format.

We decided to obtain our data from the website: <https://www.kaggle.com/>, where we found the dataset: spotify\_millsongdata.csv, containing 57651 entries in alphabetical order. The entries consist of three fields each occupying one column. The artist name occupies the first, the song title the second and the lyrics the third.

#### **Application Design**

*The following description is still in the early phases of development and is subject to change*

#### *Goal and Functionality*

The main goal of our application is to provide users with the ability to search for specific artists, song titles, or lyrics using a query input in the terminal.

#### *Data Analysis and Indexing*

To achieve this functionality, we have implemented a custom *Indexer* class based on the *IndexWriter* class of the Lucene library. The *Indexer* class contains fields for various Lucene objects, including *Directory*, *Analyzer*, *IndexWriterConfig*, and *IndexWriter*. The *Indexer* object requires the specification of the '*indexingPath*' parameter to initialize the *Directory* field using the *FSDirectory* sub-class. Moreover, the remaining fields are initialized within the constructor.

The primary function of this class is achieved by the *loadFromCSV* method. Using the '*csvPath*' and '*myIndexer*' parameter, the method opens the csv file, reads it line by line and stores the entries in the corresponding variables namely 'artist', 'song', 'title'. The tokenization is accomplished through the creation of a new *Document* object in which, a new *TextField* for each attribute is added. Every new document created, is added to '*myIndexer*' field. When every line is processed, every change is *finalized* by calling the *commit* method. The method is terminated by closing '*myIndexer*' object and displaying a message indicating the successful completion of data import.

Additionally, this class provides auxiliary methods, namely *addDoc*, *deleteDoc*, and getters to assist in the manipulation of the index.

### Query Parsing and Searching

The *QueryHandler* class is responsible for handling user queries and returning the corresponding Lucene queries based on the user's input. It has a constructor that takes a *QueryParser* as a parameter, and a **getQuery** method that prompts the user to enter their query, parses it, and returns a corresponding Lucene *Query*.

The **getQuery** method takes the user's input, splits it into two parts based on the first occurrence of ":" character, and uses the first part as the field type and the second part as the search phrase. If the search phrase consists of only one word, a *TermQuery* object is created and returned. Otherwise, if the search phrase consists of multiple words, a *PhraseQuery* object is created and returned, which matches documents containing the search phrase in the specified field type.

The *Searcher* class is tasked with handling user queries and performing search operations within the Lucene-based search engine. It plays a crucial role in executing searches and retrieving relevant results based on the user's search. The class features a constructor that takes a *QueryHandler* object, an index path, and a CSV path as parameters. An essential method of the *Searcher* class is the **search** method. This method accepts a query string as input and facilitates the search process. It leverages the capabilities of the underlying components, including the *IndexSearcher*, *Analyzer*, and *QueryHandler*, to execute the search query against the Lucene index. To enhance result visibility, the method employs a *Highlighter* object to highlight matching terms in the retrieved documents. The highlighted results are formatted in HTML for better presentation.

### Query Results Presentation

The presentation of the search results and the submission of queries are now facilitated through a web page implemented with Spring Boot. Initially, the user is presented with a form to submit their query, followed by the display of search results in the form of a list, with matching items highlighted in bold.

### Sample of data entries

Artist	Title	Lyrics
ABBA	That's Me	Are you sure you want to hear more what if I ain't worth the while not the style you'd be looking for if I'm sweet tonight things look different in the morning light I'm jealous and I'm proud if you hurt my feelings I'll cry out loud I'm Carrie not-the-kind-of-girl-you'd-marry. That's me are you sure you want to hear more Would I be the one you seek Mild and meek like the girl next door Don't you realize I may be an angel in disguise It's lonely to be free But I'm not a man's toy, I'll never be I'm Carrie not-the-kind-of-girl-you'd-marry That's me I don't believe in fairy-tales Sweet nothings in my ear But I do believe in sympathy That's me, you see Are you sure you want to hear more Won't you have a drink with me Just to see you're not really sore I can't help my ways I'm just not the girl to hide my face I'm Carrie not-the-kind-of-girl-you'd-marry That's me There's a special love Like an eagle flying with a dove I'll find it in the end If I keep on searching, but until then I'm Carrie not-the-kind-of-girl-you'd-marry That's me
ABBA	The Day Before You Came	I must have left my house at eight, because I always do My train, I'm certain, left the station just when it was due I must have read the morning paper going into town And having gotten through the editorial, no doubt I must have frowned I must have made my desk around a quarter after nine With letters to be read, and heaps of papers waiting to be signed I must have gone to lunch at half past twelve or so The usual place, the usual bunch And still on top of this I'm pretty sure it must have rained The day before you came I must have lit my seventh cigarette at half past two And at the time I never even noticed I was blue I must have kept on dragging through the business of the day Without really knowing anything, I hid a part of me away At five I must have left, there's no exception to the rule A matter of routine, I've done it ever since I finished school The train back home again Undoubtedly I must have read the evening paper then Oh yes, I'm sure my life was well within its usual frame The day before you came I must have opened my front door at eight o'clock or so And stopped along the way to buy some Chinese food to go I'm sure I had my dinner watching something on TV There's not, I think, a single episode of Dallas that I didn't see I must have gone to bed around a quarter after ten I need a lot of sleep, and so I like to be in bed by then I must have read a while The latest one by Marilyn French or something in that style It's funny, but I had no sense of living without aim The day before you came And turning out the light I must have yawned and cuddled up for yet another night And rattling on the roof I must have heard the sound of rain The day before you came
Ace Of Base	Always Have, Always Will	Always have, always will I was mesmerized when I first met you Wouldn't let myself believe That you could step right out of my wildest dreams But you didn't know That secret part of me Until we kissed an made it open up so easily I always have Even when it didn't show I always will You know that I just want to touch you Whenever you're close to me I always have Doesn't matter where we go I always will You know that I just want to show you Just how much you mean to me Always have, always will Everything that you give in to Everything you'll ever need Is locked up somewhere deep inside of me You gotta know But more importantly You've got to stay and hold me while we live this fantasy I always have Even when it didn't show I always will You know that I just want to touch you Whenever you're close to me I always have Doesn't matter where we go I always will You know that I just want to show you Just how much you mean to me Sometimes we try too hard to please We should let love come naturally And sometimes I don't know Just what you really do to me That is O.K.'cause it's all part of the mystery I always have Even when it didn't show I always will You know that I just want to touch you Whenever you're close to me I always have Doesn't matter where we go I always will You know that I just want to show you Just how much you mean to me Always have, always will I always have Even when it didn't show I always will You know that I just want to touch you Whenever you're close to me I always have Doesn't matter where we go I always will You know that I just want to show you Just how much you mean to me Always have, always will

Adele	Need You Know	Picture perfect memories, Scattered all around the floor. Reaching for the phone cause, I can't fight it anymore. And I wonder if I ever cross your mind. For me it happens all the time. It's a quarter after one, I'm all alone and I need you now. Said I wouldn't call, but I lost all control and I need you now. And I don't know how I can do without, I just need you now. Another shot of whiskey, can't stop looking at the door. Wishing you'd come sweeping in the way you did before. And I wonder if I ever cross your mind. For me it happens all the time. It's a quarter after one, I'm a little drunk, And I need you now. Said I wouldn't call but I lost all control and I need you now. And I don't know how I can do without, I just need you now. Yes I'd rather hurt than feel nothing at all. It's a quarter after one, I'm all alone and I need you now. And I said I wouldn't call but I'm a little drunk and I need you now. And I don't know how I can do without, I just need you now. I just need you now. Oh baby I need you now.
Aerosmith	Mama Kin	It ain't easy, livin' like a gypsy. Tell ya, honey, how I feel. I've been dreaming, Floatin' down stream and Losin' touch with all that is real. Whole earth lover, keepin' under cover Never knowin' where ya been. You've been fadin', always out paradin'. Keepin' touch with Mama Kin. Well you've always got your tail on the wag. Shootin' fire from your mouth just like a dragon. You act like a perpetual drag. You better check it out, Or someday soon you'll have to climb back on the wagon. It ain't easy, livin' like ya want to And it's so hard to find piece of mind. Yes it is. The way I see it, you've got to say shit. But don't forget to drop me a line. Said you're as bald as an egg at eighteen. And workin' for you dad is just a drag. He still stuffs your mouth with your dreams. You better check it out, Or someday soon you'll have to climb back on the wagon. Keepin' touch with Mama Kin. Tell her where you've gone and been. Livin' out your fantasy, Sleeping late and smoking tea. Keepin' touch with Mama Kin. Tell her where you've gone and been. Livin' out your fantasy, Sleeping late and smoking tea. It ain't easy, livin' like ya want to, And it's so hard to find piece of mind. Yes it is.
Air Supply	Big Cat	Big cat walking on the wild sideBig cat talking on the wild sideHe knows he looks the way he shouldHe's got something making him feel goodHe's got the style, he's got the swayHe's a million miles awayShe cat walking on the wild sideShe cat talking on the wild sideShe don't smile, she don't lookShe don't do laundry and she don't cookShe's not listening to what he saysShe's not making any promisesHe just wants to love someoneShe just wants to love someoneHe just wants to hold someoneShe just wants to love someoneBig cat walking on the wild sideBig cat talking on the wild sideShe cat walking on the wild sideShe cat talking on the wild sideHe's thinking how she's not so toughCould be a diamond sitting in the roughShe's staring out to empty spaceShe's wondering how long he will takeHe just wants to love someoneShe just wants to love someoneHe just wants to hold someoneShe just wants to love someone
Aiza Segueria	Friend Of Mine	I've known you for so longYou are a friend of mineBut is this all we'd ever be?I've loved you ever sinceYou are a friend of mineBut babe, is this all we ever could be?You tell me things I've never knownI've shown you love you've never shownBut then again, when you cryI'm always at your sideYou tell me 'bout the love you've hadI listen very eagerlyBut deep inside you'll never seeThis feeling of emptinessIt makes me feel sadBut then again I'm gladI've known you all my lifeYou are a friend of mineI know this is how it's gonna beI've loved you then and I love you stillYou're a friend of mineNow, I know friends are all we ever could beYou tell me things I've never knownI've shown you love you've never shownBut then again, when you cryI'm always at your sideYou tell me 'bout the love you've hadAnd I listen very eagerlyBut deep inside you'll never seeThis feeling of emptinessIt makes me feel sadBut then againThen againThen again I'm glad
Alabama	Clear Water Blues	Clear water blues, thinkin' of youSittin' here fishin', catchin' a fewSpendin' my days just tryin' to loseThese clear water bluesClear water blues driftin' alongNowhere to go, now that you're goneMy lonely heart don't know what to doWith these clear water bluesLookin' out across the oceanBlue is all I seeAnd it seems like no matter how far I goYour memory just won't set me freeClear water blues won't leave me aloneKeeps on remindin' me why you're goneMy reflection is showin' a foolIn these clear water bluesClear water blues, still thinkin' of youSittin' here fishin', catchin' a fewSpendin' my days just tryin' to loseThese clear water bluesThese clear water blues

Chicago	Bigger Than Elvis	<p>Come, let's talk just you and me  For once just let me be.  The little boy you used to know.  Relive that summer's bliss.  Cause they came no more like this.  Those were the days,  The days when love was still in style.  [Chorus]  All I ever dreamed I'd be  Is what you are to me.  Bigger than Elvis.  And for all the missing years,  A memory reappears.  Bigger than Elvis.  I saw you on TV.  The king, you were to me.  Could you feel me watching you?  At times my heart got mad,  Only heroes are allowed  To run free,  That they could come back inside of me.  [Chorus]  We know the sadness of goodbyes  Must be the one that's bringing  Tears to your child's eyes.  Oh, from now on I'll walk with you  Making music like you do.  Would you believe I always knew?  You were never hard to take  In some mysterious way  Bigger than Elvis  And for all the missing years  Your memory reappears  Bigger than Elvis.  Now I've found the missing years,  Forgotten all my tears.  I've found the missing years.</p>
Fall Out Boy	So Sick	<p><u>Originally by Ne-Yo</u>  Gotta change my answering machine  Now that I'm alone  'Cause right now it says that we  Can't come to the phone  And I know it makes no sense  'Cause you walked out the door  But it's the only way I hear your voice anymore  It's ridiculous  It's been months  And for some reason I just  Can't get over us  And I'm stronger then this  Ain't no faith in her  Always walkin' 'round  With my head down  I'm so over being blue  Cryin over you  And I'm so sick of love songs  So tired of tears  So done with wishing you were still here  Said I'm so sick of love songs  So sad and slow  So why can't I turn off the radio?  Gotta fix that calender I have  That's marked July 15th  Because since there's no more you  There's no more anniversary  I'm so fed up with my thoughts of you  And your memory  And how every song reminds me  Of what used to be  That's the reason I'm so sick of love songs  So tired of tears  So done with wishing you were still here  Said I'm so sick of love songs  So sad and slow  So why can't I turn off the radio?  Leave me alone  Stupid love songs  Don't make me think about her smile  Or having my first child  Let it go  I'm turning off the radio  'Cause I'm so sick of love songs  So tired of tears  So done with wishing she was still here  Said I'm so sick of love songs  So sad and slow  So why can't I turn off the radio?  Yes, I'm so sick of love songs  So tired of tears  So done with wishing she was still here  Said I'm so done with love songs  So sad and slow  So why can't I turn off the radio?  Why can't I turn off the radio?</p>
Kirsty Maccoll	Patrick	<p>He was a stranger in london at night  And he felt alone so he followed a light  Into a bar where the music was loud  He ordered a pint and got lost in the crowd  He asked a girl if she wanted to dance  She turned up her nose and she told him  "no chance!"  He felt rejected and stood by the wall  And wondered why he'd ever bothered at all  He missed his family and wished he was home  With all of those strangers he felt so alone  Patrick don't be afraid  You'll live to laugh another day  Patrick don't be afraid  The cavalry is on the way  He stood in silence, looked round for a while  Then he saw a girl and she looked back and smiled  Then he went over and started to talk  She looked a bit like his sister in cork  He bought her a drink with his last two quid  When he said "come back for a coffee" she did  Patrick you've got it made  You're halfway there, you're on your way  Patrick she's not afraid  And now I bet you're glad you stayed  Looking so lovely and perfectly groomed  She showed in the centre of patrick's room  She was lit up from the inside and out  Oh he was enchanted as she moved about  She touched him like sunlight on cold mountain stone  And he grew afraid lest she leave him alone  Patrick don't be afraid  You've won the girl and saved the day  Patrick you've got it made  The girl's not going to run away  Patrick don't be afraid  The cavalry is on the way  Patrick you've got it made  Just look outside it's a lovely day</p>

Kiss	I'm Alive	Oh, let's get 'em, boysToo many women, I've got too little timeI keep on tryin'Man, if it kills me I know that I'll goDead, stiff, and smilin'Oh, don't need no doctor puttin' me to bedGive me the nurse and I'll make sure that she's fedDon't need no doctor giving me pillsI'm hot enough to give you chillsLivin' life for love, I'm alive, I'm aliveI can't get enough (I can't get enough)Get it right (right) I'm aliveTake a look in the Book of Love, man it's understoodRight to the letterOne pretty girl makes you feel pretty goodTwo's even betterOh, I learned my lesson, my golden ruleYou know I made the teachers stay after schoolDon't look for reasons, don't waste my timeI've got the goods to make you mineLivin' life for love, I'm alive, yeah, I'm aliveI can't get enough (I can't get enough)Get it right (right) I'm aliveYou know baby, you make my heart beat, alrightDon't need no doctorTake a look at the Book of Love, man it's understoodIt ain't a crime to feel this good, noLivin' life for love, I'm alive, yeah, I'm aliveI can't get enough (can't get enough)Get it right (right) I'm aliveSing itLivin' life, livin' life for love, I'm alive, I'm aliveI can't get enough (can't get enough)Get it right I'm alive (I'm alive)Livin' life for love (livin' life for love)Livin' life for love (I'm alive)Livin' life for love, (yeah, can't get enough)Livin' life for love (I'm alive, whoo)Livin' life for love
Korn	Counting	I can't bare to face what's growing in my head.Please get away from me.Take advantage of what I still guess you do.One day you'll pay for me.So I'm saying nothing.Each day taking that much more.As I'm screaming all my pain.You will be there counting.You just see me as something you throw around.You were there for me (there for me).Beating down to the ground yes it always seems.You take more from me (from me).So I'm saying nothing.Each day taking that much more.As I'm screaming all my pain.You will be there counting.It's funny how we get started.They get their money from the things on you.They get your money and the girls and the fame.I only do it for the fun.That's my game.So I'm saying nothing.Each day taking that much more.As I'm screaming all my pain.You will be there counting.So I'm saying nothing.Each day taking that much more.As I'm screaming all my pain.You will be there counting.
Radiohead	Black Star	Get home from work and you're still standing in your dressing gownWell what am I to do?I know all the things around your head and what they do to you.What are we coming to?What are we gonna do?Blame it on the black starBlame it on the falling skyBlame it on the satellite that beams me home.The troubled words of a troubled mind I try to understandWhat is eating you.I try to stay awake but its 58hrs since that I last slept with you.What are we coming to?I just don't know anymore.I get on the train and I just stand about now that I don't think of you.I keep falling over I keep passing outWhen I see a face like you.What am I coming to?I'm gonna melt down.
Black Sabbath	Paranoid	Finished with my woman 'cause she couldn't help me with my mindPeople think I am insane because I'm frowning all the timeAll day long I think of things but nothing seems to satisfyThink I'll lose my mind if I don't find something to pacifyCan you help me, occupy my brain?Oh yeahI need someone to show me the things in life that I can't findI can't see the things that make true happiness, I must be blindMake a joke and I will sigh and you will laugh and I will cryHappiness I cannot feel and love to me is so unrealAnd so as you hear these words telling you now of my statel tell you to enjoy life I wish I could but it's too late



Bob Dylan	Foot Of Pride	<p>Like the lion tears the flesh off of a man  So can a woman who passes herself off as a male  They sang "Danny Boy" at his funeral  and the Lord's Prayer  Preacher talking 'bout Christ betrayed  It's like the earth just opened and swallowed him up  He reached too high, was thrown back to the ground  You know what they say about bein' nice to the right people on the way up  Sooner or later you gonna meet them comin' down  Well, there ain't no goin' back when your foot of pride come down  Ain't no goin' back  Hear ya got a brother named James, don't forget faces or names  Sunken cheeks and his blood is mixed  He looked straight into the sun and said revenge is mine  But he drinks, and drinks can be fixed  Sing me one more song, about ya love me to the moon and the stranger  And your fall by the sword love affair with Erroll Flynn  In these times of compassion when conformity's in fashion  Say one more stupid thing to me before the final nail is driven in.  Well, there ain't no goin' back when your foot of pride come down  Ain't no goin' back  There's a retired businessman named Red, cast down from heaven and he's out of his head  He feeds off of everyone that he can touch  He said he only deals in cash or sells tickets to a plane crash  He's not somebody that you play around with much  Miss Delilah is his, a Philistine is what she is  She'll do wondrous works with your fate  Feed you coconut bread, spice buns in your bed  If you don't mind sleepin' with your head face down in a grave.  Well, there ain't no goin' back when your foot of pride come down  Ain't no goin' back  Well they'll choose a man for you to meet tonight  You'll play the fool and learn how to walk through doors  How to enter into the gates of paradise  No, how to carry a burden too heavy to be yours  Yeah, from the stage they'll be tryin' to get water outta rocks  A whore will pass the hat, collect a hundred grand and say thanks  They like to take all this money from sin, build big universities to study in  Sing "Amazing Grace" all the way to the Swiss banks  Well, there ain't no goin' back when your foot of pride come down  Ain't no goin' back  They got some beautiful people out there, man  They can be a terror to your mind and show you how to hold your tongue  They got mystery written all over their forehead  They kill babies in the crib and say only the good die young  They don't believe in mercy  Judgment on them is something that you'll never see  They can exalt you up or bring you down main route  Turn you into anything that they want you to be  Well, there ain't no goin' back when your foot of pride come down  Ain't no goin' back  Yes, I guess I loved him too  Can still see him in my mind climbin' that hill  Did he make it to the top, well he probably did and dropped  Struck down by the strength of the will  Ain't nothin' left here partner, just the dust of a plague that has left this whole town afraid  From now on, this'll be where you're from  Let the dead bury the dead. Your time will come  Let hot iron blow as he raised the shade  Well, there ain't no goin' back when your foot of pride come down  Ain't no goin' back</p>
Bob Marley	Small Axe	<p>Why boasteth thyself  Oh, evil men  Playing smart  And not being clever?  I said, you're working iniquity  To achieve vanity (if a-so a-so)  But the goodness of Jah, Jah!  Dureth forever  So if you are the big tree  We are the small axe  Ready to cut you down (well sharp)  To cut you down  These are the words  Of my master, keep on tellin' me  No weak heart  Shall prosper  And whosoever diggeth a pit  Shall fall in it, fall in it  And whosoever diggeth a pit  Shall fall in it (fall in it)  If you are the big tree, let me tell you that  We are the small axe, sharp and ready  Ready to cut you down (well sharp)  To cut you down (to cut you down)  (to cut you down)  These are the words  Of my master, tellin' me that  No weak heart  Shall prosper  And whosoever diggeth a pit  Shall fall in it, uh, bury in it  And whosoever diggeth a pit  Shall bury in it, uh (bury in it)  If you are the big, big tree  We are the small axe  Ready to cut you down (well sharp)  To cut you down  If you are the big, big tree, let me tell you that  We are the small axe  Ready to cut you down (well sharp)  To cut you down  Sharpened</p>



Zebrahead	Let Me Go	<p>Well some wear their feelings right on their sleeve  And some want to feel what's inside of me  But I've been here twice before  oh I've been here twice before  And I notice you  Spy satellite snapping shots from the skylight  Endo you know  buffers up to a highlight  ink to the skin tight burned in the sunlight  If present lived hindsight, you would be  dynamite  Butterfly crucify yourself straight gemini  Checking out grey clouds burning out blue skies  Even high tides rail slides break for landslides  Just another ride got shot goodbye side  Don't let me go I know I'm always late to see you  I can't wait to see you again and  Don't let me go I know I'm always late to see you  I can't wait to see you here again  Well some wear their feelings right on their sleeve  And some want to feel what's inside of me  But I've been here twice before  oh I've been here twice before  And I notice you  Spy satellite snapping shots from the skylight  Endo you know  buffers up to a highlight  ink to the skin tight burned in the sunlight  If present lived hindsight, you would be  dynamite  Butterfly crucify yourself straight gemini  Checking out grey clouds burning out blue skies  Even high tides rail slides break for landslides  Just another ride got shot goodbye side  Don't let me go I know I'm always late to see you  I can't wait to see you again and  Don't let me go I know I'm always late to see you  I can't wait to see you here again  You wanted something different  You confused the lines  And now you're trying, you're trying to make this  Better 'cause you know you can't rewind  Can't go back if that's what you're doing  'Cause everything looks dope in slow motion  But you got taxed in all the commotion  Then you got waxed for all your devotion  Floating in space  No locomotion  'Cause everything looks dope in slow motion  But you got taxed in all the commotion  Then you got waxed for all your devotion  Floating in space  No locomotion  Don't let me go I know I'm always late to see you  I can't wait to see you again and  Don't let me go I know I'm always late to see you  I can't wait to see you again  Don't let me go I know I'm always late to see you  I can't wait to see you here again</p>
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