**Dependency Preservation Decomposition**

When we decompose a relation into multiple relations , we have to keep it in mind that all Functional Dependencies must be preserved.

R( A B C D )

R1( ) R2( )

FD1 FD2

**FD1 U FD2 = FD+**

**If we split the relation R into R1 and R2 and then perform union operation on FDs of these two tables , we will get all FDs of the original relation.**

**Example –**

R( A B C D )

FD { A 🡪 B , B 🡪 C ,C 🡪 D , D 🡪B }

Now , R is decomposed into R1 (A B) , R2(B C) , R3(B D)

|  |  |  |
| --- | --- | --- |
| **R1 (A B)** | **R2(B C)** | **R3(B D)** |
| A 🡪 A  B 🡪 B  A 🡪 B  B 🡪 A | B 🡪 C  C 🡪 B | B 🡪 D  D 🡪 B |

If we create a list with all correct FDs , we will find all FDs. So, in this example we can say that the dependencies are preserved after decomposition.

A 🡪 B

B 🡪 C

C 🡪 B - - - - - - - - - - - - C+ = CDB ( C 🡪 B )

B 🡪 D

D 🡪 B