8.3-1.
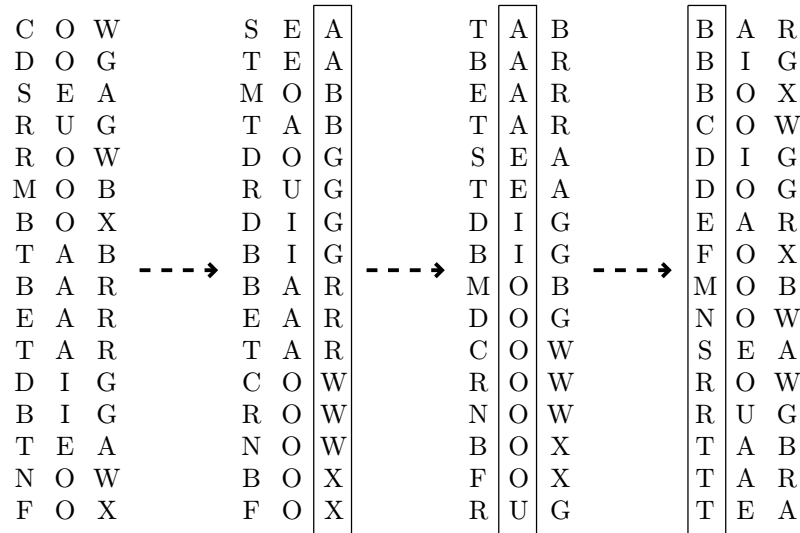
Using Figure 8.3 as a model, illustrate the operation of Radix-Sort on the following list of English words: COW, DOG, SEA, RUG, ROW, MOB, BOX, TAB, BAR, EAR, TAR, DIG, BIG, TEA, NOW, FOX.

Answer.

Figure 1 shows how radix sort operates on the designated list of English words.

```
C O W      S E A      T A B      B A R
D O G      T E A      B A R      B I G
S E A      M O B      E A R      B O X
R U G      T A B      T A R      C O W
R O W      D O G      S E A      D I G
M O B      R U G      T E A      D O G
B O X      D I G      D I G      E A R
T A B  →   B I G  →   B I G  →   F O X
B A R      B A R      M O B      M O B
E A R      E A R      D O G      N O W
T A R      T A R      C O W      S E A
D I G      C O W      R O W      R O W
B I G      R O W      N O W      R U G
T E A      N O W      B O X      T A B
N O W      B O X      F O X      T A R
F O X      F O X      R U G      T E A
```

Figure 1. The operation of radix sort on a list of English words: COW, DOG, SEA, RUG, ROW, MOB, BOX, TAB, BAR, EAR, TAR, DIG, BIG, TEA, NOW, FOX. The leftmost column is the input. The remaining columns show the list after successive sorts on increasingly significant alphabet positions. Rectangular indicates the alphabet position sorted on to produce each list from the previous one.