

Note: any topic listed at 'code writing' rank may also have questions at the code tracing / short answer rank, and any topic listed at 'code tracing' may also have questions at the short answer rank.

Graphics - code tracing

Lists

- Create lists - code writing
- Add to lists (append, insert, +) - code writing
- Remove from lists - code writing
- Swap or replace elements - code writing
- Iteration over elements of lists - code writing
- Using 2D lists - code tracing

Destructive vs non-destructive methods

- Examples of each in python (append, etc) - short answer
- Identifying destructive methods - code tracing
- Implementing a given algorithm destructively or non-destructively - code writing

Aliasing (at a simple level) - code tracing

Mutability - short answer

Recursion

- Parts of recursive functions - short answer
- Tracing recursive functions - code tracing
- Writing very simple recursive functions on lists, strings, ints - code writing

Runtime and Big-O Notation

- Differences between runtimes - short answer
- Runtime Analysis of simple Loops - code tracing

Search Algorithms

- Recognizing linear/binary search - code tracing
- Recalling runtime of different search algorithms - short answer

Sorting Algorithms (Insertion sort, Selection sort, Mergesort)

- Runtime of given sorting algorithms - short answer
- List sorting - code tracing

Hash Tables/hash functions - short answer

Dictionaries

- Purpose and use cases - short answer
- Creation - code writing
- Adding elements - code writing
- Removing - code writing
- Replacing values - code writing
- Iteration over - code writing

Trees

Vocabulary (parent, children, leaf, root) - short answer

Implemented as dictionaries - code tracing

Trees vs Binary trees vs BSTs (comparison & runtime) - short answer

Very simple tree operations with given algorithm - code writing

Graphs

Implemented as dictionaries or adjacency matrixes - code tracing

Breadth First Search and Depth First Search - code/graph tracing

Tractability

Runtime analysis - short answer

Complexity classes P and NP - short answer

Implications of $P=NP$ - short answer