

Radix Sort

Radix sort is a linear time sorting algorithm.

Code

```
1 | // TODO
```

Design

- the procedure assumes that each element in the n -element array A has d digits $D_1 D_2 \dots D_d$
 - where digit D_1 is the lowest order digit
 - and digit D_d is the highest order digit
- we use counting sort (or any other stable sort) on each digit
 - the type of sort you use here will effect its complexity
- sort from D_1 to D_d

329	720	720	329
457	355	329	355
657	436	436	436
839	457	839	457
436	657	355	657
720	329	457	720
355	839	657	839

Runtime Analysis

Given n d -digit numbers in which each digit can take up to k possible values, radix sort sorts in $\Theta(d * (k + n))$ if the stable sort used uses $\Theta(n + k)$.