Exam 2 Workshop Mini Assessment

Stacks

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1. Given an expression, find out whether or not that expression contains valid parentheses.

An expression contains valid parenthesis if it has the proper parenthesis ( ), [ ], { } in the correct order.

string = “{ [ ] (( )) }” ➜ true
string = “{ ( ]) } }” ➜ false

bool validParanthesis(string s){

}

Stacks

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2. Convert the following infix expression to a postfix expression. Assume all integers are single digit integers.

(4 * 3) - 6 / (7 * (8 + 1))

Queues

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3. Implement an enqueue() function which adds elements to the end of a “Queue” data structure (represented as a Linked List).

```
struct queueNode{
        int data;
        queueNode* next;

        queueNode(int value){
                data = value;
                next = nullptr;
        }
};

void Queue::enqueue(int value){









}
```

Sorting

4. Sort the following array using Merge Sort

{14, 23, 8, 4, 11, 18, 2, 32}

Heaps

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5. Build a max heap from the given array, **{15, 19, 4, 9, 7, 11, 2}.**

Show what the heap looks like (as a tree) after every insertion.

Hashing

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6. Insert the following values, **{13, 26, 8, 3, 31, 14}** into a hash table of size 10 using Linear Probing.

```
int hash(int x) {
        return x % 10;
}
```

0	1	2	3	4	5	6	7	8	9
