**Outline**

**Topics**

* Review
* Recursion
* [Dynamic Programming](https://www.geeksforgeeks.org/dynamic-programming/):
  + Memoization
  + Tabulation

**This Week in Points**

* Group Activities (Max 9 points)
* Homework (Max 9 points)
* Peer reviews (Max 7 points)

**Part 1: Recursion**

* The Top-Down Thought Process
* [Recursion In C++](https://www.softwaretestinghelp.com/recursion-in-cpp/)
* Fibonacci:
  + Visualization: [Link 1](https://www.cs.usfca.edu/~galles/visualization/DPFib.html), [Link 2](https://www.educative.io/courses/grokking-dynamic-programming-a-deep-dive-using-cpp/m2JgzWPw9RR)
  + [Fibonacci number](https://en.wikipedia.org/wiki/Fibonacci_number) & [Fibonacci sequence](https://www.mathsisfun.com/numbers/fibonacci-sequence.html)
* [The Staircase Problem](https://www.geeksforgeeks.org/count-ways-reach-nth-stair/)
* [Activity 1](https://github.com/TT00FE39-3001/lecture5/blob/main/activity1)

**Part 2: Dynamic Programming (Memoization)**

* [Overlapping Sub-problems](https://www.geeksforgeeks.org/overlapping-subproblems-property-in-dynamic-programming-dp-1/)
* Fibonacci Revisited
  + Visualization: [Link 1](https://www.cs.usfca.edu/~galles/visualization/DPFib.html), [Link 2](https://www.educative.io/courses/grokking-dynamic-programming-a-deep-dive-using-cpp/m2JgzWPw9RR)
  + [Fibonacci Revisited](https://www.geeksforgeeks.org/introduction-to-dynamic-programming-data-structures-and-algorithm-tutorials/)
* [The Staircase Problem](https://www.geeksforgeeks.org/count-ways-reach-nth-stair/)
* [The Knapsack Problem](https://www.geeksforgeeks.org/0-1-knapsack-problem-dp-10/)
* [What is memoization?](https://www.geeksforgeeks.org/what-is-memoization-a-complete-tutorial/)
* [Activity 2](https://github.com/TT00FE39-3001/lecture5/blob/main/activity2)

**Part 3: Dynamic Programming (Tabulation)**

* [Tabulation vs Memoization](https://www.geeksforgeeks.org/tabulation-vs-memoization/)
* Fibonacci Revisited
  + Visualization: [Link 1](https://www.cs.usfca.edu/~galles/visualization/DPFib.html), [Link 2](https://www.educative.io/courses/grokking-dynamic-programming-a-deep-dive-using-cpp/m2JgzWPw9RR)
* [The Staircase Problem](https://www.geeksforgeeks.org/count-ways-reach-nth-stair/)
* [The Knapsack Problem](https://www.geeksforgeeks.org/0-1-knapsack-problem-dp-10/)
* [Dynamic Programming in the Real-world](https://www.educative.io/courses/grokking-dynamic-programming-a-deep-dive-using-cpp/m2JgzWPw9RR" \l "Real-world-problems)
* [Activity 3](https://github.com/TT00FE39-3001/lecture5/blob/main/activity3)

**Misc**

* [Notes](https://github.com/TT00FE39-3001/lecture5/blob/main/notes.md)