SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai
Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &
Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)

Puzzle: Machine Input-Output

Instructions:

A word-number arrangement machine processes an input line of words and numbers following a particular rule in each step. The following is an example:

Input:
```
win 84 game 29 more 63 hard 18
```

Step I:
```
18 win 84 game 29 more 63 hard
```

Step II:
```
18 game win 84 29 more 63 hard
```

Step III:
```
18 game 29 win 84 more 63 hard
```

Step IV:
```
18 game 29 hard win 84 more 63
```

Step V:
```
18 game 29 hard 63 win 84 more
```

Step VI:
```
18 game 29 hard 63 more win 84
```

Step VII:
```
18 game 29 hard 63 more 84 win
```

❓ Question:

What will be the **Step III output** if the input is:
```
learn 52 grow 14 start 39 high 78
```

☑Solution:

Let's first understand the pattern:

1. **Step I:** Smallest number is brought to the front.
2. **Step II:** First word alphabetically is moved after the number.
3. **Step III:** Next smallest number placed next.
4. **Step IV:** Next word alphabetically is placed after that, and so on.

Basically, the machine **alternates** between placing the **next smallest number** and the **next word alphabetically**.

Given Input:
```
learn 52 grow 14 start 39 high 78
```

Step-by-step:

- **Words in order:** `grow, high, learn, start`
- **Numbers in order:** `14, 39, 52, 78`

Step I:
Place smallest number → `14 learn 52 grow start 39 high 78`

Step II:
Place first word alphabetically (`grow`) after that →
`14 grow learn 52 start 39 high 78`

Step III:
Place next smallest number (39) →

14 grow 39 learn 52 start high 78

☑**Answer:**

14 grow 39 learn 52 start high 78