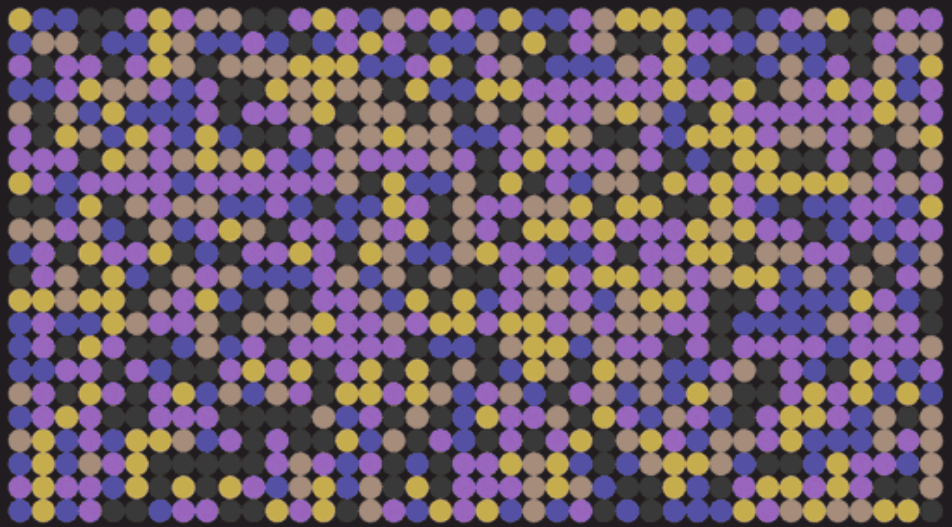
Sorting Basics

Sorting in Arrays

Basic Algorithms

- Bubble Sort
- Selection Sort
- Insertion Sort



What is Sorting?

```
//Unsorted Array
a = {10,12,5,4,1,3,2};


//Sorted Array in Increasing Order
a = {1,2,3,4,5,10,12}

//Sorted Array in Decreasing Order
a = {12,10,5,4,3,2,1}
```

Check if Array is Sorted?

Bubble Sort

Key Idea

Take *larger element* to the end by repeatedly swapping the adjacent elements.

In-built Sort

Problems

Subarray Sort

Given an array of size at-least two, find the smallest subarray that needs to be sorted in place so that entire input array becomes sorted.

If the input array is already sorted, the function should return [-1,-1], otherwise return the start & end index of smallest subarray.

```
Sample Input
a1 = [1, 2, 3, 4, 5, 8, 6, 7, 9, 10, 11]
Sample Output
[5,7]
```

Check Subsequence

Given two non-empty arrays, write a function that determines whether the second arrays is subsequence of first one.

Sample Input

```
[5, 1, 22, 25, 6, -1, 8, 10]
[1, 22, 8]
```

Sample Output

```
Yes
```

More techniques
Intermediate Course

Selection Sort

Key Idea

Repeatedly find the minimum element from unsorted part and putting it at the beginning.

Insertion Sort

Key Idea

Insertion sort is similar to playing cards in our hands.

Insert the *card* in its correct position in a sorted part.