# Stacks and Queues

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This is our work

How do Stacks work?

- Stack is a linear data function that piles data points on top of eachother
- Stacks use a First-In, Last-out method
- The first data point will be at the bottom and all of the other points will "stack" on top of eachother
- The first data point cannot be accessed until the other data points are removed or "popped"
- An example of this would be Pringles. The first chip would be on the bottom and would have to be the last taken out

How do Queues work?
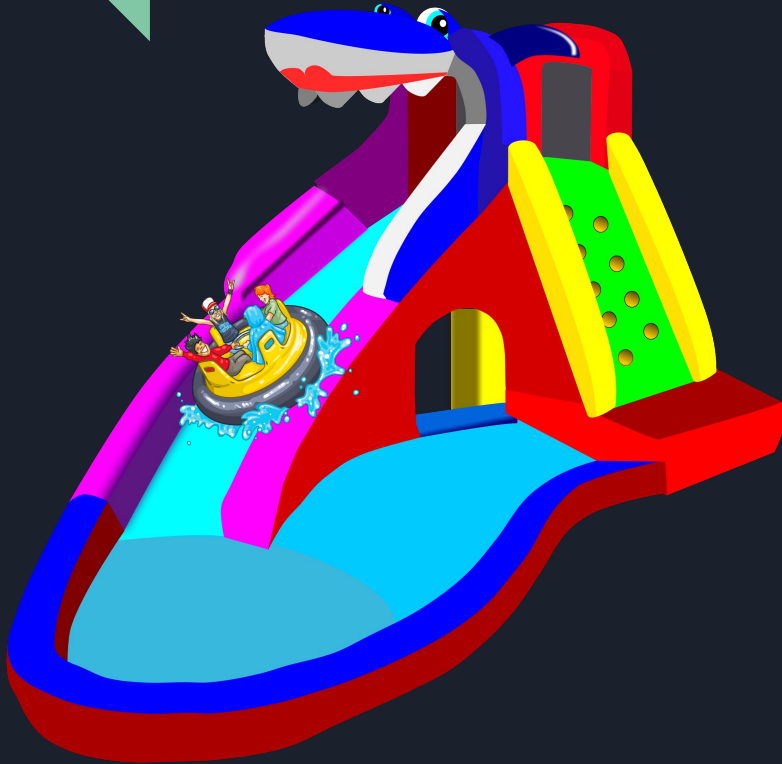
- Queues are a linear data structure that puts each data point in order of when it entered
- Queues use a First-in, First-out method
- The data points will remain in order throughout the entire data set
- The first data point can leave without having to remove any other data points. However, if the last data point needs to be removed, then the rest of the points will have to be removed first
- An example of this would be going on a water slide. If three people go into a water slide at three different times, the first person who entered will be the first one who exited.

Big-O Notation of Stacks and Queues

- Stacks and Queues are considered to be quite efficient
- With Access and Search, both fairly efficient, or O(n)
- When it comes to Insertion and Deletion, they are considered outstandingly efficient, or O(1)

Restrictions of Stacks and Queues

- Both Stacks and Queues have the restriction of not being able to access a data point in the middle of the data structure without going through each data point up until they get onto the set data point
- Similarly, a data point cannot be inserted or deleted in the middle without being tedious

References

https://www.bigocheatsheet.com/

https://www.youtube.com/watch?v=6QS_Cup1YoI&feature=youtu.be