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CS 162
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Assignment 5 Design Document

Understanding the Problem:

Summary: In this assignment we are asked to implement a linked list. This is meant so that we get a taste of what is like to implement data structures in c++. The class is already build for the most part, but we have to fill in the blanks on the function definitions. We also must come up with an algorithm that can sort the linked list.

Assumptions:

- I am assuming that there is enough room in memory for the linked list
- I am assuming that the person who uses the linked list class doesn't change the function members of the class
- I am assuming that we don't need to access any index I > length

Design:

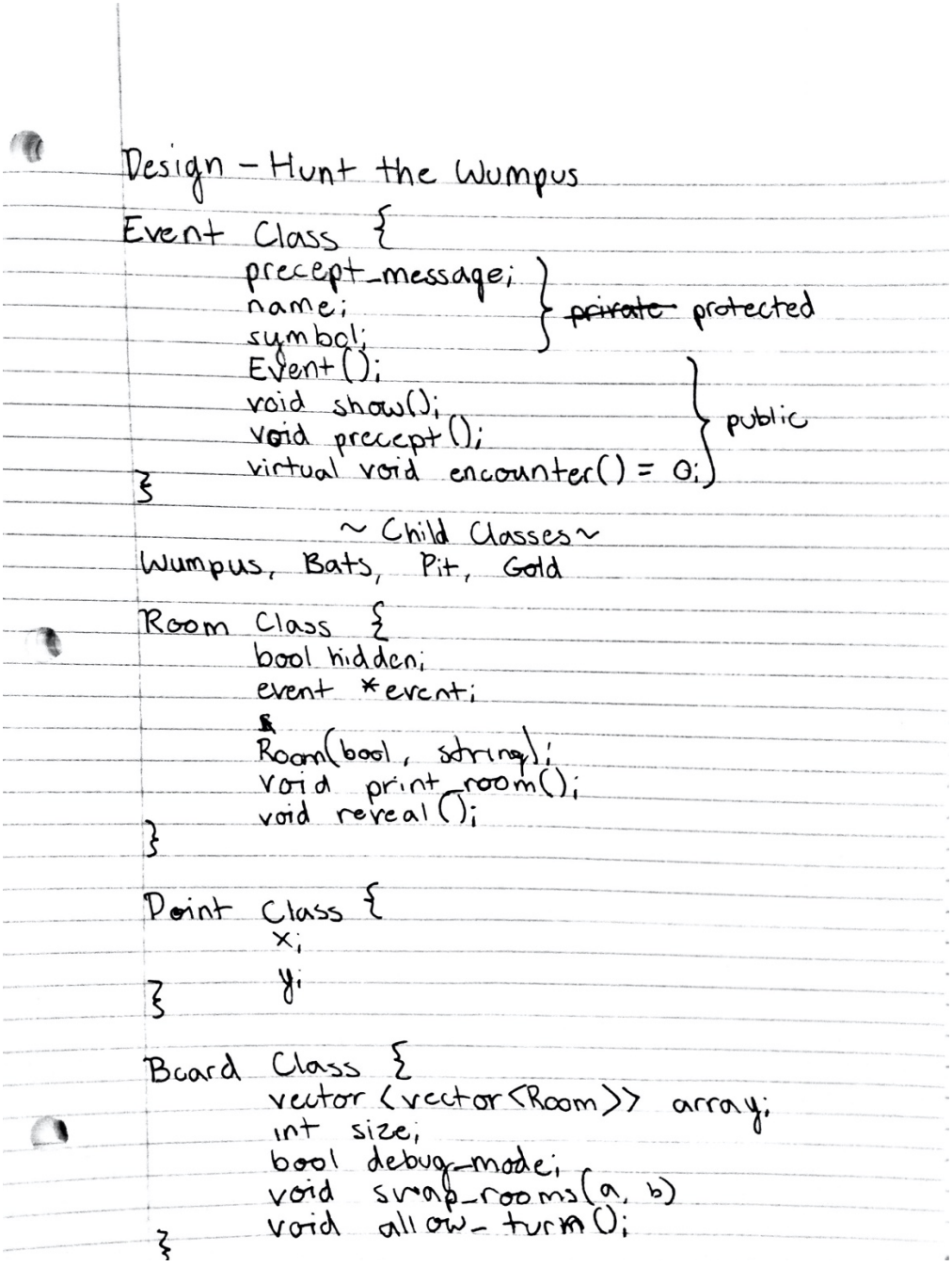
(see next page)

```
class Node {
  public:
    int val;
    Node *next
}

class Linked_List {
  private:
    unsigned int length;
    Node *head;
  public:
```

-- Functions --

```
int get_length() {
    return length;
}
void print() {node* curr = head
    for i in length{
        cout << curr->val;
    curr = curr -> next;  cout <<i<<;
    }
```



Testing:

Function	*Case*	*Case Type*	*Outcome*
Push_front	Pass in i	I > length	ERRROR OUT OF RANGE

Push front	Pass in I < length, >= 0	Good	Puts thing at head of LL
Push front	Pass in i negative	Edge	ERROR OUT OF RANGE
Push back	Runs pushback	Good	Puts thing at back
Push at(i)	Passes in I not in range	Bad	ERROR OUT OF RNAGE
Push at(i)	Passes in I in range	Good	Inserts the item at the ith index
Sort	Calls sort function	Good	Sords the linked list by value ascendending