Data Structures

WIT & WIL

Why am I Teaching What I am Teaching
&
Why am I Learning What I am Learning

Why am I teaching?

- In computer , we need lot of data to process a particular application or program or transaction. For all these do correctly we need to structure the data or organize the data.

- In computer science organizing data is so important and it is a time consuming process.

- If the data is in a particular order, then it is easy to process and easy to operate on that data.

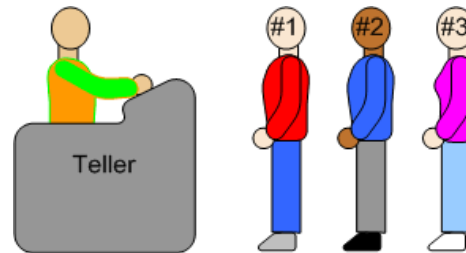- A data structure is used to organizing data and using that data effectively for good results.

What I am teaching

Stacks

To organize data in LIFO order

Queues

Teller

#1 #2 #3

To organize data in FIFO order

Linked Lists

To store elements in sequence

Trees

To organize data in Hierarchical manner

Graphs

To maintain relationship between data

**Searching & Sorting**

To retrieve and sort the data

Why am I learning?

The reason for learning about data structures is because adding structure to our data can make the algorithms much simpler, easier to maintain, and often faster

Example: Booking Ticket in "Book My Show" app

- In "Book My Show", first we search for movies, which can be done in three ways:
  - ➢ Bases on Release Date(Latest releases)
  - ➢ Alphabetically
  - ➢ Bases on Language
- After selecting required movie, we are by default given list of nearby theatres.
- After selecting required theatre, we are shown free seats. People who book tickets first have more choices.
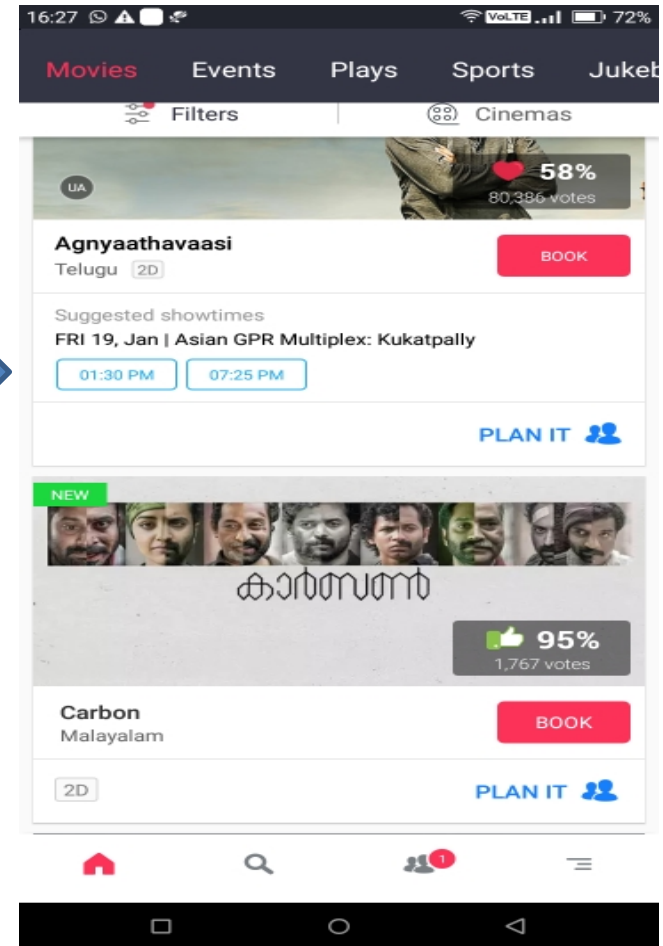
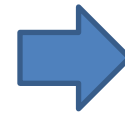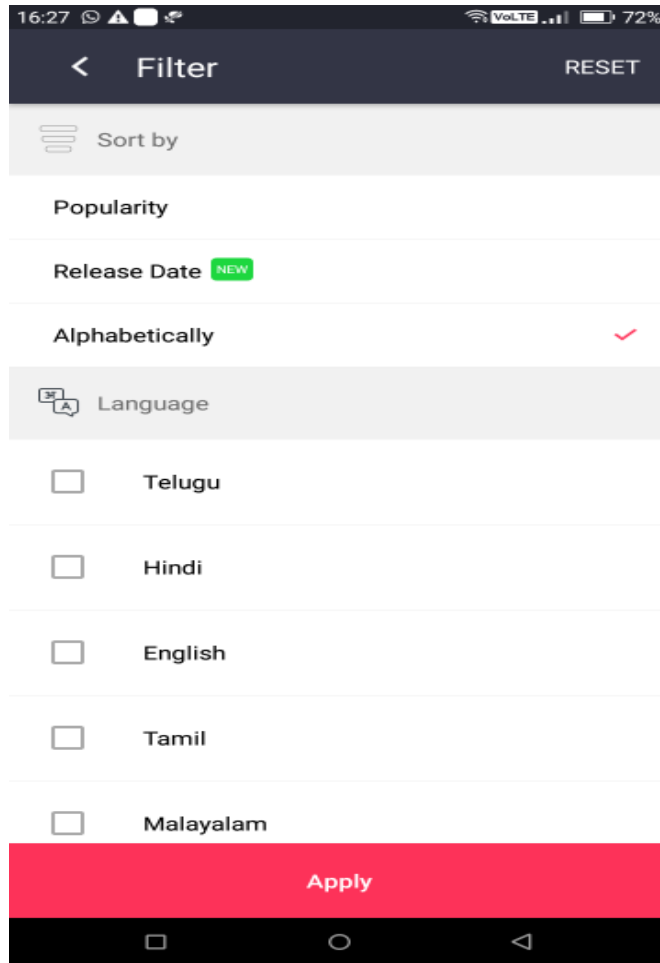# New released movies will be on the top of the list
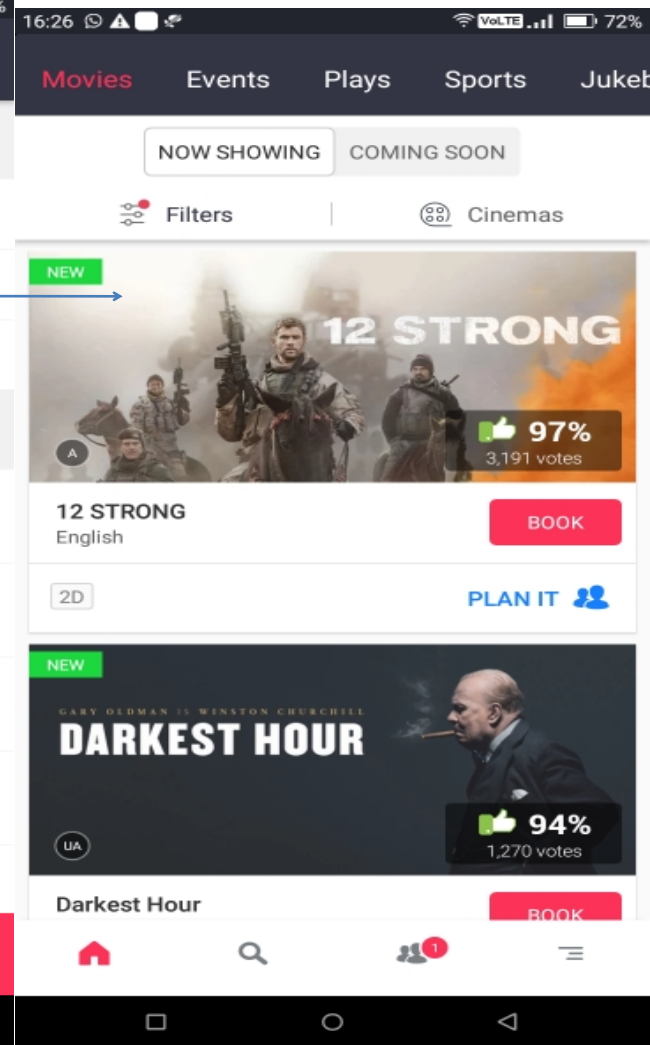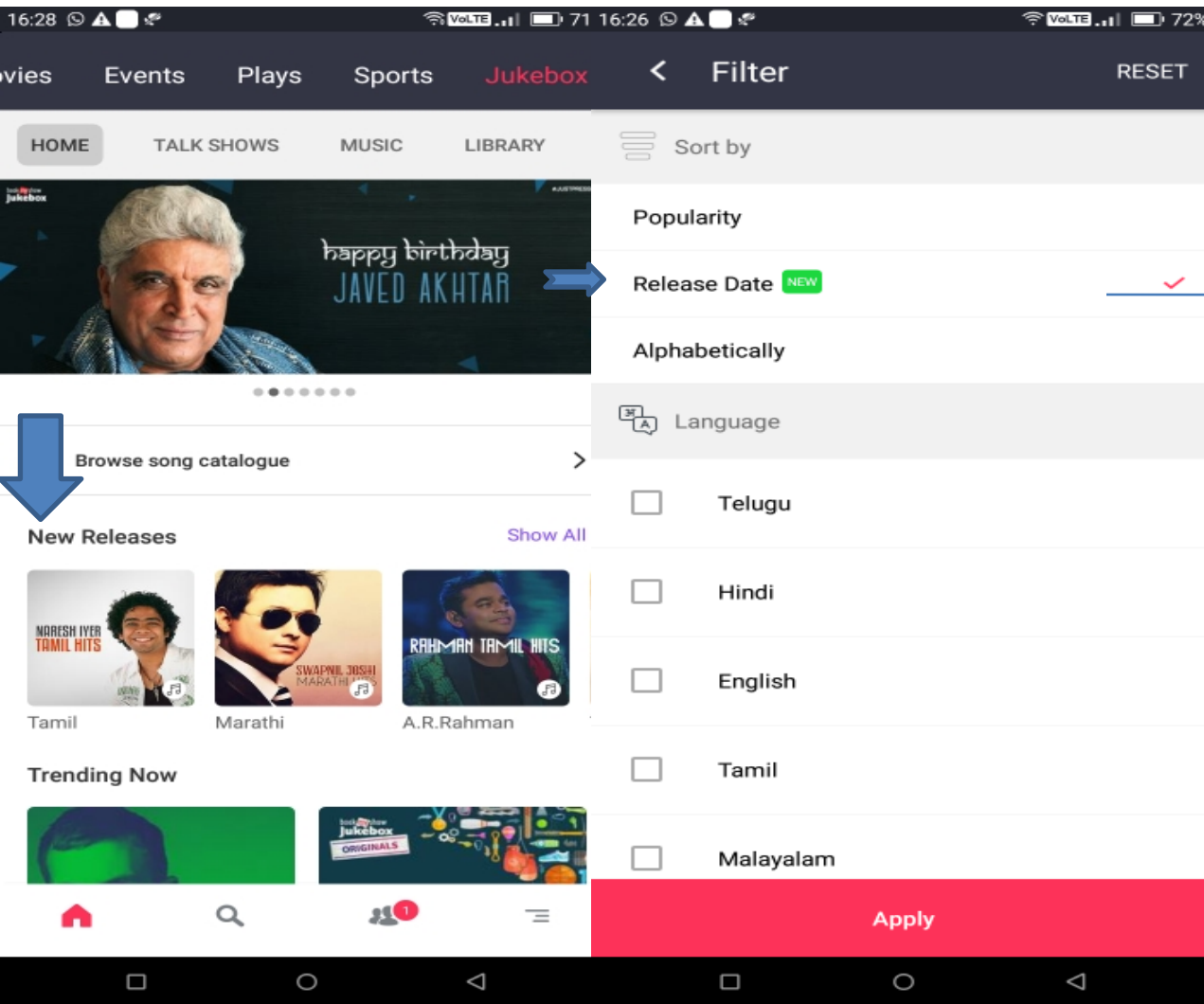
Stacks – Last inserted items will be on the top

Classifies movies based on language
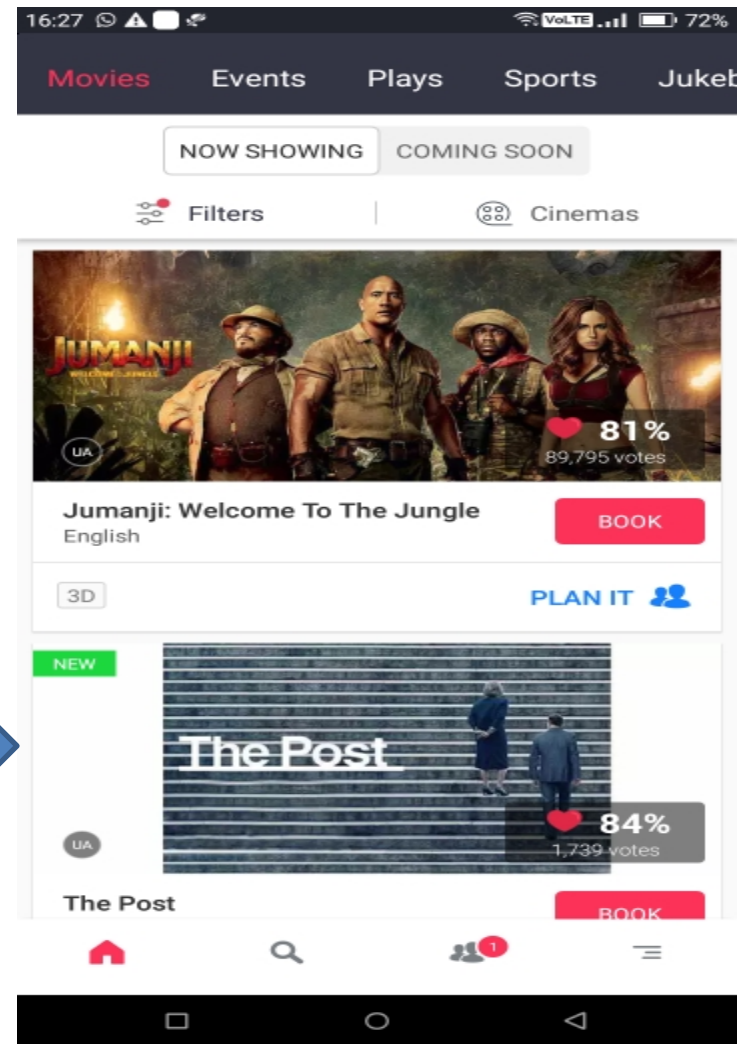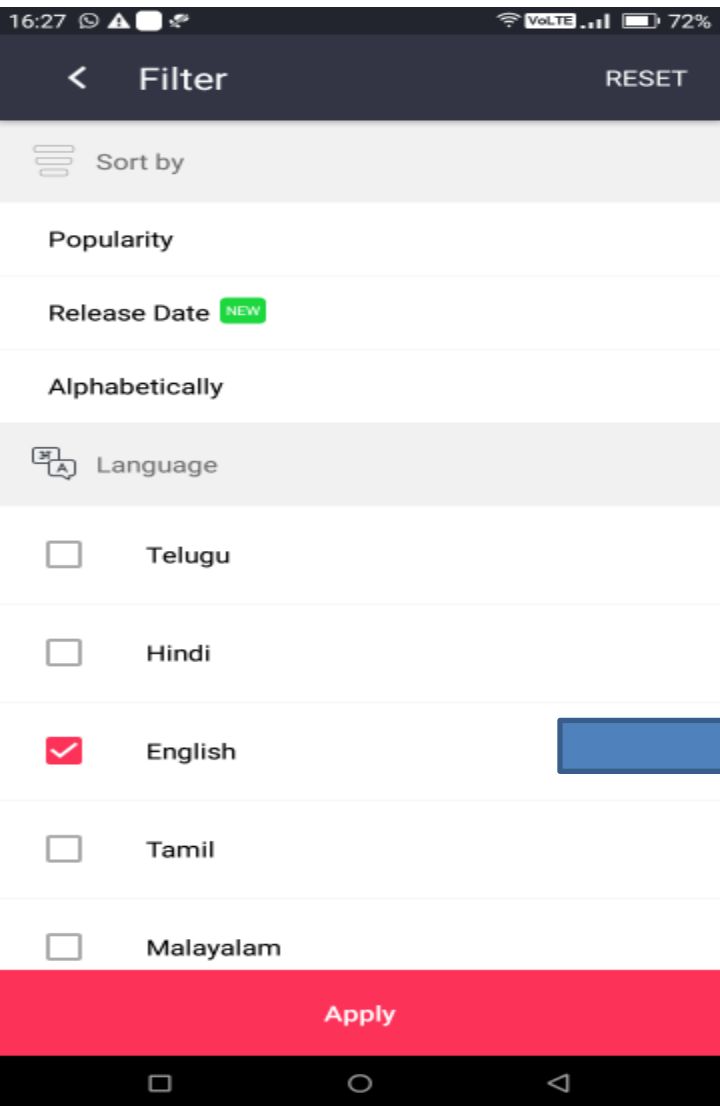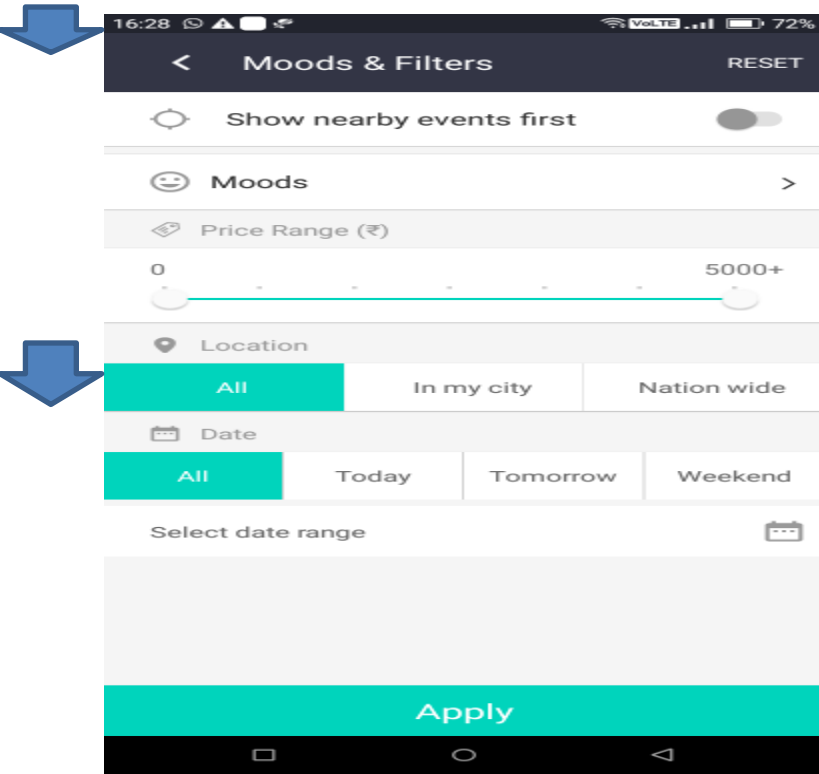

Trees – To classify the data

The option **"Alphabetically"** sorts the list of movies based on alphabet

Sorting – To sort the list in order

By default, it gives list of nearest theatres.

Graphs – To find the shortest path

The people who book tickets at the first have mire choice of seats.

Queue - Works on the principle of "First come, first served".

What I am learning

- Files – To store huge volume of data permanently
- Linked lists - To store data with structures so that the programmer can automatically create a new place to store data whenever necessary
- Stacks – To organize data in Last In First Out (LIFO) manner
- Queues- To organize data in First In First Out (FIFO) manner
- Trees and Graphs – To organize data in hierarchical manner
- Searching and Sorting – To retrieve and sort the data