

Optimizing Deployment- Scheme System Using the Concept of Bin Packing Algorithm.

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*Abstract--*Deployment scheme is a variant of bin packing problem. It is known to be an NP-complete problem. The deployment scheme problem asks for the minimal number k of identical bins (states) of capacity C needed to store a finite collection of weights (members) $w_1, w_2, w_3, \dots, w_n$ so that no bin has weights stored in it whose sum exceeds the bin's capacity. Traditionally, the capacity C is chosen to be 1 and the weights are real numbers which lie between 0 and 1, but here, for convenience of exposition, the consideration will be a situation where C is a positive integer and the weights are positive integers which are less than the capacity.

The bin packing concepts was modified by adding some other soft and hard constraints.

The algorithm was tested with real life data of graduate from Nigerian tertiary institutions who are to be deployed for the National Youth Service Corps (NYSC) Scheme and interesting results were obtained.

*Key-word--*Bin Packing Algorithm, Hard and Soft Constraints, NP Problem, Optimization.

be packed. The algorithm can be made much more effective by first sorting the list of elements into decreasing order (sometimes known as the first-fit decreasing algorithm), although this does not guarantee an optimal solution, and longer lists may increase the running time of the algorithm [12].

The NYSC scheme is an initiative of the federal government of Nigeria that requires a Nigerian graduates to serve the nation for a period of one year. It involves deploying graduates to different states of the country in which they are to serve. The complexity of the deployment however stems from ensuring that each intending corps member is not posted into his familiar environment i.e. he/she is posted far away from home as much as possible. In addition to this, there are conditions that may affect the deployment of corps members e.g. marital status, health condition e.g. Also, it is required that corps members should be posted to every available state each of which has a maximum capacity.