Python Slicing Practice Worksheet — Compact Edition

Includes: Introduction • Syntax • 30 Practice Problems with Solutions

INTRODUCTION TO PYTHON SLICING

Slicing extracts parts of sequences like lists, tuples, or strings using syntax:
sequence[start:stop:step].
It returns a new sequence containing items between start and stop (excluding stop).
Examples: s='abcdefg' → s[1:4]='bcd', s[:3]='abc', s[::2]='aceg', s[::-1]='gfedcba'.

Key Parameters:

• start → index to begin (default 0)
• stop → index to end (excluded)
• step → increment between indices (default 1)

Core Rules & Behavior:

- Works on list, tuple, string, range.
- Out-of-range indices are safe (no IndexError).
- Negative indices count from end (s[-1] = last element).
- Negative step reverses direction.
- [:] creates a shallow copy.

Common Pitfalls:

1. Forgetting stop is excluded.
2. Assuming out-of-range slice errors (it doesn't).
3. Misunderstanding negative steps.
4. Expecting in-place modification on strings (they're immutable).
5. Confusing shallow vs deep copy.

PRACTICE PROBLEMS WITH SOLUTIONS (30)

1) Extract first three letters from 'python'
Ans: 'python'[:3] → 'pyt'

2) Extract last three letters from 'python'
Ans: 'python'[-3:] → 'hon'

3) Reverse the string 'data'
Ans: 'data'[::-1] → 'atad'

4) Get even-index characters from 'abcdef'
Ans: 'abcdef'[::2] → 'ace'

5) Get odd-index characters from 'abcdef'
Ans: 'abcdef'[1::2] → 'bdf'

6) Slice middle 3 numbers from [1,2,3,4,5,6,7]
Ans: lst[2:5] → [3,4,5]

7) Extract [20,30] from [10,20,30,40,50]
Ans: lst[1:3] → [20,30]

8) Remove first and last element from [1,2,3,4,5]
Ans: lst[1:-1] → [2,3,4]

9) Every second element from [0,1,2,3,4,5,6,7]
Ans: lst[::2] → [0,2,4,6]

10) Slice backwards to get [5,4,3]
Ans: [1,2,3,4,5,6][4:1:-1] → [5,4,3]

11) All but last 2 elements from [10,20,30,40,50]
Ans: lst[:-2] → [10,20,30]

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12) Copy entire list [1,2,3]
Ans: lst[:] → [1,2,3]

13) Rotate list [1,2,3,4,5] left by 2
Ans: lst[2:]+lst[:2] → [3,4,5,1,2]

14) Extract vowels from 'databricks'
Ans: [ch for ch in 'databricks' if ch in 'aeiou'] → ['a','a','i']

15) Insert [9,9] into [1,2,3,4] at position 2
Ans: lst[2:2]=[9,9] → [1,2,9,9,3,4]

16) Replace [3,4,5] with [30,40,50] in [1,2,3,4,5,6]
Ans: lst[2:5]=[30,40,50] → [1,2,30,40,50,6]

17) Delete middle three elements from [1,2,3,4,5,6]
Ans: del lst[2:5] → [1,2,6]

18) Get last element using negative index
Ans: lst[-1] → last element

19) Slice tuple (1,2,3,4,5) to get (2,3,4)
Ans: t[1:4] → (2,3,4)

20) Reverse tuple (1,2,3)
Ans: t[::-1] → (3,2,1)

21) Every 3rd element from 0–20
Ans: list(range(21))[::3] → [0,3,6,9,12,15,18]

22) First halves of ['abcd','wxyz']
Ans: [w[:2] for w in ['abcd','wxyz']] → ['ab','wx']

23) Middle of string 'statistics'
Ans: 'statistics'[2:-2] → 'atisti'

24) Slice [1,2,3,4,5,6] to get [2,4,6]
Ans: lst[1::2] → [2,4,6]

25) Remove even indices from [10,20,30,40,50]
Ans: [x for i,x in enumerate(lst) if i%2!=0] → [20,40]

26) Chunk list [1..9] into parts of 3
Ans: [lst[i:i+3] for i in range(0,9,3)] → [[1,2,3],[4,5,6],[7,8,9]]

27) Reverse list ['a','b','c']
Ans: lst[::-1] → ['c','b','a']

28) Get grid[1][1:3] from [[1,2,3],[4,5,6]]
Ans: → [5,6]

29) Alternate digits from 2nd position in '123456789'
Ans: '123456789'[1::2] → '2468'

30) Elements between index 3 and -3 from [0..10]
Ans: lst[3:-3] → [3,4,5,6,7]