

# Bcnf in dbms in hindi

## bcnf in dbms in hindi

## BCNF (Boyce-Codd Normal Form) 是什么？

[illegible]

**BCNF (Boyce-Codd Normal Form)** is a database normalization technique that ensures data integrity and minimizes redundancy by eliminating transitive dependencies.

3NF 3NF functional dependencies determinants candidate key

## Functional Dependency (ฟังก์ชันการขึ้นต่อกัน) สำคัญ ไหม?

Functional dependency คือ การที่ attribute หนึ่ง attribute หนึ่ง  
 หนึ่งค่า จะสามารถหา attribute หนึ่งค่าได้, นั่นหมายความว่า attribute หนึ่งค่า  
 - Roll\_Number → Name คือ Roll\_Number หนึ่งค่า จะสามารถหา Name หนึ่งค่าได้

## Candidate Key □□□□ □□?

Candidate key  $\Rightarrow$  attribute  $\Rightarrow$  attributes  $\Rightarrow$   $\Rightarrow$  uniquely identify  $\Rightarrow$  candidate key  $\Rightarrow$  attribute  $\Rightarrow$  unique  $\Rightarrow$

□ □ □ □ □ □ □ □   □ □   □ □ □ □ □ □ □ □   □ □   □ □ □ □

00000000 00 000000 00000000 00000000 000 anomalies 00 00000 00000 0000 00 anomalies 0000 00000000 00 00 00000  
 0000:

1. Insertion Anomaly (삽입이상)
2. Deletion Anomaly (삭제이상)
3. Update Anomaly (갱신이상)

00000000 00 000: - 0000 redundancy 000 000 - 0000 inconsistency 00 0000 00 - 00000000 00 00000000 00000 00  
 maintainable 0000 00 - query efficiency 00000 00

## BCNF (Boyce-Codd Normal Form)

00 0000000 000000000 000 000 00000 00 00: - 00 3NF 0000 00 - 00 00 functional dependency  $X \rightarrow Y$  0000 X candidate key 00 0000000, 00 determinant candidate key 00000 0000000 000 000 functional dependency 000 00 0000000 determinant candidate key 00000 00, 00 0000000 000000000 000 00000 000000

000 00000 00000 000 00 0000 00: | Student\_ID | Course | Instructor | ||| | 101 | Math | Mr. Sharma | | 102 | Science | Mr. Verma | | 103 | Math | Mr. Sharma | 0000, 00 functional dependency 00: - Student\_ID, Course → Instructor 000 00 0000 000 Student\_ID 00 Course 00 000000 candidate key 00, 00 00 0000 00000000 000 00 0000 000 00 0000 0000 00: - Instructor → Course 00 dependency 00000000 00 00 Instructor 00 000 00000 00 0000 00000 00 000 00000 000 00 dependency candidate key 0000 00, 00000 00 relation BCNF 000 00000 000 00000 data anomalies 00 00000 00000 000 00000 00000 00 000, 0000 00 relation 00 00000000 0000 0000000 0000 00 dependency 000 determinant candidate key 000

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1. BCNF 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 84

□□□□□□□ □ **3NF** □□□ □□□□ □□□□ □□?

| 3NF | BCNF | ||| | 3NF non-prime attribute prime attribute | transitive dependencies | functional dependency determinant candidate key | | strictness | BCNF 3NF strict | 3NF BCNF | | BCNF strict | 3NF BCNF |

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 anomalies 00 000000 0000 00000000 000000: - 00 00000000 0000 data integrity 00 0000 0000 0000 - 0000 anomalies 00  
 0000 0000 0000 - query performance 00 000000 000000 0000 - 0000 00 consistency 0000000000 0000 0000

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1. Find functional dependencies and primary key
2. candidate keys and primary key
3. decompose into 3NF and primary key
4. Find all dependency and determinant candidate key and primary key, and decompose into 3NF and primary key
5. decompose into 3NF and primary key, and decompose into BCNF and primary key, and decompose into 3NF and primary key

□ □ □ □ □ □ □ □

Boyce-Codd Normal Form (BCNF) 是 3NF 的进一步规范化形式，旨在消除 3NF 中仍可能存在的冗余 (redundancy) 和异常 (anomalies)。BCNF 要求每个非平凡函数依赖 (functional dependency) 的决定因素 (determinant) 都是候选键 (candidate key)。BCNF 确保了数据的一致性和完整性 (integrity) 和一致性 (consistency)。



## BCNF 与其他正常形式的区别 (Difference with other Normal Forms)

| 1NF | 2NF | 3NF | BCNF |

||||

| 1NF (第一范式) | 属性不可再分 | 消除重复组 | 主键唯一 |

| 2NF (第二范式) | 1NF 基础上, 消除非主属性对主键的部分函数依赖 |

| 3NF (第三范式) | 2NF 基础上, 消除非主属性对主键的传递函数依赖 |

| BCNF (第四范式) | 3NF 基础上, 消除主属性对主键的传递函数依赖 |

BCNF 是最高级别的范式, 它要求所有非平凡函数依赖的决定因素都是主键。

## BCNF 的原理 (Principles of BCNF)

1. 函数依赖与主键
1. 如果属性 A 函数依赖于属性 B, 且 B 不是主键, 则 A 必须也是主键的一部分。
2. 如果 A 函数依赖于 B, 且 B 不是主键, 则 A 必须也是主键的一部分, 否则 BCNF 不成立。
1. 主键属性
1. 主键属性必须唯一。
2. BCNF 要求所有非平凡函数依赖的决定因素都是主键。

1. 主键属性

BCNF 的分解算法:

| 1. 找到所有非平凡函数依赖 |

||||

| 101 | 找到所有非平凡函数依赖 |

| 102 | 找到所有非平凡函数依赖 |

BCNF 分解算法: 找到所有非平凡函数依赖, 如果存在非主属性对主键的传递函数依赖, 则分解。

1. 找到所有非平凡函数依赖
2. 如果存在非主属性对主键的传递函数依赖, 则分解。

BCNF 分解算法: 找到所有非平凡函数依赖, 如果存在非主属性对主键的传递函数依赖, 则分解。

## BCNF 的实现 (How to Achieve BCNF)

BCNF 的实现步骤:

1. 找到所有非平凡函数依赖
2. 如果存在非主属性对主键的传递函数依赖, 则分解。
3. 如果存在主属性对主键的传递函数依赖, 则分解。
4. 如果存在主属性对主键的传递函数依赖, 则分解。



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## Questions & Answers About bcnf in dbms in hindi

| No | Question                                                                        | Answer                                                                                                                                                                                                                   |
|----|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | BCNF क्या है और यह DBMS में क्यों महत्वपूर्ण है?                                | BCNF (Boyce-Codd Normal Form) एक डेटाबेस नॉर्मल फॉर्म है जो 3NF (Third Normal Form) से अधिक कठोर है। यह सुनिश्चित करता है कि डेटा में कोई भी अनवांछित प्रतिलिपि नहीं है, जो डेटा को सहेजने और उसे खोजने में मदद करता है। |
| 2  | BCNF और 3NF में क्या अंतर है?                                                   | 3NF डेटाबेस नॉर्मल फॉर्म है जो डेटा को सहेजने और उसे खोजने में मदद करता है। BCNF 3NF से अधिक कठोर है और यह सुनिश्चित करता है कि डेटा में कोई भी अनवांछित प्रतिलिपि नहीं है।                                              |
| 3  | BCNF में प्रमुख की (Primary Key) और उम्मीद की (Candidate Key) में क्या अंतर है? | BCNF में प्रमुख की (Primary Key) डेटाबेस में डेटा को सहेजने और उसे खोजने में मदद करता है। उम्मीद की (Candidate Key) डेटाबेस में डेटा को सहेजने और उसे खोजने में मदद करता है।                                             |
| 4  | BCNF में डेटा को सहेजने और उसे खोजने में क्या अंतर है?                          | BCNF में डेटा को सहेजने और उसे खोजने में अंतर है। डेटा को सहेजने में डेटा को सहेजने और उसे खोजने में अंतर है।                                                                                                            |
| 5  | क्या है डेटाबेस नॉर्मल फॉर्म और BCNF में क्या अंतर है?                          | डेटाबेस नॉर्मल फॉर्म डेटा को सहेजने और उसे खोजने में मदद करता है। BCNF डेटाबेस नॉर्मल फॉर्म है जो डेटा को सहेजने और उसे खोजने में मदद करता है।                                                                           |
| 6  | BCNF में डेटाबेस नॉर्मल फॉर्म (Dependency) में क्या अंतर है?                    | डेटाबेस नॉर्मल फॉर्म डेटा को सहेजने और उसे खोजने में मदद करता है। BCNF डेटाबेस नॉर्मल फॉर्म है जो डेटा को सहेजने और उसे खोजने में मदद करता है।                                                                           |
| 7  | क्या है डेटाबेस नॉर्मल फॉर्म और BCNF में क्या अंतर है?                          | डेटाबेस नॉर्मल फॉर्म डेटा को सहेजने और उसे खोजने में मदद करता है। BCNF डेटाबेस नॉर्मल फॉर्म है जो डेटा को सहेजने और उसे खोजने में मदद करता है।                                                                           |
| 8  | BCNF में डेटाबेस नॉर्मल फॉर्म (Dependency) में क्या अंतर है?                    | डेटाबेस नॉर्मल फॉर्म डेटा को सहेजने और उसे खोजने में मदद करता है। BCNF डेटाबेस नॉर्मल फॉर्म है जो डेटा को सहेजने और उसे खोजने में मदद करता है।                                                                           |



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