**DATABASE SYSTEMS – CS3043**

**LAB 05 – DATABASE NORMALIZATION**

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01.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Customer\_ID | First\_name | Second\_name | Contact\_no | Location\_lat | Location\_long |
| 0001 | Micheal | Phelps | 941111111 | 33.680565 | 73.020199 |
| 0002 | Roger | Federer | 942222222 | 33.646104 | 72.990074 |

|  |  |
| --- | --- |
| Sales\_rep\_id | Sales\_rep\_name |
| 0987 | Andrew |
| 0034 | Peterson |

02.

|  |  |
| --- | --- |
| Customer\_id | Customer\_name |
| 0009 | Tom |
| 0013 | Jane |

|  |  |  |
| --- | --- | --- |
| Customer\_id | Sales\_rep\_id | payment |
| 0009 | 0987 | 100000 |
| 0013 | 0034 | 150000 |

|  |  |  |
| --- | --- | --- |
| Package\_id | Courier\_id | amount |
| 1 | 3 | 145.00 |
| 2 | 2 | 14.00 |
| 3 | 1 | 16.50 |
| 4 | 4 | 80.00 |
| 5 | 1 | 20.40 |

03.

|  |  |
| --- | --- |
| Courier\_id | Courier\_type |
| 1 | Standard |
| 2 | Same Day |
| 3 | International |
| 4 | Overnight |

04.

* The functional dependency H → I means that the value of I is uniquely determined by the value of H.
* The functional dependency K → OM means that the values of O and M are uniquely determined by the value of K.
* The functional dependency O → MN means that the values of M and N are uniquely determined by the value of O.
* The functional dependency KO → I means that the value of I is uniquely determined by the values of K and O.

Therefore, if we know the values of K and O, we can uniquely determine the values of I, M, and N. In other words, the set of attributes {IKOMN} is functionally determined by the set of attributes {KI}.

05.

F = {A → BC, A → C}

This implies attribute A is a primary key of the relation.

06.

|  |  |
| --- | --- |
| Emp\_id | Emp\_nationality |
| 002 | Sri Lankan |
| 003 | Canadian |

|  |  |  |
| --- | --- | --- |
| Dept\_type | Emp\_dept | Dept\_no\_of\_emp |
| D001 | Finance | 9 |
| D002 | Logistics | 15 |
| D003 | warehousing | 6 |

|  |  |
| --- | --- |
| Emp\_id | Dept\_type |
| 002 | D003 |
| 002 | D002 |
| 003 | D002 |
| 003 | D001 |