Parallel and Distributed Computing

A Brief Introduction

- *Sequential computing* is a model in which operations are performed one at a time, one after the other.
- *Parallel computing* is a model where the program is broken up into multiple smaller operations – some of which are performed simultaneously.
  - The *speedup* of a parallel solution is measured by a ratio – time taken to complete the task sequentially divided by time taken to complete the task when done in parallel.
  - Ultimately, need to be aware of the challenges and benefits of parallel computing.

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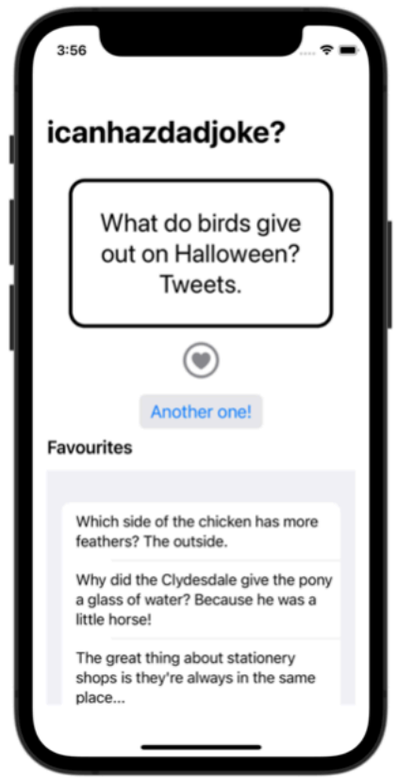
- Any time you have built an app that requests data from the Internet, you are dealing with parallel computing.
    - Why?
        - Because we don't know how long a web request will take to finish.

- Adding that code introduced some new Swift keywords:

    `async` **`await`**

- This requires a brief digression to talk about how modern computer processors work and how programming languages like Swift make it possible for apps to take full advantage of this hardware.

- What follows is purely an "FYI"... no need to memorize.



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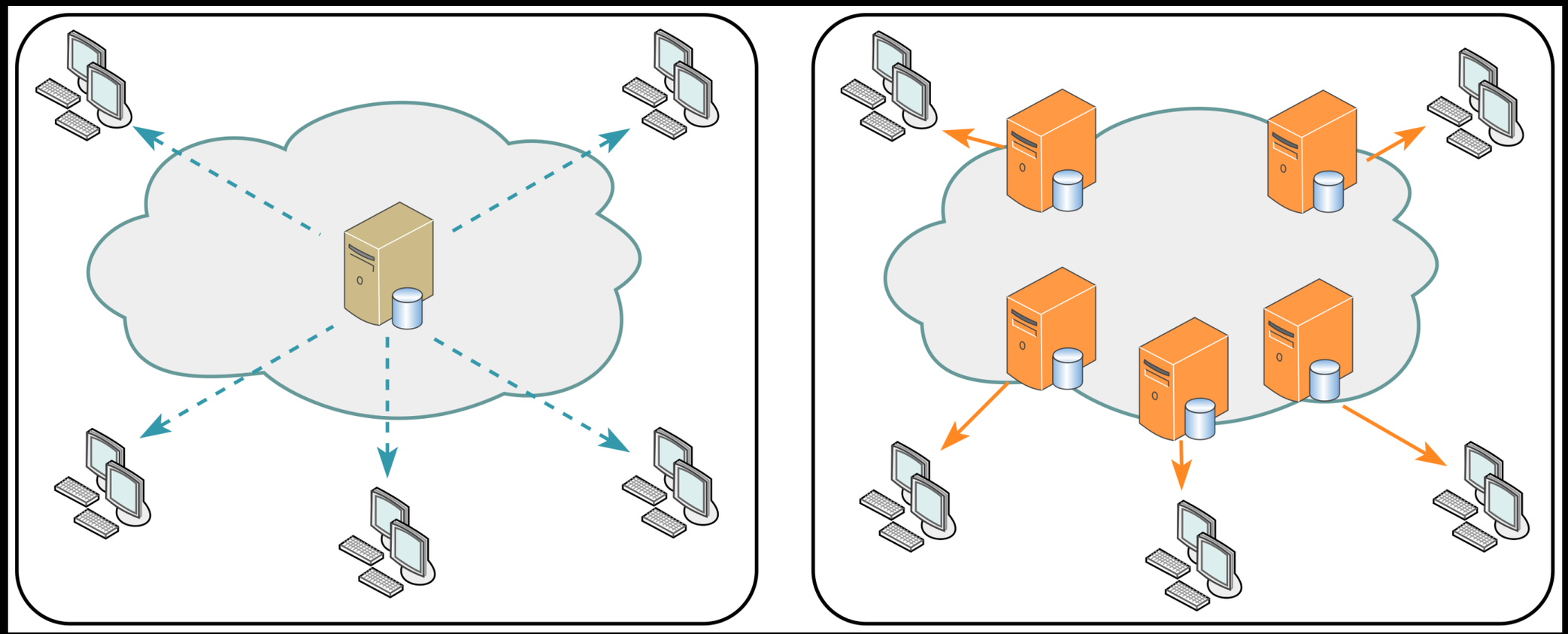
- *Distributed computing* is a model in which multiple physical devices are used to accomplish a given goal.
  - Content delivery networks are one example:



Suggested Exercises

Parallel and Distributed Computing

1. From Khan Academy, complete this module:

   - Parallel and Distributed Computing
     - Please complete both of the related quizzes.