DATA STRUCTURES

1. List the nodes with only one child in the binary search tree for:

ACHRISTMASCAROL

The nodes with only one child are: A, H, I, and R.

2. Given an initially empty stack and the following sequence of operations, what would be the next POPPED element? PUSH(E), PUSH(B), PUSH(E), PUSH(N), POP(X), POP(X), POP(X), PUSH(E), PUSH(Z), PUSH(E), PUSH(R), POP(X), POP(X), PUSH(S), PUSH(C), POP(X), POP(X), POP(X), PUSH(R), PUSH(O), PUSH(O), POP(X), POP(X), POP(X), PUSH(G), PUSH(E), POP(X), POP(X)

The next element POPPED would be E.

3. List the nodes at depth 6 of the binary search tree of the following string?

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The binary search tree has a depth of 7. The nodes at depth 6 are C, H, I, L, O.

4. Given an initially empty queue and the following commands on the queue, what will the next popped item be? PUSH(D), PUSH(A), PUSH(R), POP(X), PUSH(T), PUSH(H), POP(X), PUSH(V), PUSH(A), PUSH(D), POP(X), POP(X), PUSH(E), PUSH(R), POP(X), POP(X), POP(X)

The next item popped is D.