1. Every conversion into BCNF may not be dependency preserving

Consider the following schema; a b c and c->b Clearly the above schema is in 3NF, because ab->c is a superkey dependency and ,from c->b we can see that b-c=b, which is a subset of the primary key (such dependency is also allowed in 3NF). But, the above schema is not in BCNF because c->b is neither super-key nor trivial dependency. So we decompose above schema , keeping it lossless. Only possible lossless decomposition is: ac and cb. (because,their intersection c is primary key for the 2nd table). But clearly the dependency ab->c is lost.

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| --- | --- |
| TutorID | TutEmail |
| Tut1 | Tut1@fhbb.ch |
| Tut3 | Tut3@fhbb.ch |
| Tut5 | Tut5@fhbb.ch |

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| --- | --- | --- | --- | --- |
| UnitID | Data | Room | Topic | Books |
| U1 | 23.02.03 | 629 | GMT | Deumlich |
| U2 | 18.11.02 | 631 | Gln | Zehnder |
| U4 | 04.07.03 | 621 | AVQ | SwissTopo |
| U5 | 05.05.03 | 632 | PhF | Dümmlers |

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| --- | --- | --- | --- |
| UnitID | StudentID | TutorID | Grade |
| U1 | St1 | Tut1 | 4.7 |
| U2 | St1 | Tut3 | 5.1 |
| U1 | St4 | Tut1 | 4.3 |
| U5 | St2 | Tut3 | 4.9 |
| U4 | St2 | Tut5 | 5.0 |

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| ProjectName | ProjectManager |
| Project1 | Manager1 |
| Project2 | Manager2 |

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| --- | --- | --- |
| ProjectName | Budget | Teamsize |
| Project1 | 1 kk $ | 15 |
| Project2 | 1.5 kk $ | 12 |

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| --- | --- |
| ProjectManager | Position |
| Manager1 | CTO |
| Manager2 | CTO2 |

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| --- | --- |
| Group | Faculty |
| G1 | F1 |
| G1 | F1 |

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| --- | --- |
| Faculty | Speciality |
| F1 | S1 |
| F2 | S1 |