Coding Plan Immersion PY-2025		Date: 07-05-2024
Weeks	**Topics**	**Subtopics**
Week 1	Number Theory	Number properties, GCD and LCM, Euclidean Algorithm, Extended Euclidean Algorithm, Sieve of Eratosthenes, Modular arithmetic
	Bit Manipulation	Basic bitwise operations, Bit manipulation tricks
	Arrays	Array manipulation, Prefix sums, Two-pointer technique
	Strings	String manipulation, String searching algorithms
Week 2	Arrays & Strings	Advanced array manipulation, Multi-dimensional arrays
	Sliding Window	Advanced string operations, Regular expressions (Regex), Sliding window technique
	Searching and Sorting Algorithms	Binary search, Merge sort, Quick sort
	Recursion	Understanding recursion, Common recursive algorithms
Week 3	Recursion	Advanced recursion techniques
	Backtracking	N-Queens problem, Subset sum problem
	Divide and Conquer Algorithms	Implementing merge sort, Implementing quick sort
	Stack	Tower of Hanoi, Stack operations, Stack-based algorithms
Week 4	Linked List	Singly linked list operations
	Queue	Queue operations, Queue-based problems
	Tree	Doubly linked list operations, Binary Search Tree (BST), Binary tree traversal, Implementing a binary search tree
Week 5	Tree	Binary tree properties (height, depth, full binary tree, complete binary tree), AVL trees (self-balancing binary search trees)
	Tries	Trie implementation, Trie-based problems
	Heap	Heap operations, Heap-based problems
	HashSet	HashSet operations, HashSet-based problems
Week 6	HashMap	HashMap operations, HashMap-based problems
	Graph	Graph representation, Graph traversal algorithms
	Dynamic Programming (DP)	Dynamic programming concepts, Solving problems with dynamic programming
	Greedy Algorithms	Principles of greedy algorithms, Greedy algorithm problems
Week 7	Graph	Advanced graph algorithms, Shortest path algorithms
	Dynamic Programming (DP)	Optimizing solutions with dynamic programming
	Greedy Algorithms	Applications of greedy algorithms