Dictionaries Cheat Sheet

A Python dictionary (`dict`) is a special container type. It contains a collection of `items`, which are called `key-value pairs` and have the following form

\[
\text{key:val}
\]

The `key` in an item must be an `immutable` object and the `val` can be any type of object. The items contained in a dictionary are delimited by curly braces (`{ and }`) and separated by commas. For example,

\[
A = \{ 'CA': 38332521, 'TX': 26448193, 'MI': 9895622 \}
\]

creates a new `dict` containing 3 items and assigns variable `A` a reference to it.

The keys in a dictionary are used to retrieve and update values, and to create items.

- To create an item or update a value for a key: \( a\_dict[k] = \text{exp} \)

  If `a_dict` contains an item whose key equals `k`, then the assignment replaces the value in this item with the value of `\text{exp}`; otherwise, the assignment creates an item whose key equals `k` and value equals `\text{exp}` and adds this new item to `a\_dict`.

- To retrieve a value: when not on the left-side of an assignment, `a\_dict[k]` returns the value in the item in `a\_dict` whose key equals `k`; or raises a `KeyError`, if `a\_dict` does not contain any item whose key equals `k`.

A `dict` is iterable; but you iterate through a `dict` using its keys.

\( \text{exp in a\_dict} \): returns `True` if `\text{exp}` is a `key` in `a\_dict`; and `False`, otherwise.

\( \text{for var in a\_dict} \): iterates through the `keys` of `\text{a\_dict}`, assigning each key to `\text{var}` in its turn and executing the associated suite

\( \text{len(a\_dict)} \): returns the number of `items` in `\text{a\_dict}`
\( \text{max(a\_dict)} \): returns the maximum `key` in `\text{a\_dict}`
\( \text{min(a\_dict)} \): returns the minimum `key` in `\text{a\_dict}`

\( \text{a\_dict.keys()} \): returns the collection (iterable) of keys in `\text{a\_dict}`
\( \text{a\_dict.values()} \): returns the collection (iterable) of values in `\text{a\_dict}`
\( \text{a\_dict.items()} \): returns the collection (iterable) of items in `\text{a\_dict}`
\( \text{del a\_dict[exp]} \): deletes the item in `\text{a\_dict}` whose key equals `\text{exp}`