**Software Development Engineer - Technical/Functional Skills Assessment**

**Coding (Logical and Maintainable)**

* Creates simple code (e.g., leverages reuse, properly formatted, no improper coding constructs
* Creates maintainable code (e.g., quickly able to trace impact of changes, clear variable naming conventions)
* Code is organized in a way that is easy to read and understand, **split the code.**
* Code is syntactically correct, or would be syntactically correct with minor improvements
* **Ability to define a simple base class for a product that holds basic metadata**
* **Ability to define a recursive function to search products**
* Ability to identify and fix bugs in their code
* Code works as intended

**Coding (Data Structures and Algorithms)**

* Employs optimal data structures and algorithms to solve the problem effectively.
* Identifies and articulates potential limitations or drawbacks of different data structures and algorithms.
* Provides clear and logical justification for the chosen data structures and algorithms.
* **Proficient in calculating runtime and space complexity, recognizing trade-offs, and identifying optimization opportunities.**
* **Capable of implementing the node data structure for a Binary Tree.**
* **Skilled in traversing a Binary Tree using appropriate algorithms.**
* **Have knowledge of hashmaps.**
* **Don’t just focus on using arrays.**
* **Understand what a linked list node is.**

**Coding Problem Solving**

* identifies all necessary requirements for a functional solution and seeks clarification on requirements as needed.
* Anticipates edge cases and articulates how technical requirements influence design choices.
* Identifies key technical decisions that enable a working feature. Asks questions and makes reasonable assumptions to identify the problem's boundaries and constraints.
* Proposed solution meets the identified requirements. Solution efficiently utilizes resources within the given tech stack. Solution incorporates elements of fault-tolerance and/or monitoring.
* Solution is extensible to accommodate reasonable future changes in load and/or environment. Solution minimizes maintenance efforts and costs. Solution considers operational performance under adverse conditions.
* Solution incorporates intentional trade-off decisions to support customer requirements. Candidate can articulate the rationale for and against different approaches.
* Demonstrates the ability to correctly solve the problem.
* Capable of reaching an optimized solution.
* Justifies decisions by identifying potential -offs with several different solutions and understanding why one solution is superior trade to others.
* **Defines the problem by asking relevant clarifying questions.**
* Considers additional factors that may influence the solution.
* Solves the problem with minimal hints or guidance.

**Best Practices**

* **Ask clarifying questions before starting to code**
* Use the coding language you are most comfortable with
* Explain your thought process and be prepared to discuss it
* Be receptive to hints, as they are intended to help you
* Be prepared to discuss how you would improve your code