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Computer Science 201 - Assignment 2: Searching Text & String Data

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About this Assignment

In this course, you have learned about text as a data structure, string searching algorithms, trie data structure, and methods for compressing texts. For this assignment, you will develop an application using the Java programming language.

Prompt

The application must address the following requirements:

- The application uses the names of 50 states in the United States as the input text.
- It uses the bad character rule of the Boyer-Moore algorithm to search the pattern a user inputs via an interface.
- When a user runs the application, it displays a menu and prompts the user to select an option.
- The menu options are:

1. Display the text
2. Search
3. Exit program

- When a user selects 1) Display the text, the application displays the content of the text (i.e. the names of 50 states in the United States).
- When a user selects 2) Search, the application prompts the user to input a part of the name of a state as a pattern for search. The application searches for the pattern in the text using the bad character rule of the Boyer-Moore algorithm. Then, the application displays the indices of the matches (i.e. occurrences of the pattern in the text).
- When a user selects 3) Exit program, the application ends.

Related Lessons

If you'd like to review Study.com course material for this assignment, please refer to the following lessons:

- Text as a Data Structure: Java Strings & Character Arrays
- String Searching Algorithms: Methods & Types
- Standard & Compressed Tries in Java
- Greedy vs. Huffman Methods for Compressing Texts

Use of AI in Study.com Assignments

Acceptable use of generative AI tools such as ChatGPT is outlined in the Study.com Academic Integrity Policy; please familiarize yourself with this policy to ensure that you have appropriately cited and used AI tools in an authorized manner in the creation of your assignment. You may wish to use GPTZero to ensure that your assignment is sufficiently unique and free from AI plagiarism.

Reminders about using AI:

- AI may be used as a tool to support your process for creating this assignment but **may not create or write your assignment response** for you. Plagiarized submissions will not be graded and may result in disciplinary actions.
- All AI usage for this assignment must be **properly cited and documented** according to the guidelines in the How to Use & Cite AI Tools in College Saver Course Assignments article.
    - In addition to in-text citations and inclusion in your Works Cited for the assignment, you must submit a **separate document** as outlined in the Documenting and Attributing AI section of the above article.
- It is important to **fact-check any output** you obtain using AI as it may produce inaccuracy or misinformation.
- You are solely responsible for all submitted work that you provide with the use of AI.
- Do not input any confidential or personal information while using AI tools.
- For additional information on generative AI tools, please refer to Understanding Generative AI as a Student: Uses, Benefits & Drawbacks.

Grading Rubric

Your project will be graded on the following rubric:

Category	Unacceptable (0-2)	Needs Improvement (3-6)	Good (7-8)	Excellent (9-10)	Total
Program Specification (x3)	The program does not or partially meets the requirements and contains multiple major errors.	The program partially meets the requirements or contains at least one major error.	The program meets all the requirements but contains one or two minor errors.	The program meets all the requirements and works without any errors.	30
Code Efficiency (x1)	The code employs inefficient algorithms and includes unnecessary components.	The code employs inefficient algorithms or includes unnecessary components.	The code employs efficient algorithms but includes some unnecessary components.	The code employs efficient algorithms and doesn't include unnecessary components.	10
Code Readability (x.5)	The code is not easily understandable and contains improper naming and formatting.	Most parts of the code are not easily understandable or contain improper naming and formatting.	The code is mostly understandable and uses proper naming and formatting.	The code is easily understandable and well-organized and uses proper naming and formatting.	5
Documentation (x.5)	No or very few documentation exists.	The documentation is ambiguous or doesn't not explain what the code is accomplishing and how.	The documentation explains what the code is accomplishing and how but doesn't cover all the important parts of the code.	The documentation clearly explains what the code is accomplishing and how.	5
Total Points					50

Before You Submit

Before you submit your assignment, please review the Academic Integrity Policy to ensure that you fully understand what constitutes plagiarism and its consequences.

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Unless otherwise stated in the assignment instructions, AI-generated content is not permissible. The use of ChatGPT or other AI applications to generate work presented as your own is a form of plagiarism. Plagiarized submissions will NOT be graded and may result in disciplinary actions

How to Submit Your Assignment

When you are ready to submit your assignment, please fill out the submission form and copy your code into a Microsoft Word document or .txt file. You should receive your assignment grade within one week.

If you are not satisfied with the score you receive on your assignment, you may revise or rewrite it, and resubmit them for grading using the same submission form above. Keep in mind that the grade you receive on your assignment is only a portion of your overall grade for the course, and you are free to retake the proctored final exam as well if you choose. Please see the course syllabus for a more detailed breakdown of the grading policy.