C++ Group 11 STL Document
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1.1 Standard Template Libraries Used:

Vector was chosen as the main STL for the group project. It is used to store BoardObjects, Items and Character objects.

1.2 About Vector Standard Template Library:

```
template < class T, class Alloc = allocator<T> > class vector;
```

Just like arrays, vectors use contiguous storage locations for their elements, which means that their elements can also be accessed using offsets on regular pointers to its elements, and just as efficiently as in arrays. But unlike arrays, their size can change dynamically, with their storage being handled automatically by the container.**[1]**

1.3 Class Board

Description:

Template class for containing BoardObjects, Items, and Characters. It provides the mechanism for accessing the vector as a 2d array through the ( ) operator. It is defined in the main.cpp file.

Attributes:

```
std::vector<T> data
const size_t cols
```

Constructor:

```
Takes 2 parameters, amount of rows, amount of columns.
Initializes data vector of size row * column.
```

Operators:

T operator()(size_t r, size_t c)
Returns an object of type T. T is either BoardObject, Item or Character in this project's use cases.
T &operator()(size_t r, size_t c)
Returns a reference to an object of type T. T is either BoardObject, Item or Character in this project's use cases.

Member functions:

1.4 Class Inventory

Description:

Class for storing weapon,shield,armour and ring items.

Attributes:

```
std::vector<Item*> weapon;//vector of item pointers
std::vector<Item*> armour;//vector of item pointers
std::vector<Item*> shield;//vector of item pointers
std::vector<Item*> rings;//vector of item pointers
```

Constructor:

```
Default constructor called whenever a character object is created.
```

Member functions:

bool addItem(Item * iPtr)//member function that takes a pointer to an item as argument and adds an item to inventory

bool removeItem(int index)//member function that takes an index as argument and removes an item from inventory

void printInventory()//member function to print inventory

1.5 Vector Use cases:

Iterators:

begin

Return iterator to beginning (public member function)

Comment:

Used to return an iterator to the beginning of the vector in question.

Capacity:

size

Return size (public member function)

Comment:

Used througout to program to determine the size of vector in question.

Element access:

operator[]

Access element (public member function)

Comment:

Used within the Board class (in main.cpp) to access element of the board.

Modifiers:

erase

Erase elements (public member function)

Comment:

Used within the Inventory class to remove an item.

Non-member function overloads

swap

Exchange contents of vectors (function template)

Comment:

Used within the Inventory class to replace characters item.

1.6 Group GitHub repository: [2]

Every stage of the group’s progress on the assignment has been documented on GitHub.com

1.7 References

[1]"vector - C++ Reference", *Cplusplus.com*, 2016. [Online]. Available: http://www.cplusplus.com/reference/vector/vector/. [Accessed: 24- Nov- 2016].

[2]"16117743/Group-Assignment-Cpp", *GitHub*, 2016. [Online]. Available: https://github.com/16117743/Group-Assignment-Cpp. [Accessed: 24- Nov- 2016].