Lab 8 – 14th March
Topics – Hashtables with open addressing

Problem 2

Design and implement ADT Set as an array of SmallSet values. Let M be the size of the array and N be *sizeof(unsigned int)*. Then any subset of the universal set U = {0, 1, ..., (M*N)-1 } can be represented using ADT Set:

Given S $\subseteq$ U, for any j $\in$ U, (j $\in$ S) iff ((j%N)th bit of S[j/N] is 1).

Implement typical set operations *union*, *intersect*, and *difference* for this Set ADT. You can use the following table for designing your functions.

Key	Function	Input Format	Description
0	readData	0 M N X Y A_1 A_2 A_3 .. A_x B_1 B_2 B_3 .. B_y	M represents the size of the array and N represents the size of unsigned int (taken as input for convenience) & M * N would represent the size of the set. X and Y represent the sizes of two sets (A & B) respectively. You shall need to read two sets (A & B) of integers, separated by a new line. Each set contains values with space separation. Represent A and B in the form of Set ADT described above.
1	Union	1	Perform union operation on A and B (C = A ∪ B) and print C. You may sort C in ascending order first before printing.
2	Intersection	2	Perform intersection operation on A and B (C = A ∩ B) and print C. You may sort C in ascending order first before printing.
3	Difference	3	Perform difference operation on A and B (C = A - B) and print C. You may sort C in ascending order first before printing.

Sample input and output

Sample Input	Sample Output
0 10 32 5 6 2 4 92 34 74 9 37 45 10 34 58 1 2 3	2 4 9 10 34 37 45 58 74 92 34 2 4 74 92