

Decomposing



How do you solve a problem?

Like, say, making dinner?

Break it Down

How do you solve a problem?

Like, say, making dinner?

Well, dinner tonight is going to be vegetarian chili, cornbread, and beer.



How do you solve a problem?

Dinner

Vegi Chili



Cornbread



Beer



How do you solve a problem?



Sauce

Beans

Combine

Chop

Fry

Soak

Boil

Season

Top



**For some life tasks you
do this automatically.**



Example: Markov chains

Goal: create silly text from some source text

- A table of likely next words takes the form of a dictionary mapping strings to lists of possible next words
- Analyze source text to build a table of likely next words
- Generate a silly text from the table

Example: Markov chains

Analyze source text to build a table of likely next words

- Break the source text into words
- Find every pair of words where one follows the other
- Adjust the frequency table using a pair like that

Example: Markov chains

Generate a silly text from the table

- Find a plausible next word given a current word
- Find the first word
- Keep finding words
- Realize when we're done
- Somehow manage spacing regarding punctuation

Example: Markov chains

Somehow manage spacing regarding punctuation

- Spaces come between words, but not between words and most punctuation
- Good enough: put spaces before words, not before punctuation
- Means we have to decide if something is a word

Example: Markov chains

Means we have to decide if something is a word

- Words don't have punctuation in them
- Except contractions have apostrophes
- Except a single apostrophe isn't a word

Things to think about

- What information needs to be stored? How can you store it?
- What are the reasons that information might change over time?
- What decisions do you have to make?