

Prepared By:

Sajid Ali

MCS, M.Sc (Math), B.Ed

3

PROGRAMING FUNDAMENTALS

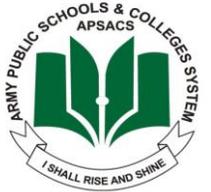
Topics:

**COMPLEX ALGORITHMS IN
JAVASCRIPT**

Page No: 102-105

KNOWLEDGE IS POWER

COMPLEX ALGORITHMS IN JAVASCRIPT

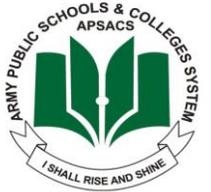


SLOs:

At The End of The Lesson Students Will Be Able to:

- Explain Array and List and major differences between them
- Describe the Algorithm to find an Element in a list

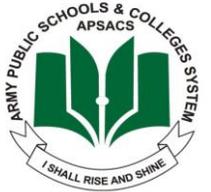
COMPLEX ALGORITHMS IN JAVASCRIPT



Array and List are similar:

An ordered sequence of elements is called list. A list is an Abstract Data Type (ADT), where an ADT is the data type which acts for defined operations only. In simple words, though JavaScript provides some basic data types to use but allows to introduce newer data types that are abstract, for which the definition and corresponding operations need to be explicitly mentioned.

COMPLEX ALGORITHMS IN JAVASCRIPT

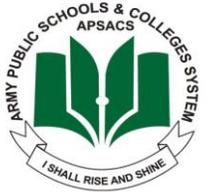


Array and List are similar:

Arrays and lists are JavaScript data structures that can hold and manage collections of data. Lists and arrays may both arrange things in an ordered fashion for a set of elements. Every element is stored and accessed via an index number which starts at 0 which shows its position. Based on this index number, values can be searched for and updated if required.

Both are able to hold all types of data, i.e. an array or list can include words, numbers or even a combination of the two. Both are able to expand or contract to hold items, since adding or removing of items as required is quite easy. In simplest form, list is implemented using array.

COMPLEX ALGORITHMS IN JAVASCRIPT

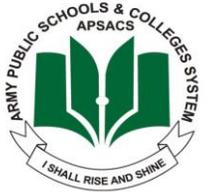


Array and List are similar:

Major Differences:

- Array is a collection of items, that are stored in memory at contiguous location, whereas list consists of memory locations that are not necessarily contiguous .
- Square brackets [] indicate that an array is a built-in JavaScript tool. Lists are not a component of JavaScript. Tools like arrays are frequently used to create them.
- Since arrays have a fixed arrangement, adding or deleting elements may require some rearranging. Based on how they are constructed, lists can be resized more easily.
- The functions of Arrays are already available, such as to add and remove an item. Lists may need additional steps and are flexible enough to incorporate newer functions and operations. For example, we can define a function 'getElement()' to view the value of current element.
- Arrays are best suited for working with numbers, while lists are chosen for general usage.

COMPLEX ALGORITHMS IN JAVASCRIPT



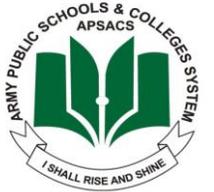
Selecting Among Lists and Arrays:

Arrays are a great option for the majority of simple JavaScript tasks since they are simple to use. However, if you want something more versatile, lists are more suitable.

3.4.2 Find an Element in a List

The standard procedure is to search the entire list until you locate the item you're looking for. Here's a basic example that demonstrates how it works. Initially, every item in the "Shopping List" list is shown i.e. bread, apples, milk, and cheese. Thereafter it searches for a certain item (like "milk") and indicates in the "Result" whether or not it is included in the list.

COMPLEX ALGORITHMS IN JAVASCRIPT



Algorithm

1. Initialize:

- (a) To store shopping goods, create an array called shoppingList.
- (b) listContent (string): This is how the shopping list is put together for presentation.
- (c) The item to be searched for is held in itemName (string).

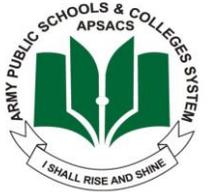
2. Enlisting Shopping List (the initial Loop):

- (a) Iterate shoppingList array using a loop.

3. Within the loop:

- (a) Update the listContent string with the current item.
- (b) If this is not the final item, separate it with a comma and leave space.
- (c) Using the entire listContent string, update the HTML section with the ID "list".

COMPLEX ALGORITHMS IN JAVASCRIPT



4. The second loop:

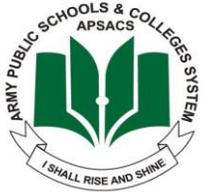
- (a) search for an item by going over everything in the shoppingList array.
- (b) Inside loop: Verify that the item we now have matches the itemName that we are searching for.
- (c) If a match is discovered, use return to end the loop and update the HTML section with the ID "result" and a message indicating the item is found.
- (d) Update the HTML code in the section with the ID "result" with a notification indicating the item is not found if the loop concludes without finding a match.

5. Using the Algorithm:

- (a) To begin, call the findItem method and search the required itemName.

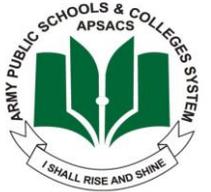
The respective implementation of the algorithm is as follows:

COMPLEX ALGORITHMS IN JAVASCRIPT



Q&A
QUESTIONS &
ANSWERS

AFL STRATEGIES



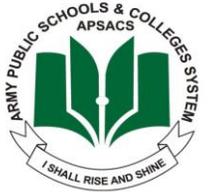
Class Discussion,

Brainstorming,

Feedback and Reflection

KNOWLEDGE IS POWER

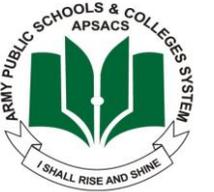
ASSIGNMENT



Write down Activity-3 Page No 95 in your computer notebooks:

1. Write the code in any text editor of your choice (VS Code, Notepad) and show the out put in the browser. Also write the output.

HOME WORK



Reading Text Book Page Number 102-105

LGES

KNOWLEDGE IS POWER

**THANK
YOU**