8.2a Why is it that we can say that the number of comparisons that must be made in insertion sort is exactly equal to $n + d$ where n is the number of elements in the unsorted list and d is the number of inversions.

8.2b Demonstrate that the number of comparisons is $\Theta(n + d)$ by applying insertion sort to the following example:

$$6, 7, 3, 9, 2, 9, 3, 4, 2, 8, 8$$

8.2c Compare the number of assignments made with the following two implementations of insertion sort on the above list:

```
template <typename Type>
void insertion_sort( Type *const array, int const n ) {
    for ( int k = 1; k < n; ++k ) {
        for ( int j = k; j > 0; --j ) {
            if ( array[j - 1] > array[j] ) {
                Type tmp = array[j];
                array[j] = array[j - 1];
                array[j - 1] = tmp;
            } else {
                break;
            }
        }
    }
}

template <typename Type>
void insertion( Type *const array, int const n ) {
    for ( int k = 1; k < n; ++k ) {
        Type tmp = array[k];

        for ( int j = k; k > 0; --j ) {
            if ( array[j - 1] > tmp ) {
                array[j] = array[j - 1];
            } else {
                array[j] = tmp;
                goto finished;
            }
        }

        array[0] = tmp;
        finished: ;
    }
}
```

8.2d Under which conditions is the statement `array[0] = tmp;` executed?