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Ex 7

Suppose that the ADT list has a method contains that tests whether the list contains a given entry. Write specifications for such a method.

**Linked List**

template<class ItemType>

int LinkedList<ItemType>::contains(const ItemType& entry) const{

Node<ItemType>\* curPtr = headPtr;

int position = -1;

int i = 0;

while(curPtr!=nullptr){

i++;

ItemType isIt = curPtr->getItem();

if(entry == isIt){

position = i;

}

curPtr=curPtr->getNext();

}

return position;

}

**Array List**

template<class ItemType>

int ArrayList<ItemType>::contains(const ItemType& check) const{

int loc = -1;

for (int i =0; i<getLength();i++){

ItemType j = getEntry(i+1);

if(j==check){

loc = i+1;

}

}

return loc;

}

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1. Ex #1
   1. O(n), shaking hands with n amounts of people requires n handshakes
   2. O(n^2), one person shakes hands with n amount of people. N persons will shake n\*n;
   3. If n steps, it will require O(n);
   4. If the height is h, it will require O(h) since sliding is based off the height
   5. Choosing a buttons takes the same amount of time. Therefore O(1)
   6. O(n) since its based of the nth floor
2. Ex #3 aefi
   1. O(n)

e. O(1)

f. O(n) based off size of the linked chain to get to the last element

i. O(1) takes the same time to add to a stack

1. Ex #5

If n = 5;

Each the outer loop 5 times

In the inner loop 1+2+3+4+5

So O(n!\*n)