Number partition problem is one of the NP complete problems. This problem is of importance for many applications in day today situation from scheduling to cutting stock. Given a set of numbers, the two partition problem is to divide them into two subsets so that the sums of the numbers in the two subsets are nearly equal or as close as possible.

The solutions to this problem can be broadly classified into two categories:
1. Heuristic Solutions
2. Optimal Solutions

The straightforward way to solve this is to construct all $2^n$ partitions in brute force way and then take the partition whose set difference is minimum. Many heuristics exist to solve this problem in polynomial time. The best heuristic for large $n$ is the Set Differencing algorithm by Karmakar & Karp. A complete anytime algorithm suggested by Korf gives the optimal solution by constructing and pruning in all possible ways. This works well for low values of $n$.

Horowitz and Sahni reduced the running time of Brute Force algorithm by trading space for time. This work was again improved further by Schroeppel and Shamir by reducing space complexity to half of the one taken by Horowitz and Sahni without compromising on time complexity. Both of the works give the optimal solution.

We study the Karmakar Karp Set Differencing algorithm and Complete Karmakar Karp algorithm for different ranges of numbers and different value of $N$ for different distributions. This study is important for many practical applications like processor scheduling. We present a heuristic which uses Horowitz & Sahni and Karmakar & Karp approaches so that the problem of practical sizes (Range upto $10^{14}$) can be addressed in real time heuristically without compromising on the space.

In summary, the main contribution of this work is to propose new heuristic and also to study the Karmakar Karp Set Differencing and Complete Karmakar Karp algorithm for different distributions.