Insert, Update and Delete on Carbondata Partitioned Table

Background:

Openlookeng integration with Carbondata supports creation and reading data from partitioned table but doesn't provide support for insert, update and delete. This becomes the limitation of openlookeng since other processing engine like spark provides the same.

Insert, Update and Delete support on carbondata partitioned table is the high level goal of this proposal.

Design Approach:

Carbondata partitioned table should have following directory structure

```
TABLE_PATH
        Metadata
                |-- tablestatus
                segments
                        |-- 0_timestamp.segment
                        |-- 1_ timestamp.segment
        Partition_Column_Key=Value1
                |-- XXXX-timestamp.carbonindex
                |-- XXXX-timestamp.snappy.carbondata
        Partition_Column_Key=Value2
                |-- XXXX-timestamp.carbonindex
                |-- XXXX-timestamp.snappy.carbondata
```

Insert operation –

- carbonindex file will be written inside <timestamp>.tmp folder while carbondata file remains in its final position.

```
TABLE_PATH
        Partition_Column_Key=Value1
                <current_tmstmp>.tmp
                        |-- XXXX-timestamp.carbonindex
                |-- XXXX-timestamp.snappy.carbondata
```

  This is to distinguish carbonindex files written for current segment. Since same partition folder can have entries from multiple segments. This will help segment file writer to avoid adding other index files in same segment. Carbonindex file will be moved outside tmp folder after writing segment file in Metadata folder.

- tablestatus file write flow remains same as non-partitoned table.

Update Operation –

- Update on multiple partition with multiple segment data brings difficulties for segment file writer. Carbon file writer should write index files such that index files of different segments should not be mixed. To overcome this issue, CarbonFIleWriter will use temporary path to write index as well as segment files.

```
TABLE_PATH
        Partition_Column_Key=Value1
                <segment_number>_<current_tmstmp>.tmp
                        |-- XXXX-timestamp.carbonindex
                |-- XXXX-timestamp.snappy.carbondata
```

- Flow for tableStatus and tableUpdateStatus remains same.

Delete operation –

- It will add delete-delta file inside the partition folder and tableUpdateStatus file inside metadata folder. This is same as non-partition table since delete-delta file contains entry for carbondata file which has to be deleted and it will create only one delete-delta file for each matching carbondata file in current transaction which takes care multiple segment inside one partition case.