Task 1.

No. Table is said to be in BCNF if and only if, for each nontrivial dependence of the form A 🡪 B, A is a superkey of R.

Task 2.

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

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

|  |  |
| --- | --- |
| **TutorID** | TutEmail |
| Tut1 | tut1@fhbb.ch |
| Tut3 | tut3@fhbb.ch |
| Tut5 | tut5@fhbb.ch |

Task 3.

|  |  |
| --- | --- |
| **ProjectName** | **ProjectManager** |
| Project1 | Manager1 |
| Project2 | Manager2 |

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

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

Task 4.

|  |  |
| --- | --- |
| **Group** | Speciality |
| g1 | s1 |
| g2 | s2 |

|  |  |
| --- | --- |
| **Speciality** | Faculty |
| s1 | f1 |
| s2 | f2 |

Task 5.

|  |  |  |  |
| --- | --- | --- | --- |
| **ProjectID** | **Department** | Curator | TeamSize |
| p1 | d1 | e1 | 100 |
| p2 | d2 | e2 | 120 |

|  |  |
| --- | --- |
| **TeamSize** | ProjectGroupsNumber |
| 100 | 5 |
| 120 | 6 |

Task 6.

Three design goals for relational databases:

1. BCNF.

2. Losslessness.

3. Dependency preservation.

Desirable decompositions: Dependency preserving decompositions, lossless join.

Undesirable decompositions: Lossy decomposition.