

In a singly linked list, elements called nodes are arranged in a sequence, where each node stores data and a link to the following node. The link in the final node usually contains a null reference, marking the list's end [1]. Arrays store elements in sequential memory locations, each identified by an index number. In contrast, singly linked lists arrange elements through nodes that contain pointers, which determine the order of the elements [2].

Arrays are preferred when the size of the dataset is known in advance and static memory allocation is sufficient[3]. Linked lists are ideal for situations where the number of elements is unpredictable, as they allow dynamic memory allocation[3].

In the real world, linked lists enable sequential navigation and dynamic organization, examples include next/previous functionality in image viewers, playlists, and web browsers In route tracking in GPS systems In robotics control flows In task scheduling and memory management in operating systems; representing files and directories In managing undo/redo actions organizing symbol tables in compilers representing phonetic options in speech recognition; modeling polynomials or simulating time-series states in physical systems [4].

## REFERENCES

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