Project Name

SoHo Restaurants

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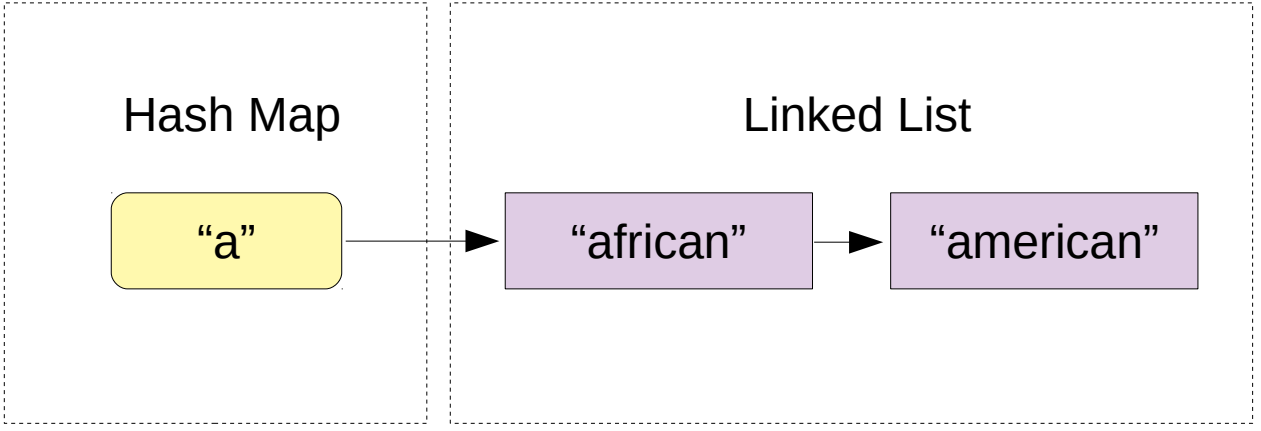
Agenda:

- Data set: Restaurant types
  - Data structure
  - Runtime
  - Alternatives
- Data set: Restaurants data
  - Data structure
  - Runtime
  - Alternatives
- Data structure usage: Suggestion for new projects

Restaurant types: Data structure

- For *Restaurant types* I used **Hash map** and **Linked list** Data structure



Restaurant types: Runtime

- Run time for **Hash Map** is constant O(1), because we access data directly (only one step is needed)
- Run time for **Linked List** is linear O(n), because we access the data in the linked list using iterations

Final big O notation for this case is O(n)

- The better big O case (that is linear) can be if 1) data set is small 2) if we hash mapping the whole word

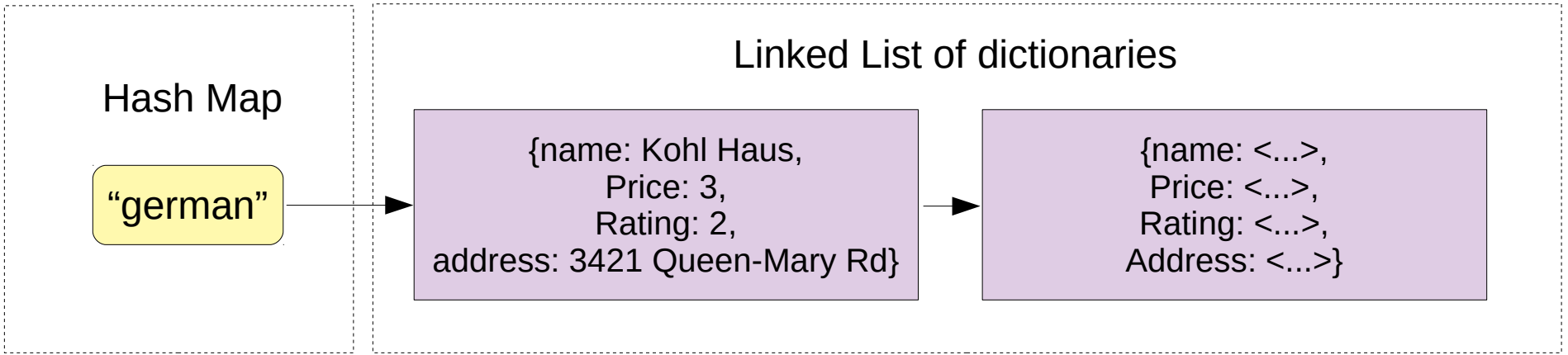
Restaurant types: Alternatives

- **Hash Map** with **in-build Python list structure**
  - ***Pros:*** easier to implement, for small amount of options (like in restaurant type) good applicable
- **Trie**
  - ***Pros:*** very good fit for auto-completion purposes
- **Tree**

Actually almost every data structure can be applicable...

Restaurants data: Data structure

- For *Restaurant data* I used **Hash map** and **Linked list** Data structure
  - Node values of **Linked list** are *dictionaries*



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- The time cannot be improved, because we need to iterate over all restaurants for a particular restaurant type

Restaurants data: Alternatives

- **Hash Map** with **in-build Python list structure**
  - ***Pros:*** easier to implement
  - ***Cons***: Not easy to handle in the case, if we need to add/ remove some restaurant data
- **Hash Map** with **Stack or Queue**
  - ***Cons:*** stacks or queues are good applicable for a static data, that is when we do not add new restaurants to our data set.

Data structure usage

Where is it possible to use Data Structures, we have learned?

- **Linked List:** Collection of historical events in a educational app for history learning
- **Stacks:** The most recent news access in a news collection for example on a news web site
- **Queue:** Real-time radio, and in general many streaming processes
- **Hash Map:** Fast access to user names in a University
- **Tree:** Animals classification in biology
- **Graphs:** Neuron connections in brain (for Neuroscience simulations for example)

Thank you!