**CIS 353 Notes**

**Week 2**

Query Languages:

Relational Algebra – procedural language

1. What we are looking for in table
2. How to get what we are looking for

Relational Calculus – non=procedural language

1. Only Tell you what we are looking for

Relational Algebra:

Fundamental –

Unary Operators: on single relation. Only outputs one table even with multiple outputs.

1. Selection - Unary
   1. () selections a subset of rows(horizontal)
   2. Grab values from the rows/tuples in the table
   3. Conditions are used along with columns
   4. Call: “ C > 3 (Table Name)
   5. Explained: Grab all tuples where column C in that tuple is greater than 3.
   6. OR/AND can be used to extend the conditions of the table search.
   7. )
   8. Explained: The first query will use the table from the results of the query in the parenthesis which uses the main Table to get its output.
   9. Original table-degree = Output table-degree
   10. Original table-cardinality >= Output Table-degree
2. Projection - Unary
   1. : Retains only desired columns
   2. Will be used to show output some attributes of a given(input) relation(table)
   3. Grab all values from column C, use the projection.
   4. Call:” : C, A (name of table)”
   5. Output will be a table of just columns C and A from the names table
   6. Will never have duplicate values in the table
   7. If more than one column the whole tuple would have to be the same as another tuple.
   8. Original table-degree >= Output table-degree
   9. Original table-cardinality >= Output Table-degree

Binary Operators: on pairs of relations (more than one table)

1. Cross-product –
2. Union – Binary
   1. The tables must have same degree
   2. The attributes must have same domain-type
   3. R1 R2 will keep the degree of the original table but will add more tuples to the new table.
3. Set difference –

Example:

Student(SID, Sname)

Book(Bid, Title, Sid)

OtherItems(Oid, Oname, Sid)

1. Find name of all Students
   1. PIE Sname,Sid (student)
      1. Need to have Sid do that they do not delete duplicate name