

CSE231: Data Structures

Lecture 01

by

Mehedi Hasan Bijoy

Data and Information

Data

- Are simply values.
- Have no specific meaning.

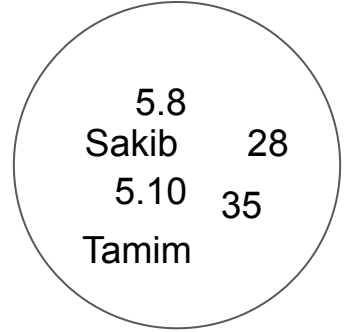
Information

- Is processed data.
- Have meaning and purpose.

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Information

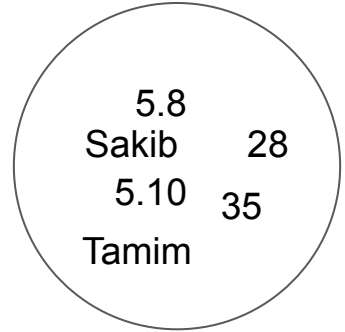
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Attribute →	Name	Age	Height
Values →	Sakib	35	5.8
Values →	Tamim	28	5.10

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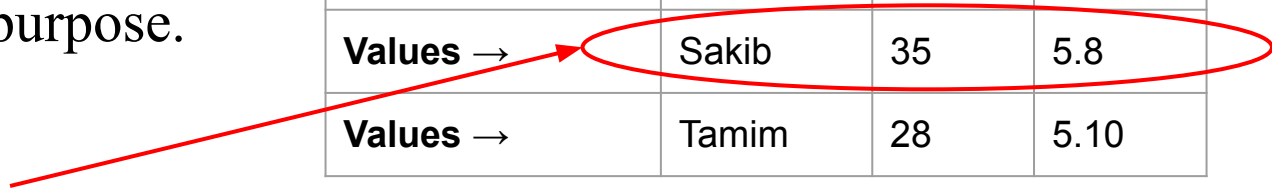


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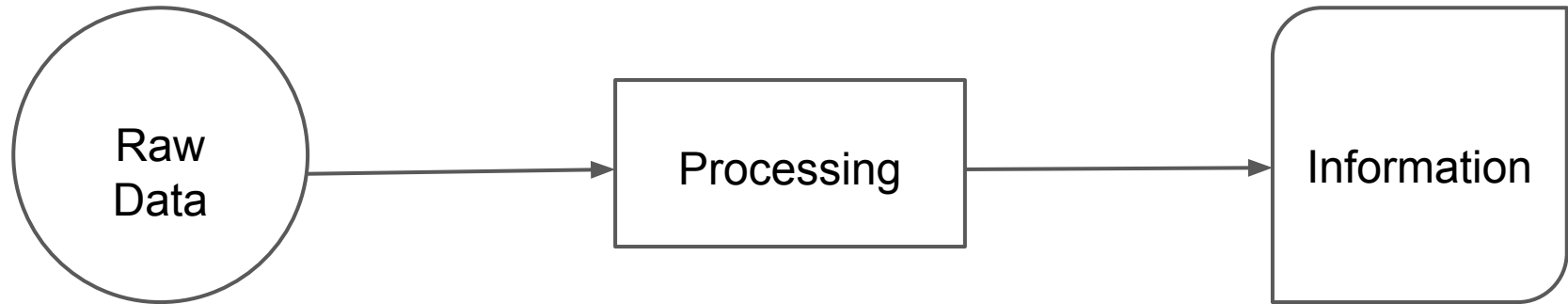
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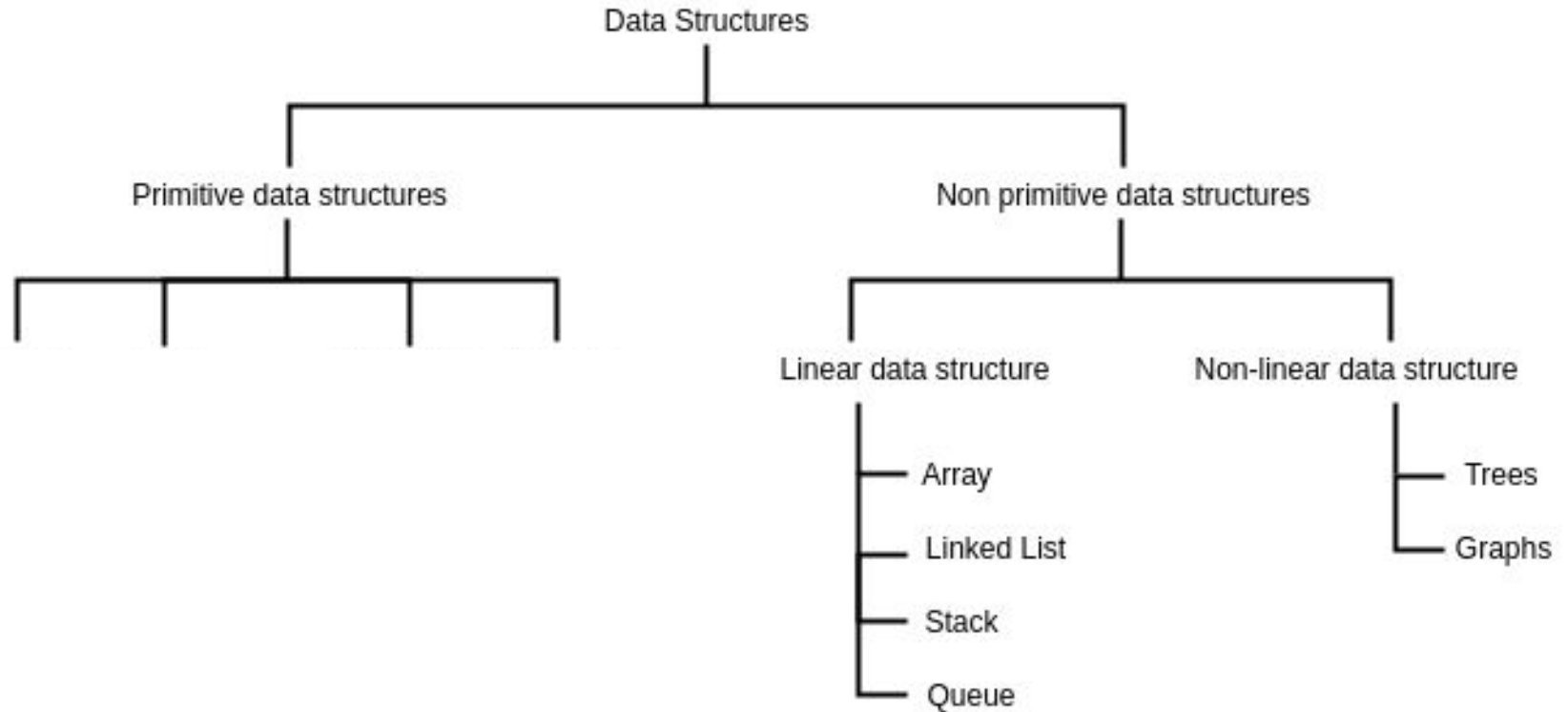
entity



Data and Information



Classification of Data Structures



Array

1D Array

STUDENT	
1	John Brown
2	Sandra Gold
3	Tom Jones
4	June Kelly
5	Mary Reed
6	Alan Smith

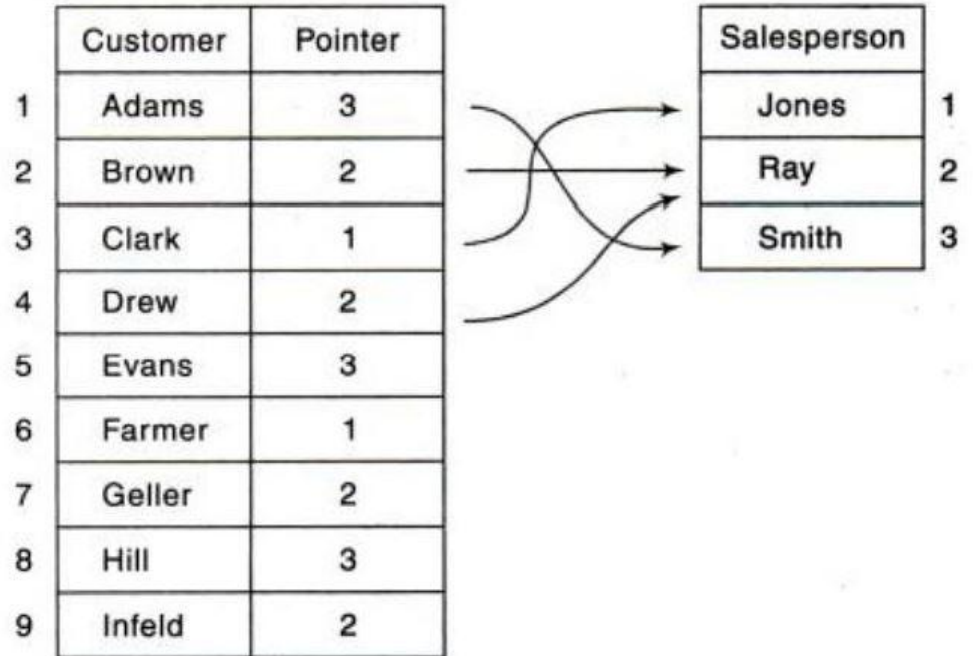
Array

2D Array

<div>Dept.</div> <div>Store</div>	1	2	3	4
1	2872	805	3211	1560
2	2196	1223	2525	1744
3	3257	1017	3686	1951
...
28	2618	931	2333	982

Linked List

	Customer	Salesperson
1	Adams	Smith
2	Brown	Ray
3	Clark	Jones
4	Drew	Ray
5	Evans	Smith
6	Farmer	Jones
7	Geller	Ray
8	Hill	Smith
9	Infeld	Ray



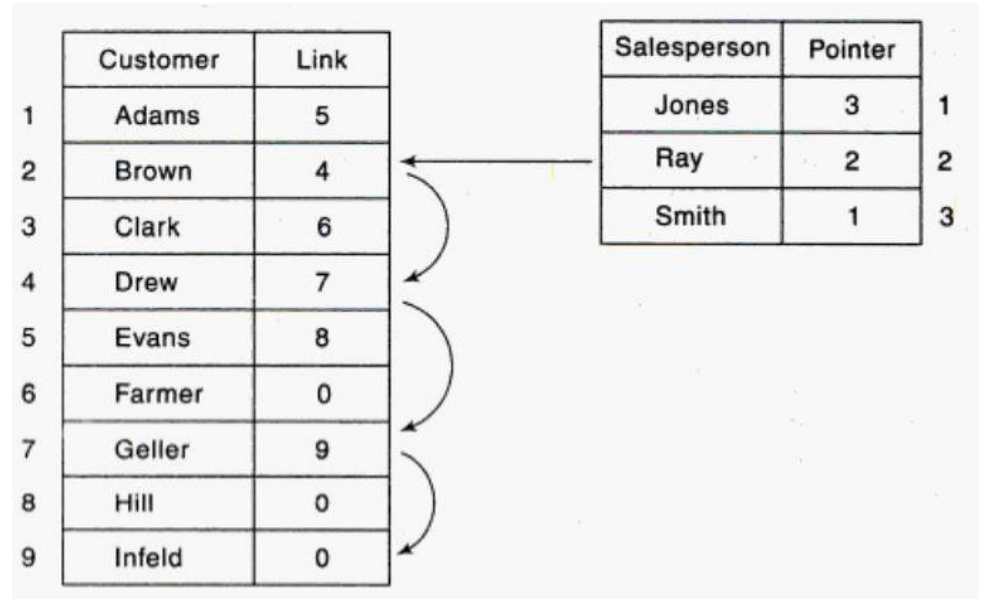
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	Salesperson	Pointer
1	Jones	3, 6
2	Ray	2, 4, 7, 9
3	Smith	1, 5, 8

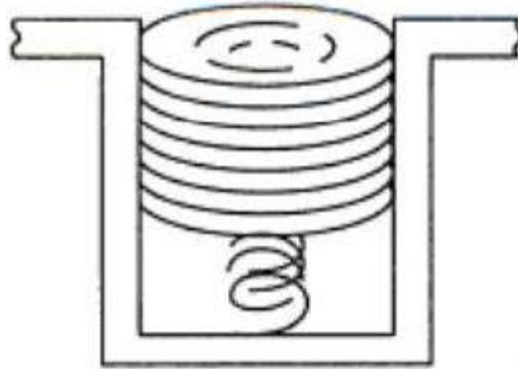
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Stack

Last In First Out (LIFO)



(a) Stack of dishes

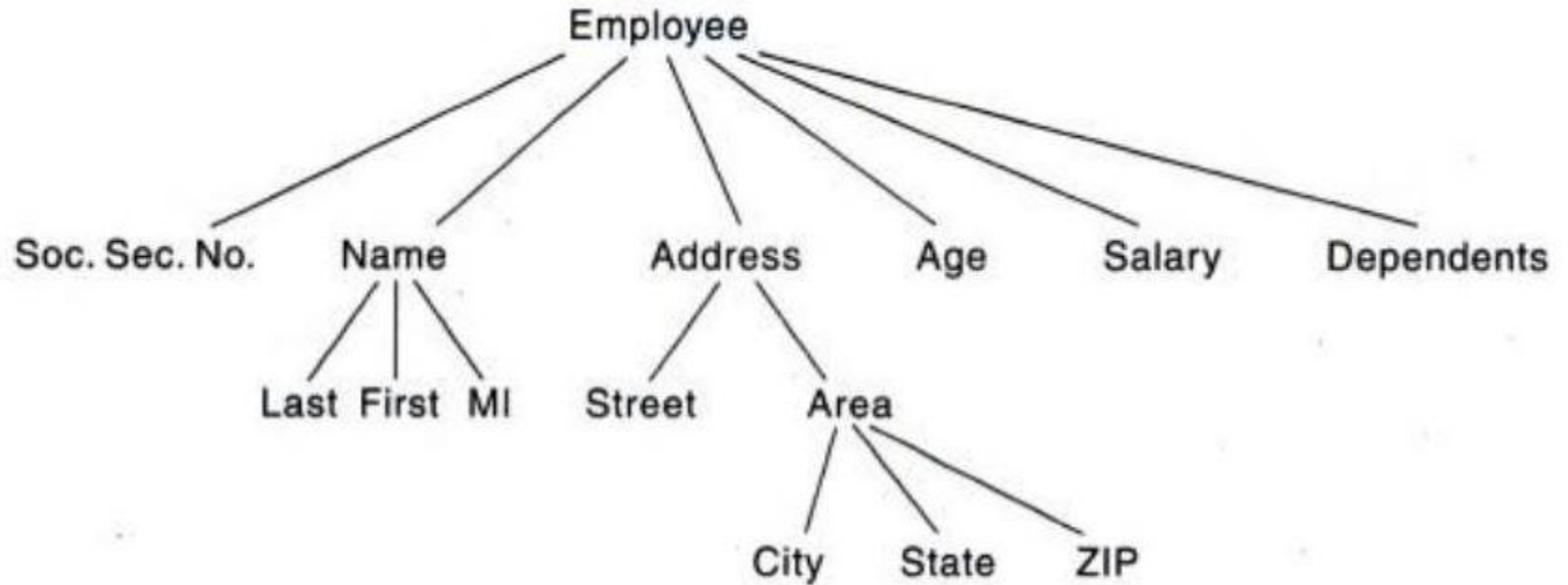
Queue

First In First Out (FIFO)

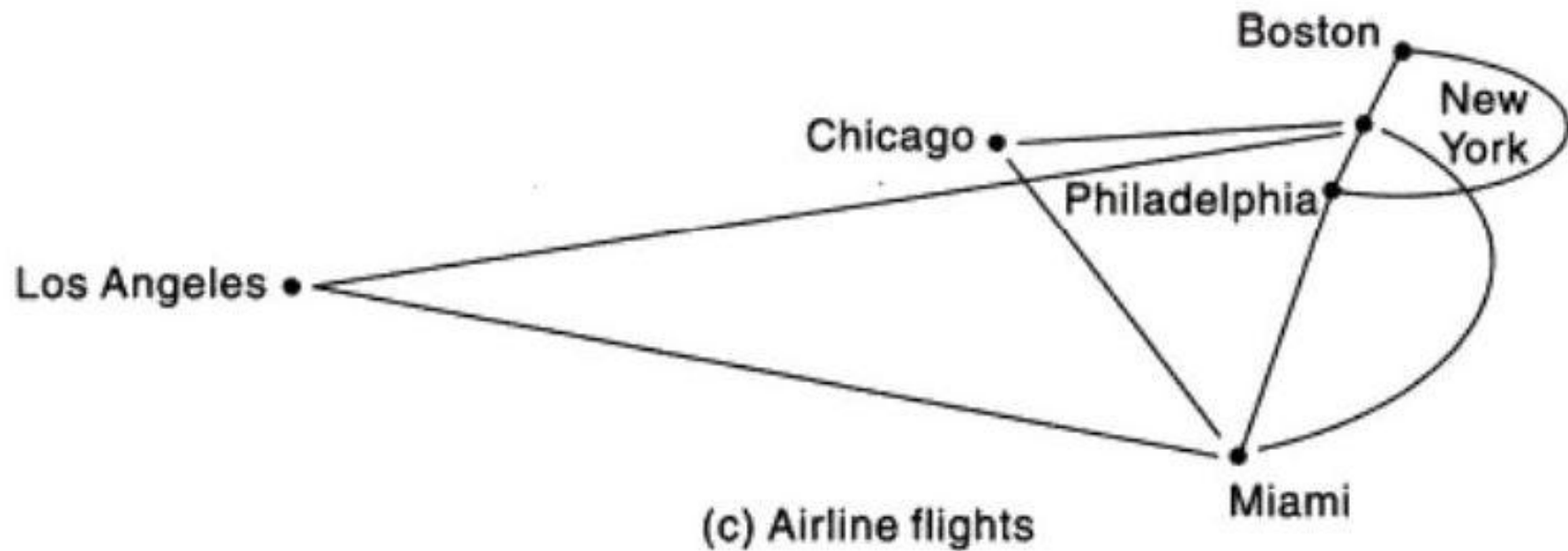


(b) Queue waiting for a bus

Tree



Graph



Data Structure Operations

Most Frequent Ones

1. Traversing
2. Searching
3. Inserting
4. Deleting

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Multiple operations may be used in a given situation

1. Sorting
2. Merging
3. Copying
4. Concatenation

Thank You!