|  |  |  |
| --- | --- | --- |
| Selection | σA > 100 R1 | WHERE statement |
| Projection | πA,B R1 | SELECT statement |
| Extended Projection | πA,B+C→D  R1 |
| Union | R1 ∩R2 | * No duplicate tuples * Both relations must have same set of attributes |
| Intersection | R1 ꓴR2 |
| Difference | R1 -R2 |

|  |  |  |
| --- | --- | --- |
| Natural Join | R1 ⋈ R2 | * No duplicate tuples & attributes * Join based on Common attribute |
| Theta Join | R1 ⋈SName=Name R2 | * Same result as Natural Join except Duplicate attributes |

|  |  |  |
| --- | --- | --- |
| Left Outer Join | ⋈L | All tuples in LEFT are retained |
| Right Outer Join | ⋈R | All tuples in RIGHT are retained |
| Full Outer Join | ⋈ | LEFT & RIGHT |

|  |  |  |
| --- | --- | --- |
| Cartesian Product | X | All combinations |
| Assignment | T1 := σA > 100 R1 | Make another copy of the table |
| Rename | ρtest(A’, B’, C’) R1 | Change of attribute names |
| Duplicate Elimination | δ(R1) | Eliminate duplicate tuples |

|  |  |
| --- | --- |
| γMAX(Score) | Grouping and Aggregation  γSchool, AVG(GPA) → AvgGPA Quiz1 |
| γMIN(Score) |
| γAVG(Score) |
| γSUM(Score) |
| γCOUNT(Score) |

|  |  |  |
| --- | --- | --- |
| Division | ÷ | Find each A that has all B |