Vector thing

Explanation

Use

Justification

A vector data type is a type of dynamic array. The data structure allocates a set number of spaces In memory which can hold data for the user. As a vector is dynamic it does not need a specified size. If the underlying array is full and another piece of data is added, the vector is copied into a larger underlying array, with the new data added. As vectors are dynamic when being declared the programmer can create a vector of a certain size or an empty vector with 0 elements, both can have elements added and removed. This allows the program to store an unknown number of data elements. This is more efficient as less memory is needed, for instance to store an unknown amount of data with an array would require an extremely large array to store a possibly large amount of data. Each element of the array requires an allocated piece of memory even if blank. Therefore if only a small number of elements where required it would be a large waste of memory. This is avoided by vectors as a vector only requires enough allocated pieces of memory to store all the values, or the number of values declared by the programmer. Removing the need for an extremely large number of allocations which may not be used.

HOW DO WE USE IT.

We decided to implement the vector data Structure for its efficiency benefits, the system allows users to Add and delete pokemon, as we do not know the number of pokemon the user will be entering into the system a vector makes sense as it avoid wasted memory allocation, reducing the overall resources needed by the program. This is desirable as it is important for a program to be as resource light and efficient as possible. The ability to iterate through a vector to search, and also the ability to delete a specific piece of allocated data at a specific point in a vector was also desirable when considering vectors as it would help make the ‘search’ and ‘delete’ functionalities easier to implement as the vector can be indexed and iterated through.

Merge sort

Justification

How it works in the system

The searching algorithm we have used within the system is a Merge sort. We chose this algorithm as it allows us to quickly and efficiently sort the data items of the program.