Radix Sort

Use radix sort to sort the following elements, show each pass.

['a', 'get', 'zen', 'ah', 'row', 'rat', 'tie']
Interrupting sorts

The following arrays have been interrupted in the middle of a sorting algorithm. Use your knowledge of comparison based sorting to determine which algorithm was being used on each array. Each of the following will be present exactly once: Heap Sort, Insertion Sort, Selection Sort, Merge Sort

<table>
<thead>
<tr>
<th>Array</th>
<th>Sort Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5 2 19 53 44 91 87 35</td>
<td></td>
</tr>
<tr>
<td>14 42 17 72 12 10 5 1</td>
<td></td>
</tr>
<tr>
<td>29 35 44 114 37 30 28 46</td>
<td></td>
</tr>
<tr>
<td>6 10 3 50 15 60 1 34</td>
<td></td>
</tr>
</tbody>
</table>
1. Suppose we are trying to perform a radix sort on a set of positive Java `int`. Recall that the runtime of Radix sort is $O(P(B + n))$ where $B$ is the Radix and $P$ is the number of passes. To what extend are $P$ and $B$ selectable and how might differing values of $n$ impact that selection process.

2. Provide an example for each of the following or indicate why no sort exists:
   - A stable comparison sort with worst-case $O(n^2)$ runtime
   - A stable comparison sort with worst-case $O(n)$ runtime
   - A $O(n\log n)$ stable comparison sort
   - A stable, in-place, comparison sort that runs in $O(n\log n)$ time
Graph Introduction

Use this graph and help from the TA to introduce our next topic: graphs.

- Identify Vertices and Edges. $G(V,E)$
- Discuss directed vs. indirected graphs
- Discuss weights
- What sort of information could this graph represent?