INTERNSHIP: STUDENT DAILY REPORT

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| Name of the Student | Vivek kumar Shriwas |
| Internship Project Topic | TCS iON RIO-125: Forecasting System - Project Demand of Products at a Retail Outlet Based on Historical Data |
| Name of the Organization | TCS iON |
| Name of the Industry Mentor | Sreekathiayini Ruthraiyah |
| Name of the Institute | Viswakarma University |

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| Date | Day | Hours Spent |
| 5/08/2023 | Day 19 | 3 hours and 15 minutes |
| Description:  **Self-learning Duration : 3 hours**  **Activity Report Duration : 15 minutes**  **Activities:**   1. **Exploring Time Series Decomposition (1 hour):**    * Delved into the concept of time series decomposition to break down a time series into its underlying components: trend, seasonality, and residual.    * Explored additive and multiplicative decomposition methods and their applications in understanding different types of time series data. 2. **Implementing Seasonal Decomposition in Python (1 hour):**    * Utilized Python's **statsmodels** library to implement seasonal decomposition on a real-world time series dataset.    * Visualized the decomposed components to gain insights into how trend and seasonality contribute to the overall behavior of the time series.    * Practiced interpreting the decomposed results and their implications for forecasting. 3. **Studying ETS Models (1 hour):**    * Introduced to the ETS (Error, Trend, Seasonality) framework for time series forecasting.    * Explored different variations of ETS models, including ETS(AAA), ETS(AAd), and ETS(MAM), each addressing specific characteristics of time series data.    * Understood the parameters and components of ETS models and their significance in capturing different patterns. 4. **Comparative Analysis: SARIMA vs. ETS (15 minutes):**    * Conducted a brief comparative analysis between the SARIMA model and ETS models.    * Discussed scenarios where SARIMA might be more suitable and where ETS models could provide better insights and forecasts.    * Recognized the importance of selecting the appropriate model based on the nature of the data and its patterns.   **Challenges:** One challenge was encountered while interpreting the results of the seasonal decomposition. Understanding the characteristics of seasonality and trend within the decomposed components required additional research and experimentation. Additionally, grasping the nuanced differences between SARIMA and ETS models in various contexts posed a learning curve. | | |