

- Recognize whether two values have the same **reference** in **memory**
 - Recognize the difference between **mutable** vs. **immutable** data types
 - Recognize the difference between **destructive** vs. **non-destructive** functions/operations
 - Use **aliasing** to write functions that destructively change lists
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- Define and recognize **base cases** and **recursive cases** in recursive code
 - Read and write basic **recursive code**
 - Trace over recursive functions that use **multiple recursive calls** with Towers of Hanoi
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- Recognize **linear search** on lists and in recursive contexts
 - Use **binary search** when reading and writing code to search for items in sorted lists
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- Identify the **worst case** and **best case** inputs of functions
 - Compare the **function families** that characterize different functions
 - Calculate a specific function or algorithm's efficiency using **Big-O notation**
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- Identify the **keys** and **values** in a dictionary
 - Use **dictionaries** when writing and reading code that uses pairs of data
 - Use **for loops** to iterate over the parts of an **iterable** value
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- Recognize the requirements for building a good **hash function** and a good **hashtable** that lead to **constant-time search**
 - Recognize and trace the algorithms for **selection sort** and **merge sort**
 - Compute and contrast the efficiency and Big-O runtimes of **selection sort** and **merge sort**