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CSE 212 Data Structure “Cheat Sheet”

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| --- | --- | --- | --- | --- |
| Data Structure | Graphic | Purpose and Example | Time Complexity of Common Operations | |
|  |  |  | Insert | Access |
| Dynamic Array | A drawing of a number  Description automatically generated | Dynamic arrays are used to store data that can grow or shrink, such as the number of grades needed to generate an average score for a class. | At the beginning:  At the end: | Find by value:  Find by index: |
| Linked List (Doubly-linked) | A line of black rectangular objects  Description automatically generated | Linked Lists are used to store data that can grow or shrink without needing to take up large groups of storage space. An example would be information scattered throughout a small storage format that allows for larger storage methods to take up the space they need. | At the beginning:  At the end: | Find by value:  Find by index: |
| Stack | A black and white drawing of a rectangular object  Description automatically generated | The purpose of a Stack is to keep information as organized as possible. An example is how CPUs run. They start at 0 and execute moving upward, moving objects in and out of the stack in perfect efficiency so that the stack is only as big as it needs to be at one point in time. |  | The top: |
| Queue | A line of numbers with a white background  Description automatically generated | The purpose of a queue is to organize data in priority, so that information passes out in the proper order. An example is how a queue in a restaurant takes the order of the first person to enter. |  | The front: |
| Map | A grid of black lines with writing  Description automatically generated with medium confidence | The purpose of a map is to organize data through an index, allowing multiple sets of data to be keyed to a specific value. An example of a map is how employees are given unique employee numbers. |  |  |
| Balanced BST | A group of black symbols  Description automatically generated | The purpose of a binary tree is to find specific data as efficiently as possible. An example of this is the binary sorting method. |  |  |