

Selection Sort



Insertion Sort

Keep <u>getting</u> 1st element from the **unsorted** portion and **inserting** it to the **sorted** portion.



Selection Sort

Insertion Sort



Selection Sort: Deriving Asymptotic Upper Bound

```
void selectionSort(int[] a, int n)
for (int i = 0; i <= (n - 2); i ++)
int minIndex = i;
for (int j = i; j <= (n - 1); j ++)
    if (a[j] < a[minIndex]) { minIndex = j; }
    int temp = a[i];
    a[i] = a[minIndex];
    a[minIndex] = temp;</pre>
```

Insertion Sort: Deriving Asymptotic Upper Bound



Selection Sort in Java



Insertion Sort in Java



Singly-Linked Lists (SLL): Visual Introduction

- A chain of connected nodes (via aliasing)
- Each node contains:
 - + reference to a data object
 - + reference to the next node
- Head vs. Tail
- The chain may grow or shrink dynamically.
- Accessing a position in a linear collection:
 - + Array uses absolute indexing: O(1)
 - + SLL uses relative positioning: O(n)