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Recursion

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Recursion

This session is optional. If the instructors feel that recursion is well known by the students, it can be introduced in Graph. However, if that is not the case introducing it here makes Graph run much more smoothly.

Session Objectives

By the end of this session students should ...

- Be able to define recursion
- Know the three aspects of recursion
 - Initial Question
 - Recursive Question
 - End Condition
- Be able to write recursive code

Session Overview

Activity

[Reversing People Role Play](#)
[Lab - reverse\(\)](#)

Session Notes

Reversing People Role Play

Setup

4 people: have each hold onto a loop in a rope

- Ask the person closest to think of the group as an object and figure out how to reverse themselves. The catch is that only the person in front can move.
- Guide the first person to realize they can detach themselves and ask the rest of the people who are now a new instance of the object.
- Guide the second and third person in the same way.
- Guide the last person to realize they can reverse themselves. Have them do it.
- Guide the others to rejoin the rope in reverse order, finishing the reversal.

Discussion

- Discover the initial question as the one the instructor asked.
- Discover the recursive question as the one they asked, and show how the person leaving was a parameter.
- Discover the end condition as the single person on the rope.
- Show how when the parameters rejoin the line they are coming off of the call stack.

Lab - reverse()

Based on what we have discussed, implement reverse() for a String.

Common mistakes

- Writing a manager that takes a String parameter instead of wrapping String and churning. Note this happens at both the initial and the recursive questions.
- Not creating the simplest test of a single character String first.
- Not naming the initial question and the recursive question the same.



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