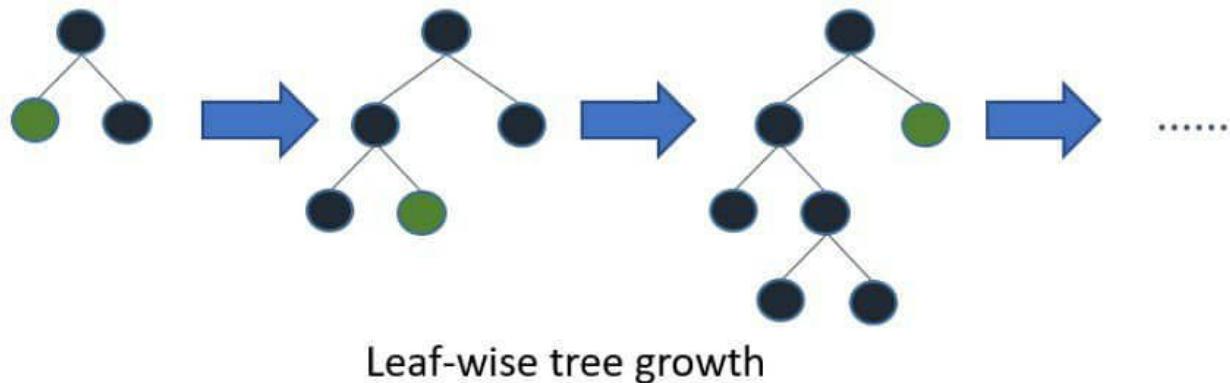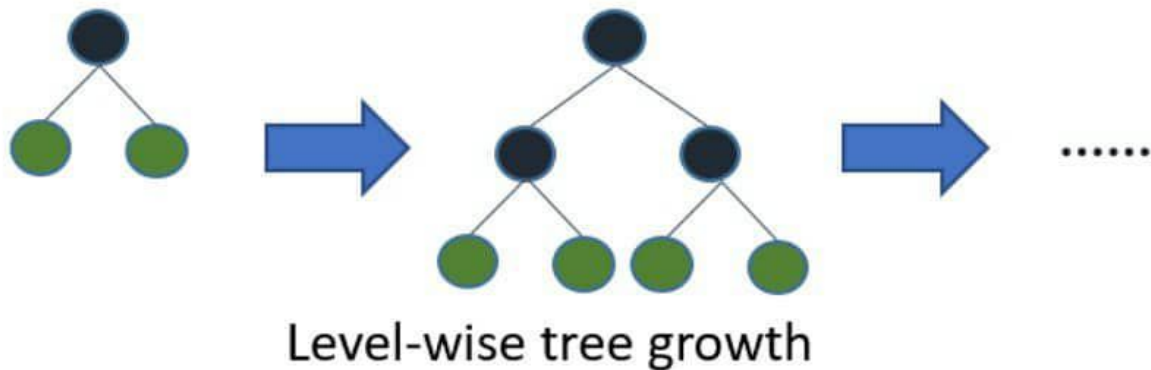# Light Gradient Boosting

- **For datasets which are extremely large Light, Gradient Boosting is the best, compared to all of the other, since it takes less time to run.**
- **This algorithm is based on leaf-wise tree growth contrary to others which work in a level-wise approach pattern.**

Level-wise tree growth

Leaf-wise tree growth

Light Gradient Boosting

- **Advantages of Light GBM**
- **Faster training speed and higher efficiency:** Light GBM use histogram-based algorithm i.e it buckets continuous feature values into discrete bins which fasten the training procedure.
- **Lower memory usage:** Replaces continuous values to discrete bins which result in lower memory usage.
- **Better accuracy than any other boosting algorithm:** It produces much more complex trees by following leaf wise split approach rather than a level-wise approach which is the main factor in achieving higher accuracy. However, it can sometimes lead to overfitting which can be avoided by setting the max_depth parameter.
- **Compatibility with Large Datasets:** It is capable of performing equally good with large datasets with a significant reduction in training time as compared to xgboost.
- **Parallel learning supported.**