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26+ Years of Experience
Mohammed Abu-Hadhoud
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لا تنسى الاشتراك في قناتنا على اليوتيوب ومشاركة القناة مع اصدقائك
لتعم الفائدة للجميع وانقاذ الاف الناس من التشتت وجزاكم الله خيرا
لا تنسونا من دعائكم وادعو لوالدي بالرحمة
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مهم جداً
هذا الملف للمراجعة السريعة واخذ الملاحظات عليه فقط ،لانه يحتوي
على اقل من 20٪ مما يتم شرحه في الفيديوهات
الاستعجال والاعتماد عليه فقط سوف يجعلك تخسر كميه معلومات
وخبرات كثيره
يجب عليك مشاهدة فيديو الدرس كاملا
لاتنسى عمل لايك ومشاركة القناة لتعم الفائدة للجميع
لا تنسونا من دعائكم
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Algorithms & Problem Solving
Level 6
Fix Violations Cases (DB)
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Fixing Violation Cases

- Case 1: Sibling is Red
- Case 2: Sibling is Black
  - Sub Case 2.1: Sibling's children are both black.
  - Sub Case 2.2: At least one of the sibling's children is red.
    - Sub-Sub Case 2.2.1: Sibling's far child is red.
    - Sub-Sub Case 2.2.2: Sibling's far child is red.

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Case 1: Sibling is Red

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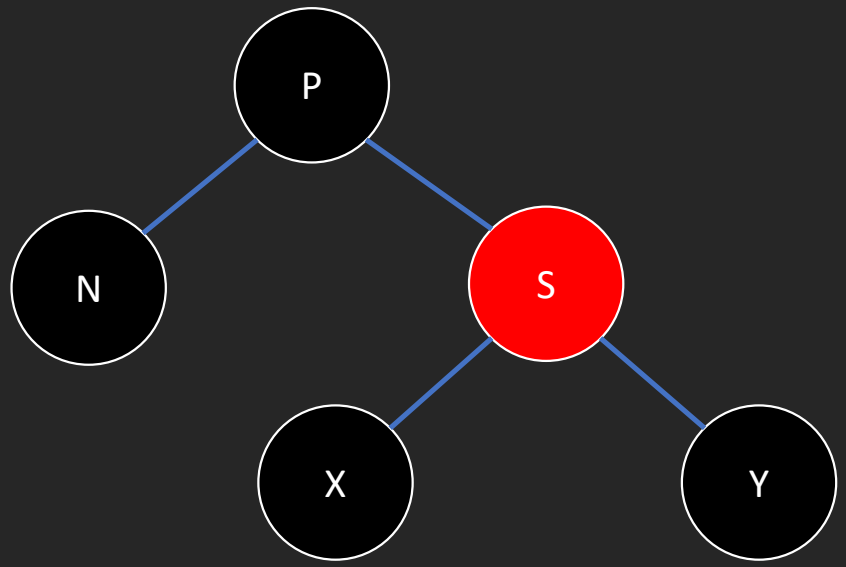
Case 1: The Sibling is Red.

- P is the parent node (black).
- N is the node being deleted or its replacement.
- S is the sibling of N (which is red).
- X and Y are children of S.



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Case 2: Sibling is Black

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Case 2: Sibling is Black

- Sub Case 2.1: Sibling's children are both black.
- Sub Case 2.2: At least one of the sibling's children is red
  - **Sub-Sub Case 2.2.1: Sibling's far child is red**
  - Sub-Sub Case 2.2.2: Sibling's near child is red

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Sub Case 2.1 - Sibling's children are both black.

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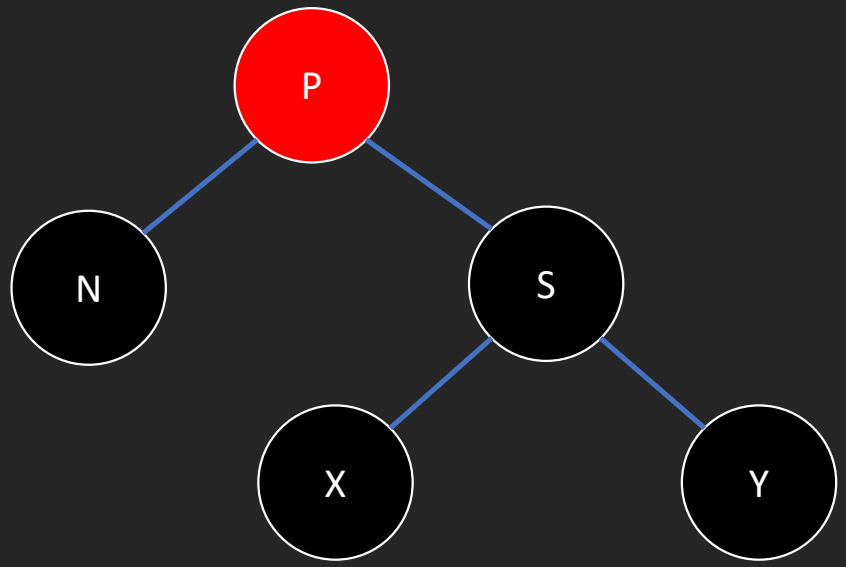
Case 2.1: Sibling's children are both black.

- P is the parent node .
- N is the node being deleted or its replacement.
- S is the sibling of N
- X and Y are children of S are both black.



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Sub Case 2.2:
At least one of the sibling's children is red

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Sub Case 2.2: At least one of the sibling's children is red

- Sub Case 2.2: At least one of the sibling's children is red
  - **Sub-Sub Case 2.2.1: Sibling's far child is red**
  - Sub-Sub Case 2.2.2: Sibling's near child is red

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Sub-Sub Case 2.2.1: Sibling's far child is red

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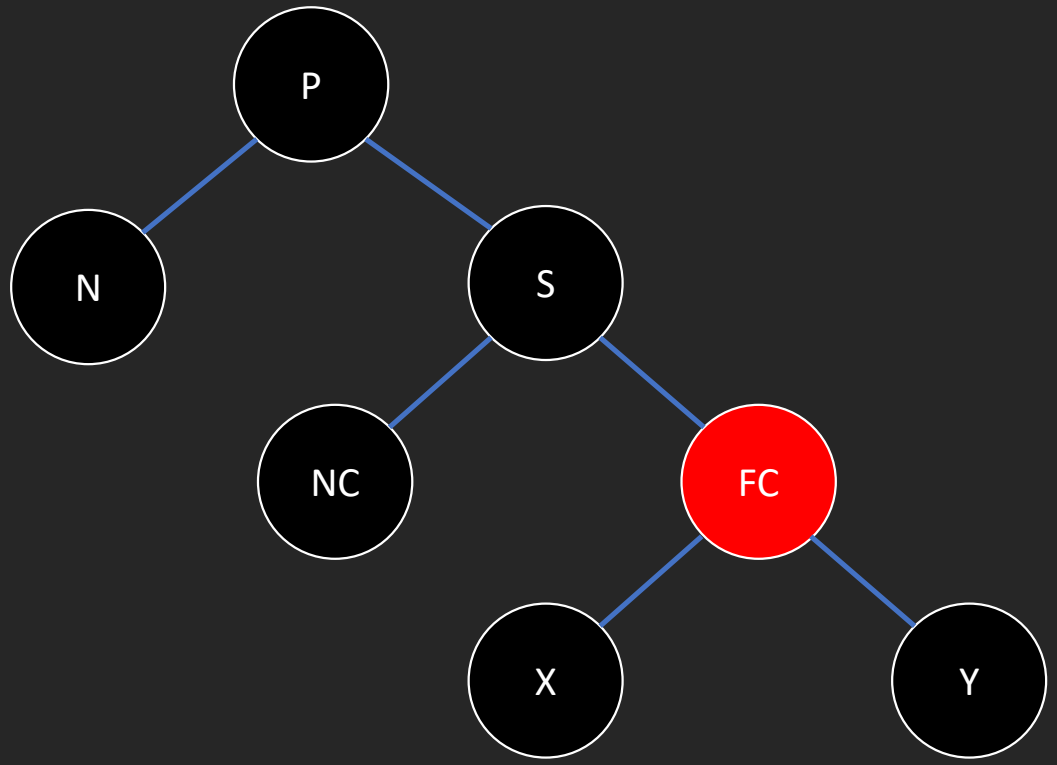
Sub-Sub Case 2.2.1: Sibling's far child is Red.

- P is the parent node .
- N is the node being deleted or its replacement.
- S is the sibling of N.
- NC an FC are children of S where NC (Near Child) and FC (Far Child).
- X and Y are children of FC.



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Sub-Sub Case 2.2.2:
Sibling’s near child is red

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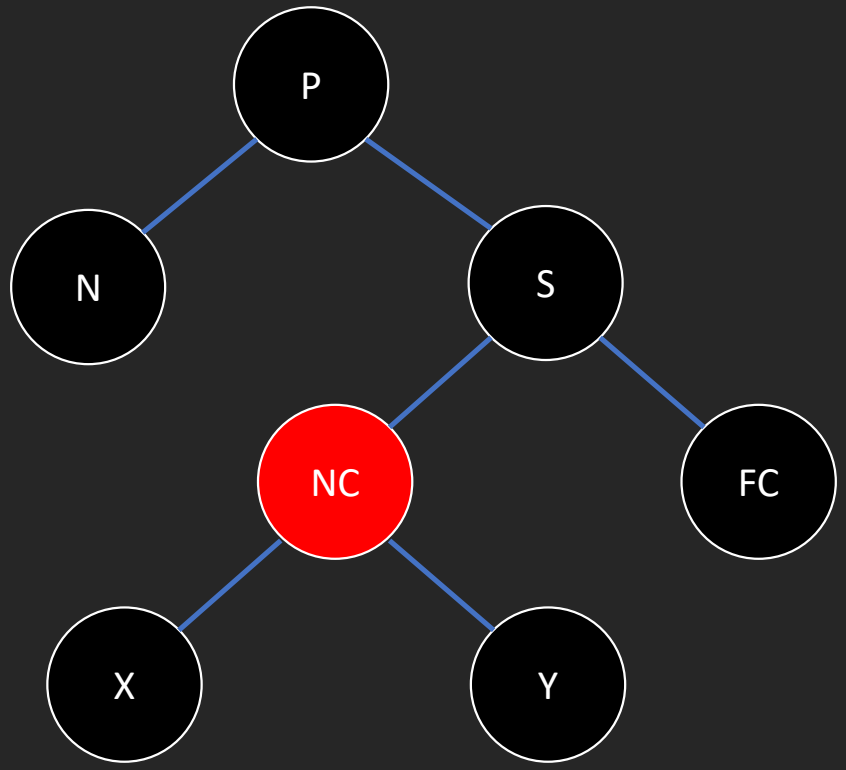
Sub-Sub Case 2.2.2: Sibling's near child is Red.

- P is the parent node .
- N is the node being deleted or its replacement.
- S is the sibling of N.
- NC an FC are children of S where NC (Near Child) and FC (Far Child).
- X and Y are children of NC.



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Thank You
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