Research Rover

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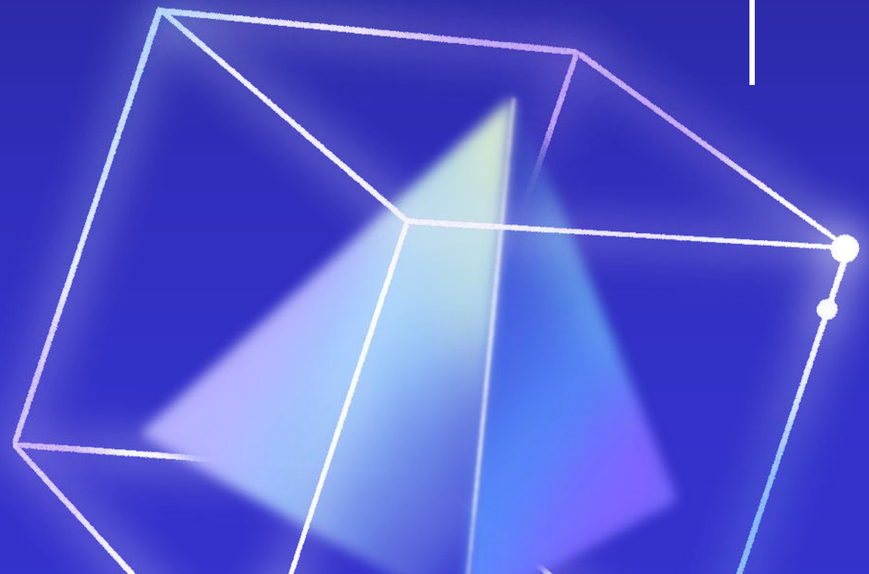


PROBLEM STATEMENT:

- A project that helps the students to find the relevant research papers and resources.

FEATURES

FEATURES 01

To Implement a robust search mechanism that allows students to easily find relevant research papers and resources.

FEATURES 02

To organize research papers and resources into categories or tags for easy navigation.

FEATURES 03

To implement sorting option to refine search results.

FEATURES 04

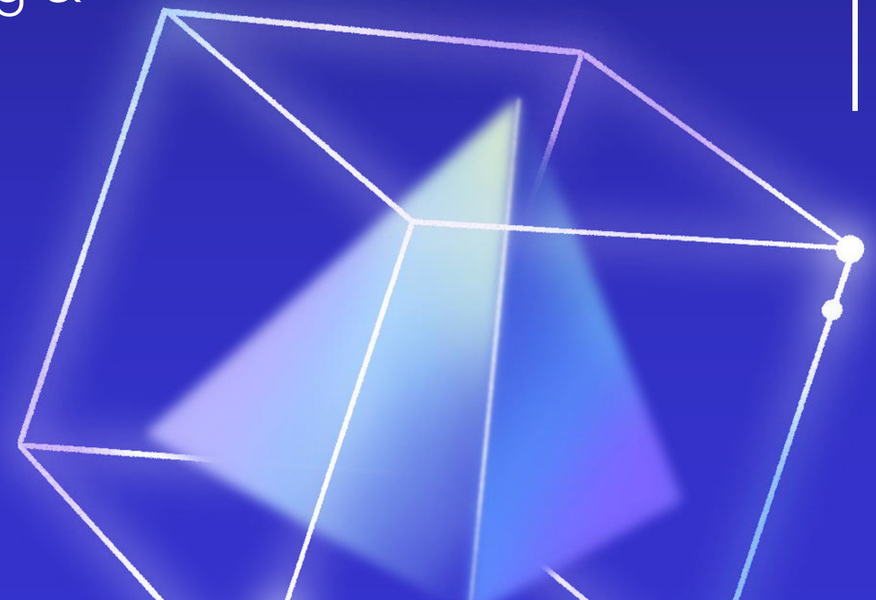
To store a command that does not match with previously stored commands

CORE TECHNOLOGIES:

1.DATA STRUCTURES & ALGORITHMS

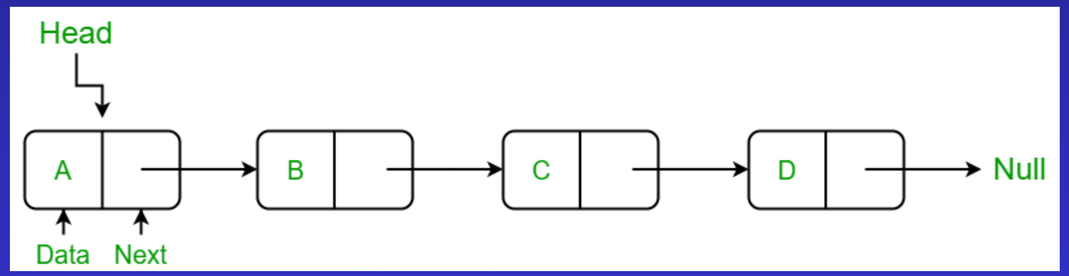
- Linked list(singly)
- Array
- Operations: Insertion, Deletion, Searching & Sorting

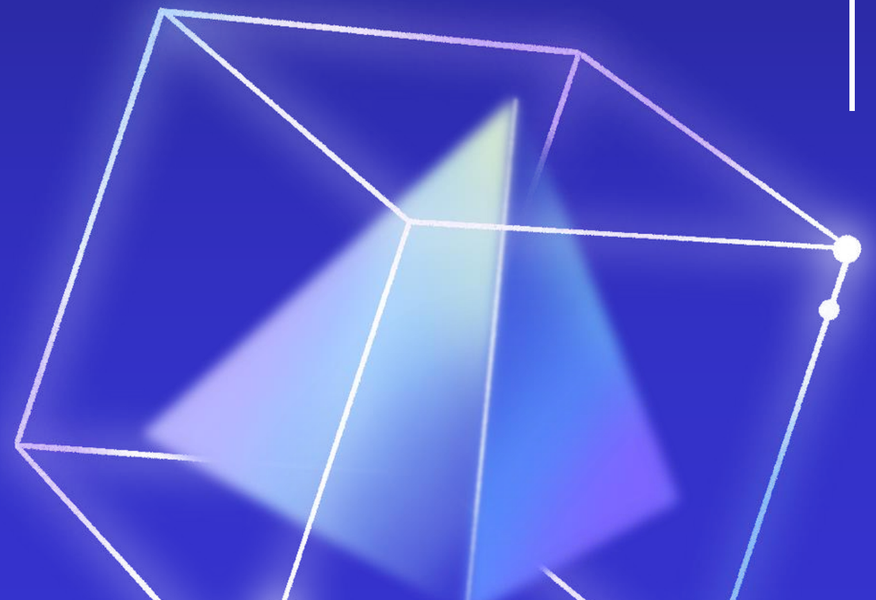
2.C++ PROGRAMMING LANGUAGE



LINKED LIST:

A linked list is a fundamental data structure in computer science that consists of a sequence of nodes, where each node contains a value and a pointer to the next node in the sequence. This non-contiguous arrangement of data in memory allows for efficient insertion and deletion operations, making linked lists a versatile tool for various applications.



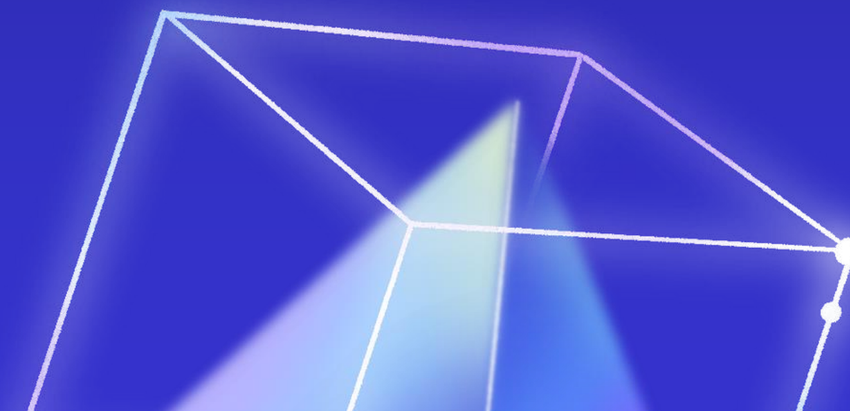


ARRAY:

An array is a collection of items of the same data type stored in contiguous memory locations. It is the most basic and fundamental data structures. Arrays are used to store collections of data, such as numbers, strings, or objects.

Array declaration:

```
int myArray[10];
```



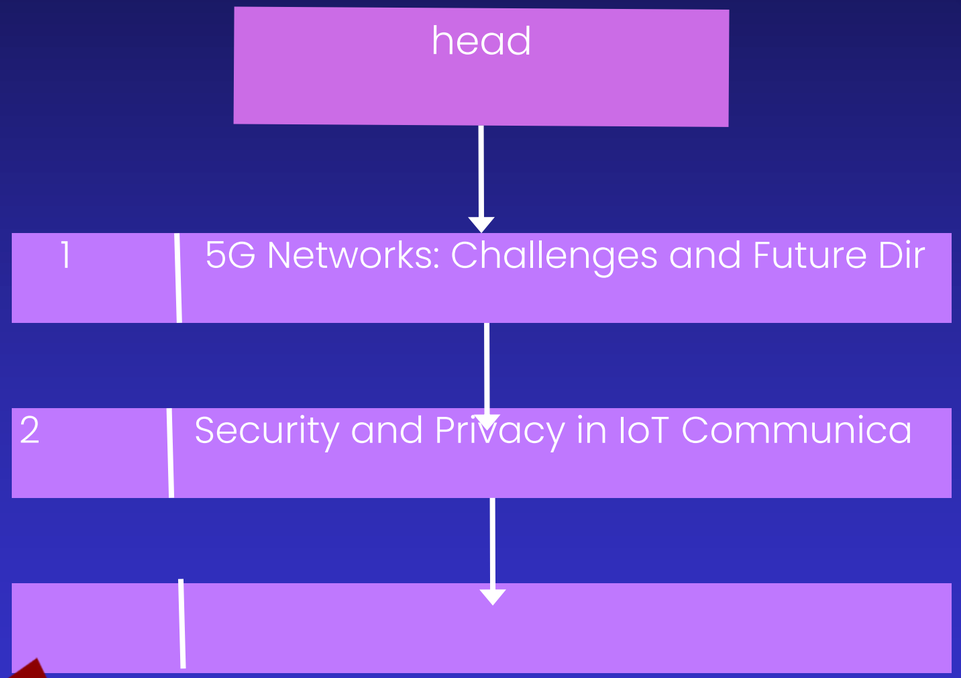
OPERATION: APPEND_PROBLEM FUNCTION

01

Creating linklist and insert research topic from generic_problem.txt file

generic_problem.txt

- 5G NETWORKS: CHALLENGES AND FUTURE DIRECTIONS
- SECURITY AND PRIVACY IN IOT COMMUNICATION
- APPLICATIONS OF MACHINE LEARNING IN WIRELESS COMMUNICATION
- MILLIMETER-WAVE ANTENNA DESIGN FOR 5G
- ENERGY-EFFICIENT PROTOCOLS FOR WIRELESS SENSOR NETWORKS



OPERATION: USER_SEARCH TOPIC

02

Take a search topic from user and operate searching

input a line:signal processing

key: 0	key: 1
signal	processing

generic_problem.txt

7. Sparse Signal Processing Techniques
8. Deep Learning Approaches in Image and Video Processing
9. Applications of Compressive Sensing in Signal Processing
10. Advancements in Audio Signal Processing
11. Smart Grids: Technologies and Implementation Challenges

TERMINAL

```
Please Enter your Search: signal processing
Word "signal" found in line(s): 7 9 10 58 93
Word "processing" found in line(s): 7 8 9 10 48 58 71 93
```

ARRAY:fileter_search

key 0	7 9 10 58 93
key 1	7 8 9 10 48 58 71 93

OPERATION: MERGE AND SORT

03

After merge and sort find out final solution according to the frequency of the line

ARRAY:fileter_search

key 0	7 9 10 58 93
key 1	7 8 9 10 48 58 71 93

ARRAY:fileter_search[0]

7 7 8 9 9 10 48 58 58 71 93 93

Final output

TERMINAL

```
Please Enter your Search: signal processing
Word "signal" found in line(s): 7 9 10 58 93
Word "processing" found in line(s): 7 8 9 10 48 58 71 93
line :-7. Sparse Signal Processing Techniques
resourches :-7. [Sparse Signal Processing Techniques](https://www.electronics.com/sparse-signal-processing)
```

ACHIEVEMENTS

01

- If we search any research paper, it gives all the relevant research papers and resources as soon as it found something matching with key word.

02

- Students can get all the relevant resources, whenever they ask any questions, but if the question is not found in memory, it notes the question and stores it.

03

- It gives a user friendly interface for the students

LIMITATIONS

01

- The availability of research papers are limited. It may result in missing relevant papers.

02

- Heavy reliance on keyword might overlook papers using different terminology

03

- As we used linear search, the time complexity is high

04

- Infrequent updates may cause the project to miss the latest findings

FUTURE ENHANCEMENTS

01

- Implementing dynamic handling allows for real-time adjustments and responsiveness

02

- If our project were online-based, it would offer the advantages of increased accessibility, providing a dynamic platform for efficient project management

THANK YOU!