**Time Series Revision Roadmap**

1. **Foundational Concepts**
   * **What to Study:**
     + Definition of Time Series
     + Components: Trend, Seasonality, Cyclic, and Irregular (Noise)
     + Stationarity and its importance
   * **Practice:**
     + Identify components from real datasets (like your tomato plantation dataset).
     + Use moving averages to visualize trends.
2. **Time Series Analysis Techniques**
   * **Descriptive Analysis:** Plotting time series, identifying patterns
   * **Decomposition:** Additive vs. multiplicative decomposition
   * **Smoothing Techniques:** Simple Moving Average (SMA), Exponential Smoothing (ETS)
3. **Time Series Forecasting Models**
   * **Classical Models:**
     + AR (Autoregressive), MA (Moving Average), ARMA, ARIMA
     + SARIMA (Seasonal ARIMA) for seasonal data
   * **Advanced Models:**
     + Prophet by Facebook (easy for quick forecasts)
     + LSTM (links to your CNN knowledge)
4. **Hands-On Practice**
   * Work with datasets like daily temperature or agricultural data (tomato plantation).
   * Apply ARIMA, visualize ACF/PACF plots, and evaluate predictions using RMSE or MAE.
5. **Key Libraries to Use:**
   * **Python:** pandas, statsmodels, matplotlib, seaborn, fbprophet
   * **Exercises:** Build a forecasting model predicting future tomato yields.

**COMPONENTS OF TIME SERIES :**

Trend : This refers to overall direction of the data i.e wheither is increasing or decreasing

Seasonality :This shows the repeated pattern of data over a period of time

Cycles : This refers to repeating but not but none-seasonality of data.

Variation\Noise\irregularity : This are un predicted patterns In the data that cannot be explained by the other 3 components