**SQL Select Data Structure**

**1. Table Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| Name | String | Table Name |
| Alias | String | Table Alias |

| **Method** | **Parameters/Return** | **Use** |
| --- | --- | --- |
| as | Alias: String | Save Table alias |

**2. Column Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| Name | String | Column Name |
| Type | Integer | Column Database Type |
| Function | Function Enum | Count/Sum/Min/Max/  Avg/distinct/…. |
| Name In Query | String | Name Considered In Query |
| Alias | String | Column Alias |
| Table Alias | String | Alias of Table of Column |
| Parameters | Map<Integer, Object> | Parameters with current column |

| **Method** | **Parameters/Return** | **Use** |
| --- | --- | --- |
| plusYear | Value: Integer | Increment Year of Date  /Timestamp |
| minusYear | Value: Integer | decrement Year of Date  /Timestamp |
| plusMonth | Value: Integer | Increment Month of Date  /Timestamp |
| minusMonth | Value: Integer | decrement Month of Date  /Timestamp |
| plusDay | Value: Integer | Increment Day of Date  /Timestamp |
| minusDay | Value: Integer | decrement Day of Date  /Timestamp |
| plusHour | Value: Integer | Increment Hour of  Timestamp/Time |
| minusHour | Value: Integer | decrement Hour of  Timestamp/Time |
| plusMinute | Value: Integer | Increment Minute of  Timestamp/Time |
| minusMinute | Value: Integer | decrement Minute of  Timestamp/Time |
| plus | Column: Column | Increment Column with another Column |
| plus | Value: Integer | Increment Column with Number |
| minus | Column: Column | Decrement Column with another Column |
| minus | Value: Integer | Decrement Column with Number |
| multiply | Column: Column | Multiply Column with another Column |
| multiply | Value: Integer | Multiply Column with Number |
| divide | Column: Column | Divide Column with another Column |
| divide | Value: Integer | Divide Column with Number |
| equal | Column: Column  Return Restriction | Give Restriction with current Column and Parameter Column and = criteria |
| equal | Value: Object  Return Restriction | Give Restriction with current Column and Parameter Value and = criteria |
| notEqual | Column: Column  Return Restriction | Give Restriction with current Column and Parameter Column and <> criteria |
| notEqual | Value: Object  Return Restriction | Give Restriction with current Column and Parameter Value and <> criteria |
| greater | Column: Column  Return Restriction | Give Restriction with current Column and Parameter Column and > criteria |
| greater | Value: Object  Return Restriction | Give Restriction with current Column and Parameter Value and > criteria |
| greaterEqual | Column: Column  Return Restriction | Give Restriction with current Column and Parameter Column and >= criteria |
| greaterEqual | Value: Object  Return Restriction | Give Restriction with current Column and Parameter Value and >= criteria |
| less | Column: Column  Return Restriction | Give Restriction with current Column and Parameter Column and < criteria |
| less | Value: Object  Return Restriction | Give Restriction with current Column and Parameter Value and < criteria |
| lessEqual | Column: Column  Return Restriction | Give Restriction with current Column and Parameter Column and <= criteria |
| lessEqual | Value: Object  Return Restriction | Give Restriction with current Column and Parameter Value and <= criteria |
| between | Column: Column  Column2: Column  Return Restriction | Give Restriction with current Column and Parameter Two Columns and between criteria |
| between | Value: Object  To: Object  Return Restriction | Give Restriction with current Column and Parameter Two Values and between criteria |
| isNull | Return Restriction | Give Restriction with is null criteria |
| isNotNull | Return Restriction | Give Restriction with is not null criteria |
| in | Values: Variable Objects  Return Restriction | Give Restriction with Parameter values and in criteria |
| notIn | Values: Variable Objects  Return Restriction | Give Restriction with Parameter values and not in criteria |
| in | Query: Query  Return Restriction | Give Restriction with Parameter Query and in criteria |
| notIn | Query: Query  Return Restriction | Give Restriction with Parameter Query and not in criteria |
| asc |  | Give Entry of current column and ascending order |
| desc |  | Give Entry of current column and descending order |

**3. Relation Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| Join | Join Enumeration | Join/Inner Join/Left Join  Full Join |
| Table | Table | Join Table |
| Query | Query | Query in join clause |
| Restriction | Restriction | Restriction in on clause |

| **Method** | **Parameters/Return** | **Use** |
| --- | --- | --- |
| as | String | Save Join Query Alias |
| on | Restriction: Restriction | Save Restriction |

**4. Restriction Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| Operator | Operator | AND/OR |
| Column | Column | Column in Restriction |
| Criteria | Criteria Enum | =/<>/>/>=/</<=/between/in/not in/is null/is not null/exists/not exists |
| Value | Object | =/<>/>/>=/</<=/between Value |
| Values | Array of Object | In/not In values |
| To | Object | Between To value |
| Column2 | Column | Between From Column |
| Column3 | Column | Between To Column |
| Query | Query | Exists/Not Exists/In/Not In Query |
| Restrictions | List<Restriction> | Sibling Restrictions in same level |

| **Method** | **Parameters/Return** | **Use** |
| --- | --- | --- |
| and | Restriction: Restriction | Add Restriction into Sibling Restrictions with AND operator |
| or | Restriction: Restriction | Add Restriction into Sibling Restrictions with OR operator |

**5. Case Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| Restriction | Restriction | Save Case Restriction in case clause |
| ThenColumn | Column | Save Case Then Clause Column |
| ThenValue | Object | Save Case Then clause value |
| WhenValue | Object | Save Case value in case clause |

| **Method** | **Parameters/Return** | **Use** |
| --- | --- | --- |
| then | Column: Column | Save Column in then clause |
| then | Value: Object | Save value in then clause |

**6. RowNumber Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| Partitions | List<Column> | Row Number Partitions |
| Orders | Map<Column, Order> | Row Number Orders |

| **Method** | **Parameters/Return** | **Use** |
| --- | --- | --- |
| partitionBy | Column: Column | Save Column in then clause |
| orderBy | Columns: Variable Column Array | Add Columns in orders with Order Ascending |
| orderByDesc | Columns: Variable Column Array | Add Columns in orders with Order Descending |
| orderBy | Orders: Variable Entries with Column/Order | Add Entries in orders |

**7. Query Class**

|  |  |  |
| --- | --- | --- |
| **Instance Variable** | **Data Type** | **Use** |
| \_1 | Column | Integer Column with name 1 |
| Current Date | Column | Date Column with name CURRENT\_DATE |
| Current Timestamp | Column | Timestamp Column with name CURRENT\_TIMESTAMP |
| Current Time | Column | Time Column with name CURRENT\_TIME |
| Columns | List<Columns> | List of Columns in select clause |
| Table | Table | Table in from clause |
| From Query | Query | Query in from clause |
| Relations | List<Relation> | List of Joins in from clause |
| Restrictions | List<Restriction> | List of restriction in where clause |
| Orders | Map<Column, Order> | Save Columns and their order in order by clause |
| Groups | List<Column> | Save Columns in group by clause |
| Limit | Integer | Limit clause value |
| Offset | Integer | Offset clause value |
| Combine Queries | List<Entry<CombineQuery, Query>> | Save Combined Queries with UNION(ALL)  INTERSECTION(ALL)  EXCEPT(ALL) |
| Alias | String | Current Query Alias |

| **Method** | **Parameters/Return** | | **Use** |
| --- | --- | --- | --- |
| select | Columns: Variable Column Array | | Save Select clause columns |
| min | Column: Column | | Give Column with min function |
| max | Column: Column | | Give Column with max function |
| sum | Column: Column | | Give Column with sum function |
| count | Column: Column | | Give Column with count function |
| max | Column: Column | | Give Column with max function |
| average | Column: Column | | Give Column with average function |
| distinct | Column: Column | | Give Column with distinct function |
| coelsce | Column: Column | | Give Column with coelsce function |
| case | Cases: Variable Case Array | | Give Column with case function |
| case | Column: Column  Cases: Variable Case Array | | Give Column with case function |
| when | Restriction: Restriction | | Give Case with Restriction Parameter |
| when | Value: Object | | Give Case with Value Parameter |
| row\_number |  | | Give Column with row\_number() name |
| row\_number | Partitions: List<Partition>  Return RowNumber | | Give RowNumber with partitions parameters |
| from | Table: Table | | Save Table in from clause |
| from | From Query: Query | | Save Query in from clause |
| join | Table: Table  Return Relation | | Give Relation with parameter table and Join type |
| innerJoin | Table: Table  Return Relation | | Give Relation with parameter table and Innter Join type |
| leftJoin | Table: Table  Return Relation | | Give Relation with parameter table and Left Join type |
| fullJoin | Table: Table  Return Relation | | Give Relation with parameter table and Full Join type |
| exists | Query: Query  Return Restriction | | Give Restriction with Parameter Query and exist criteria |
| notExists | Query: Query  Return Restriction | | Give Restriction with Parameter Query and not exist criteria |
| where | Restriction | | Add Restriction into Restrictions with AND operator |
| and | Restriction | | Add Restriction into Restrictions with AND operator |
| or | Restriction | | Add Restriction into Restrictions with OR operator |
| orderBy | Columns: Variable Column Array | | Add Columns in orders with Order Ascending |
| orderByDesc | Columns: Variable Column Array | | Add Columns in orders with Order Descending |
| orderBy | Orders: Variable Entries with Column/Order | | Add Entries in orders |
| groupBy | Columns: Variable Column Array | | Add Columns in groups |
| limit | Integer | | Save Limit value |
| offset | Integer | | Save Offset value |
| union | Query | | Save Parameter Query into combine Queries with Union type |
| unionAll | Query | | Save Parameter Query into combine Queries with Union All type |
| intersect | Query | | Save Parameter Query into combine Queries with intersect type |
| intersectAll | Query | | Save Parameter Query into combine Queries with intersect All type |
| except | Query | | Save Parameter Query into combine Queries with except type |
| exceptAll | Query | | Save Parameter Query into combine Queries with except All type |
| getObjectResult | Return Object | | Return Object with Column Data Type for one column and one row |
| getStringResult | Return String | | Return Single String value for one column and one row |
| getCharacterResult | Return String | | Return Single Character value for one column and one row |
| getShortResult | Return Short | | Return Single Short value for one column and one row |
| getIntegerResult | Return Integer | | Return Single Integer value for one column and one row |
| getLongResult | Return Long | | Return Single Long value for one column and one row |
| getFloatResult | Return Float | | Return Single Float value for one column and one row |
| getDoubleResult | Return Double | | Return Single Double value for one column and one row |
| getDecimalResult | Return Decimal | | Return Single Decimal value for one column and one row |
| getDateResult | Return Date | | Return Single Date value for one column and one row |
| getDateResult | Return Date | | Return Single Date value for one column and one row |
| getTimestampResult | Return Timestamp | | Return Single Timestamp value for one column and one row |
| getTimeResult | Return Time | | Return Single Time value for one column and one row |
| getBooleanResult | Return Boolean | | Return Single Boolean value for one column and one row |
| getListResult | Return List | | Return Single List value for one column and one row |
| getObjectList | Return List of Object | Return Object with Column Data Type for one column and multiple rows | |
| getStringList | Return List of String | Return List of String for one column and multiple rows | |
| getCharacterList | Return List of Character | Return List of Character value for one column and multiple rows | |
| getShortList | Return List of Short | Return List of Short value for one column and multiple rows | |
| getIntegerList | Return List of Integer | Return List of Integer value for one column and multiple rows | |
| getLongList | Return List of Long | Return List of Long value for one column and multiple rows | |
| getFloatList | Return List of Float | Return List of Float value for one column and multiple rows | |
| getDoubleList | Return List of Double | Return List of Double value for one column and multiple rows | |
| getDecimalList | Return List of Decimal | Return List of Decimal value for one column and multiple rows | |
| getDateList | Return List of Date | Return List of Date value for one column and multiple rows | |
| getTimestampList | Return List of Timestamp | Return List of Timestamp value for one column and multiple rows | |
| getTimeList | Return List of Time | Return List of Time value for one column and multiple rows | |
| getBooleanList | Return List of Boolean | Return List of Boolean value for one column and multiple rows | |
| getArrayList | Return List of Array | Return List of Array value for one column and multiple rows | |
| getEntryResult | Return Entry with Key Object and Value Object | | Return two values for two columns and one row |
| getEntryResult | KeyClass: Class  ValueClass: Class  Return Entry with Key Object and Value Object | | Return two values for two columns and one row with key and value classes |
| getEntryList | Return Entry List with Key Object and Value Object | | Return two values for two columns and multiple rows |
| getEntryList | KeyClass: Class  ValueClass: Class  Return Entry with Key class and Value class | | Return two values for two columns and multiple rows with key and value classes |
| getMapResult | Return Map with Key Object and Value Object | | Return two values for two columns and multiple rows |
| getMapResult | KeyClass: Class  ValueClass: Class  Return Map with Key class and Value class | | Return two values for two columns and multiple rows with key and value classes |
| getRecord | Return Map of Column Key and Object value | | Return column/value mapping for one row |
| getRecordList | Return List of Map of Column Key and Object value | | Return column/value mapping for multiple rows as List |
| getRecordMap | Return Map of Map of First Column Key and Object value | | Return column/value mapping for multiple rows as Map with first Column Key |
| getRecord | Class: Class  Return Entity Class Object with populated properties | | Return Object of Parameter class |
| getRecordList | Class: Class  Return List of Entity Class Objects with populated properties | | Return List of Object of Parameter class |
| getRecordMap | Return Map of Map of First Column Key and Object value | | Return Map of Object of Parameter class |