

# Solution 15: Palindrome Check with Two Pointers

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## 1) Which strings are palindromes?

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- `"level"` : `True`
  - `"robot"` : `False`
  - `"ABBA"` : `True`
  - `" "` : `True`
  - `"A"` : `True`
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## 2) Fill in the blanks: the two pointers idea

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- `left` starts at `0`
- `right` starts at `len(s) - 1`

We keep looping while `left < right` .

Inside the loop:

- If `s[left] != s[right]` , then `palindrome = False` .
  - If they match, we do:
    - `left = left + 1`
    - `right = right - 1`
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## 3) Trace the output: `"ABCBA"`

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It prints two lines (then `left == right` and the loop stops):

```
0 4 A A
1 3 B B
```

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## 4) Trace the output: "ABCDDBA "

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It prints three lines (then it finds a mismatch at C vs D and breaks):

```
0 5 A A
1 4 B B
2 3 C D
```

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## 5) Empty string

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`len(s) - 1` is `-1`, so `left < right` is `0 < -1` (False). The loop never runs.

Output:

```
True
```

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## 6) Debugging (2 bugs)

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Wrong lines: - Line A: `right = len(s)` - Line B: `right = right + 1`

Corrected lines: - Line A: `right = len(s) - 1` - Line B: `right = right - 1`

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## 7) Fill in the missing code

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One correct completion:

```
s = "racecar"

palindrome = True
left = 0
right = len(s) - 1

while left < right:
    if s[left] != s[right]:
        palindrome = False
        break
    left = left + 1
    right = right - 1

print(palindrome)
```

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## 8) Print the first mismatch (if any)

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One possible solution:

```
s = "ABCDXDCBA"

left = 0
right = len(s) - 1
found = False

while left < right:
    if s[left] != s[right]:
        print(s[left], s[right])
        found = True
        break
    left = left + 1
    right = right - 1

if found == False:
    print("No mismatch")
```

Output:

```
C D
```