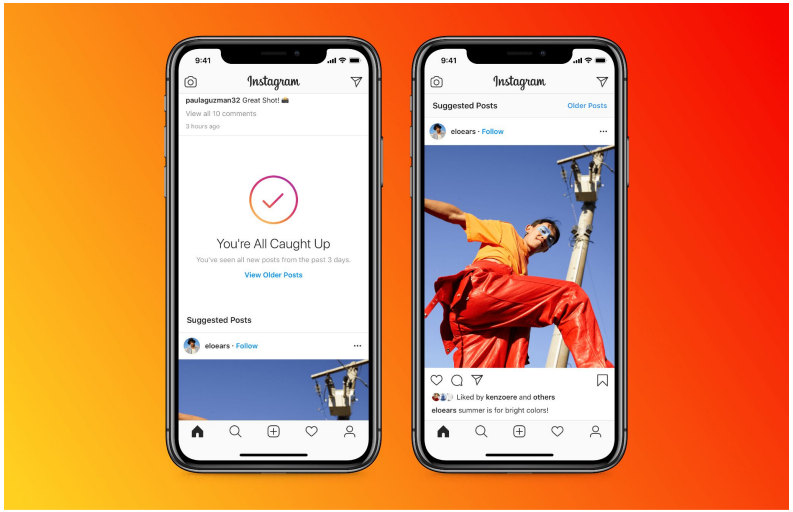
MapReduce and Distributed Computing

JamCoders 2026
Kanav Mittal


9:41
Instagram
paulaguzman32 Great Shot!
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You've seen all new posts from the past 3 days.
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9:41
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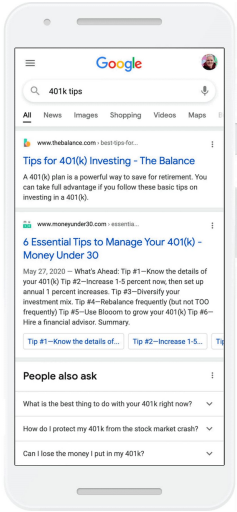
Liked by kenzoere and others
eloears summer is for bright colors!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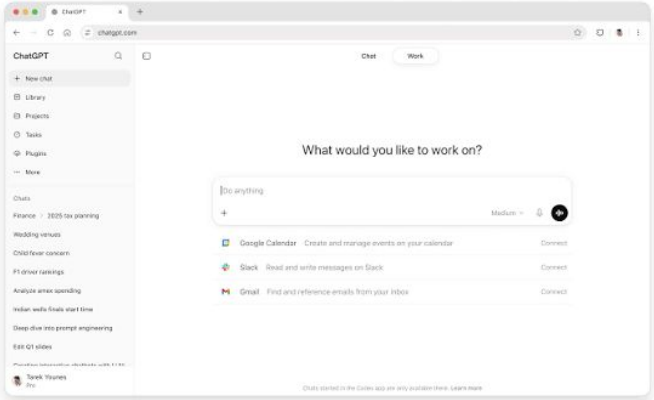
Tips for 401(k) Investing - The Balance
A 401(k) plan is a powerful way to save for retirement. You can take full advantage if you follow these basic tips on investing in a 401(k).
6 Essential Tips to Manage Your 401(k) - Money Under 30
People also ask
What is the best thing to do with your 401k right now?
How do I protect my 401k from the stock market crash?
Can I lose the money I put in my 401k?


ChatGPT
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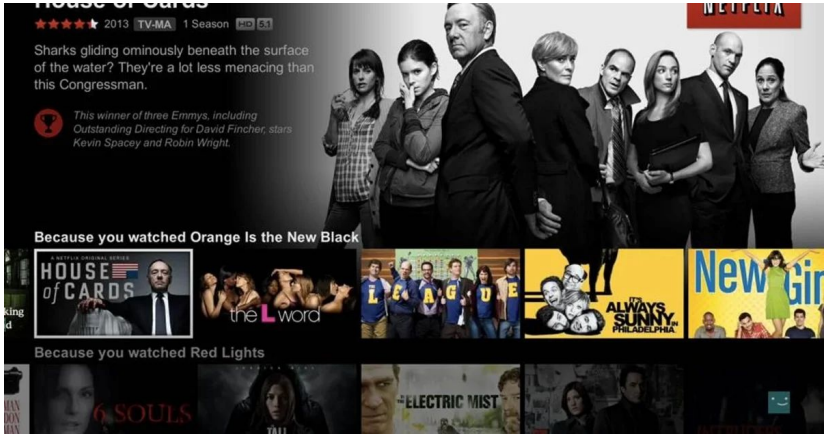
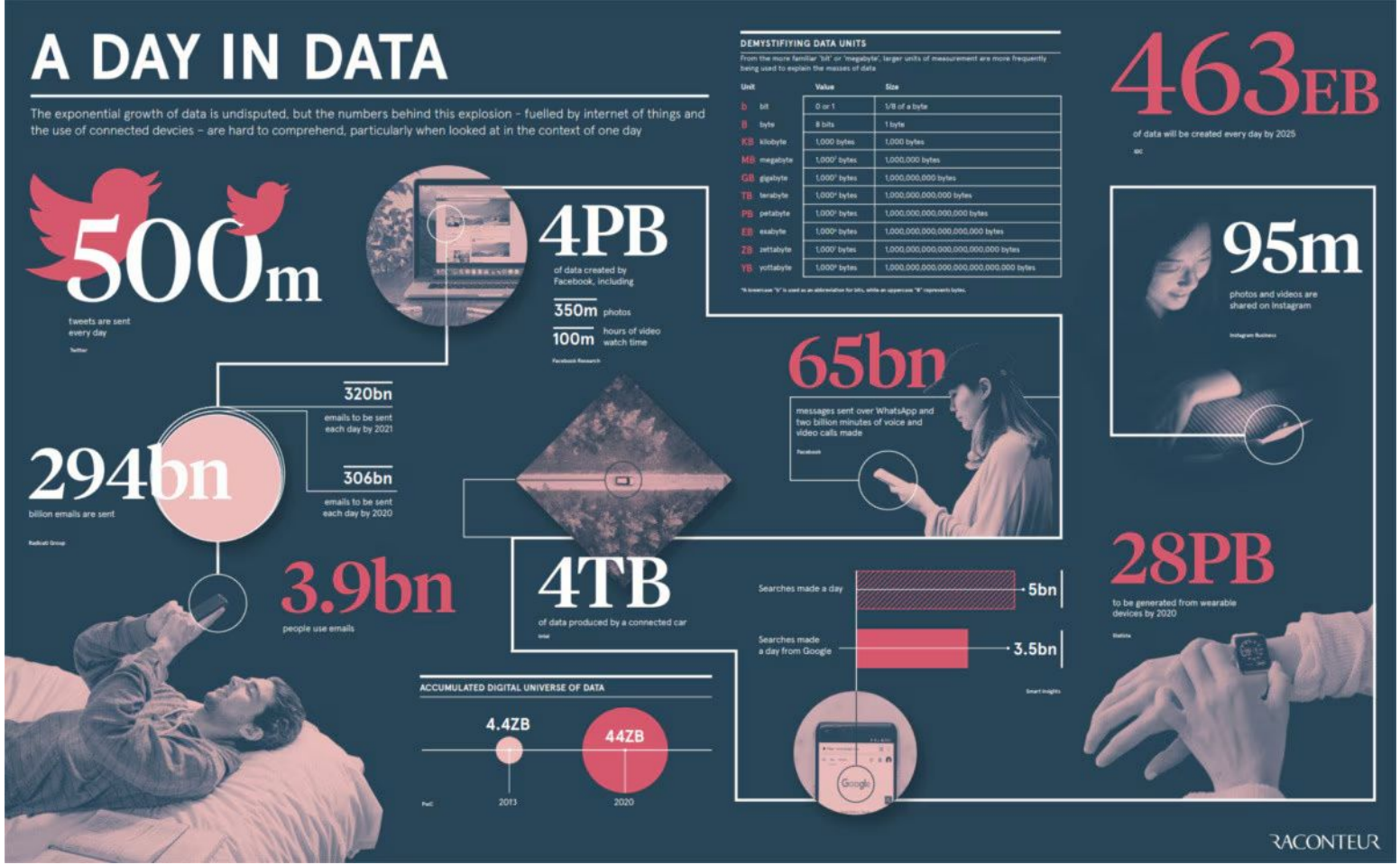
ChatGPT
Chat
Work
New chat
Library
Projects
Tasks
Plugins
More
What would you like to work on?
Do anything
Google Calendar
Slack
Gmail


2013
TV-MA
1 Season
HD
5.1
Sharks gliding ominously beneath the surface of the water? They're a lot less menacing than this Congressman.
This winner of three Emmys, including Outstanding Directing for David Fincher, stars Kevin Spacey and Robin Wright.
Because you watched Orange Is the New Black
HOUSE of CARDS
the L word
Because you watched Red Lights
6 SOULS
ELECTRIC MIST



https://www.weforum.org/stories/2019/04/how-much-data-is-generated-each-day-cf4bddf29f/

How do we process this data?

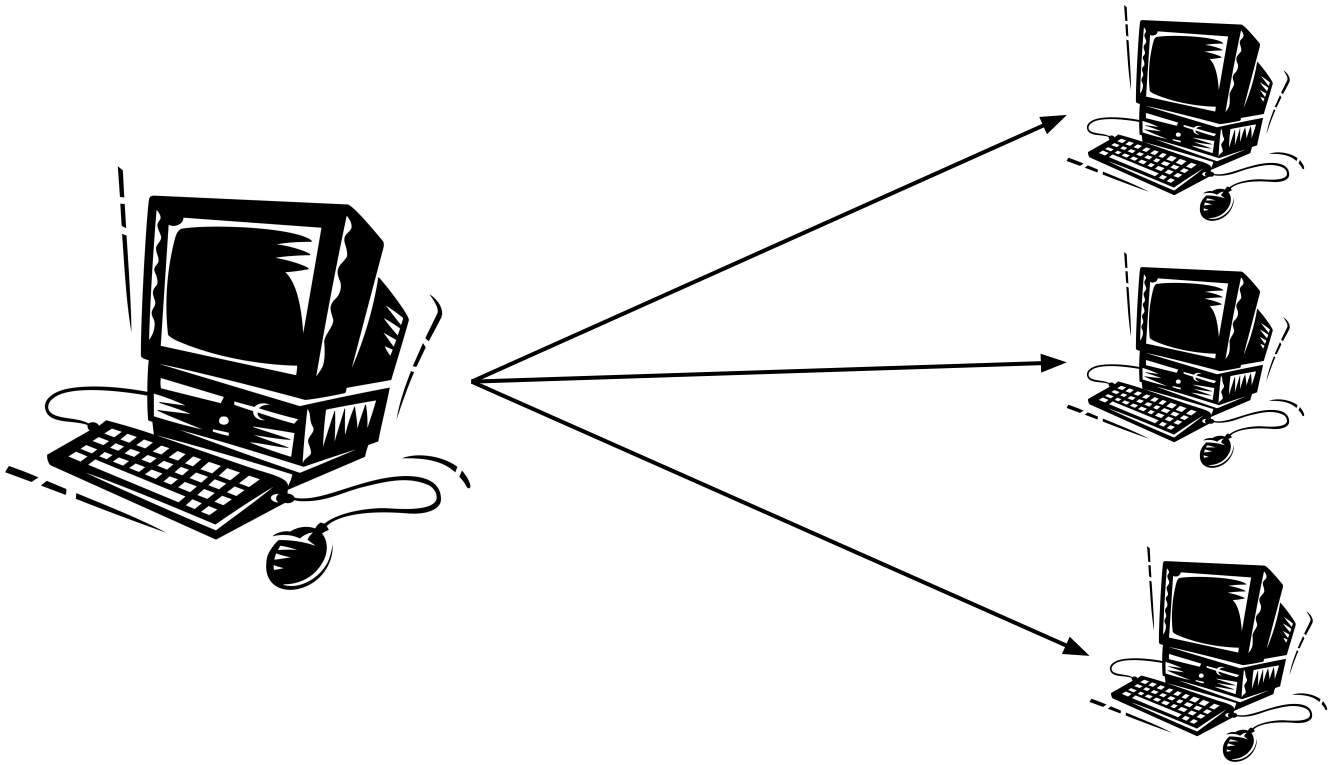
What’s the problem with using a single computer?

How do we process this data?

What's the problem with using a single computer?

- Would take forever
- Computer might overheat
- Might not have enough memory available

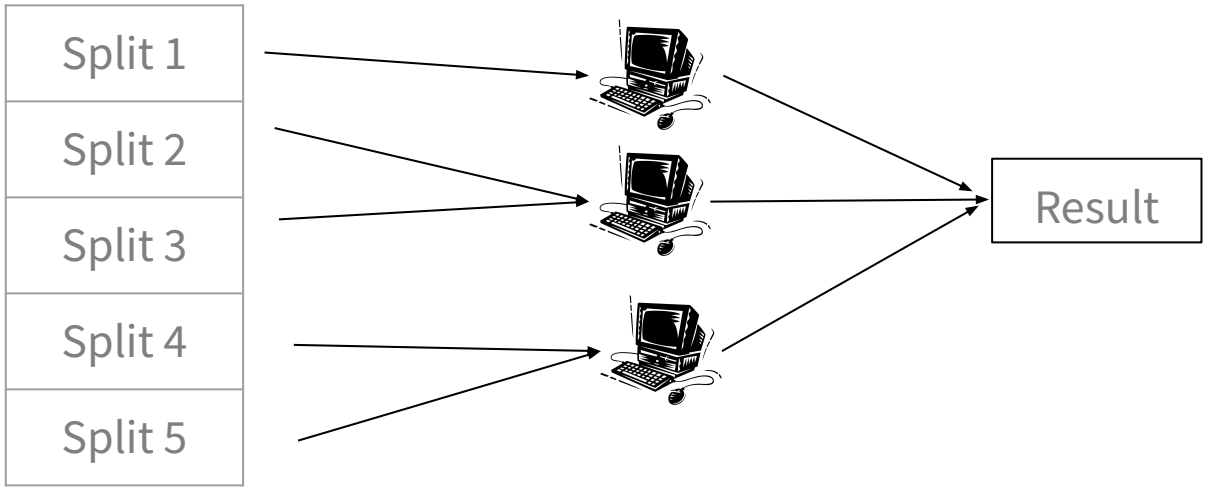
How do we process this data? Multiple computers!



Distributed computing is faster for large tasks

MapReduce: processing data on many computers

- Created all the way back in 2004 by researchers at Google
- Main idea: we split up the work in an organized way!
- Each computer works on one split, then we combine the results

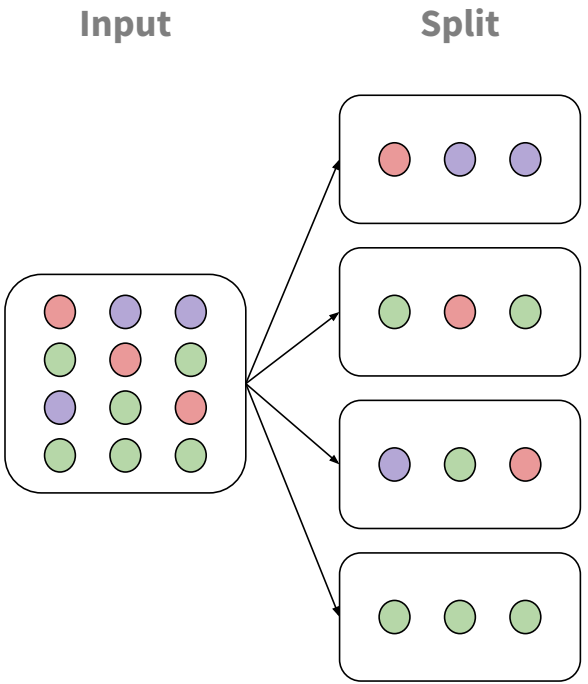


Activity: MapReduce with Skittles

Phase 1: Split

We will take the Skittles and split into cups.

We will give to our workers – that’s all of you!



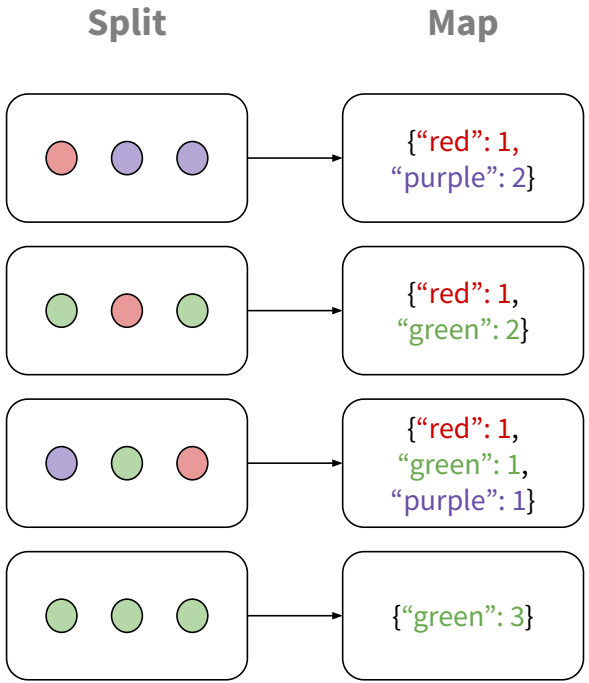
Phase 2: Map

Each worker should count the number of

- Red
- Purple
- Green

Skittles in the cup you are given.

Write the counts on a slip of paper.

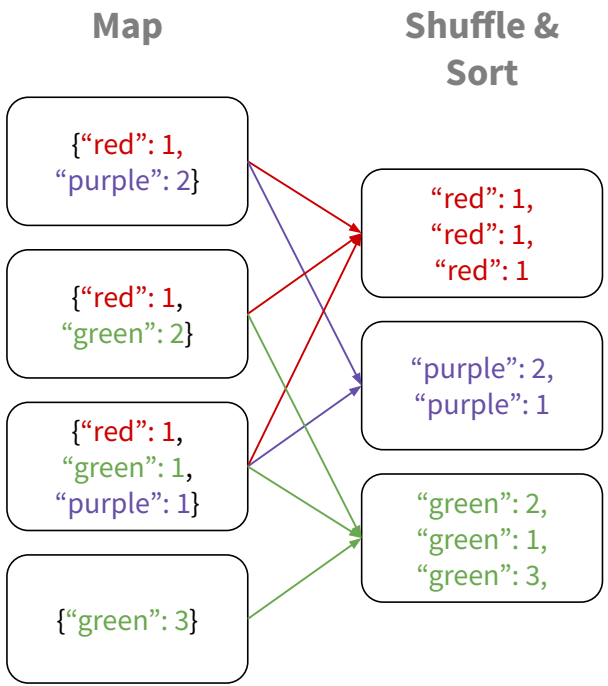


Phase 3: Shuffle

We'll group the papers by

- Red
- Purple
- Green

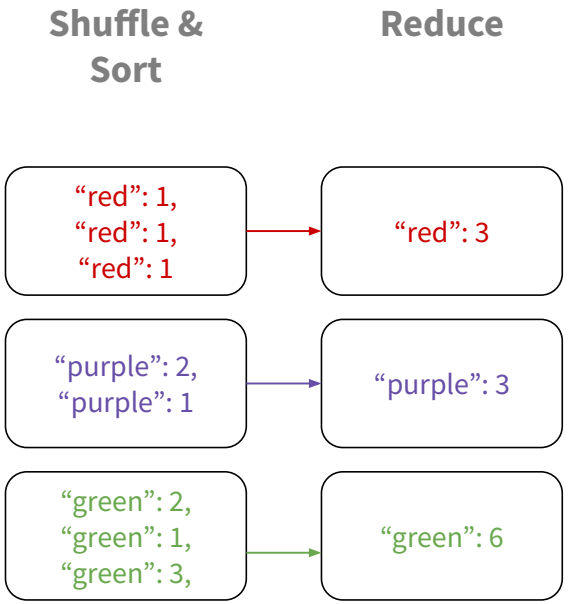
And send each group to one worker

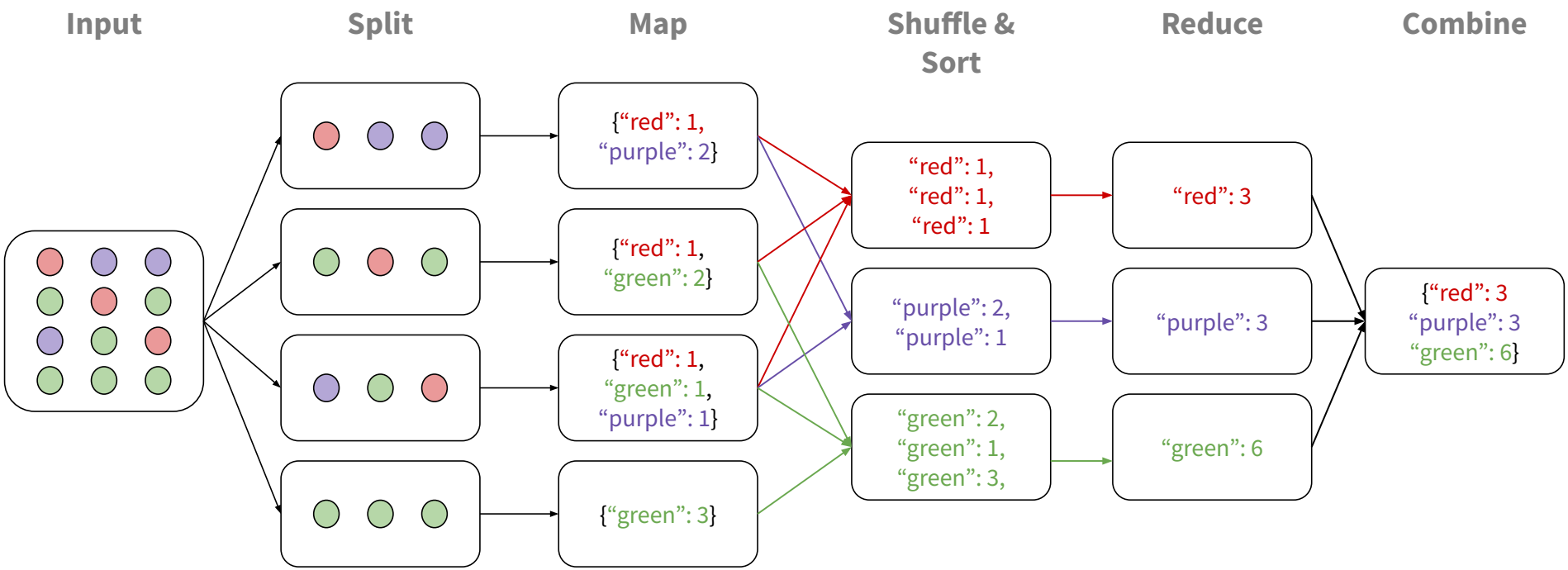


Phase 4: Reduce

The workers will each sum up the counts for

- Red
- Purple
- Green




Input
Split
Map
Shuffle & Sort
Reduce
Combine
{“red”: 1, “purple”: 2}
{“red”: 1, “green”: 2}
{“red”: 1, “green”: 1, “purple”: 1}
{“green”: 3}
“red”: 1, “red”: 1, “red”: 1
“purple”: 2, “purple”: 1
“green”: 2, “green”: 1, “green”: 3,
“red”: 3
“purple”: 3
“green”: 6
{“red”: 3 “purple”: 3 “green”: 6}