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 |
| 27/07/2023 | Day 10 | 3 hours and 15 minutes |
| Description:  **Self-learning Duration : 3 hours**  **Activity Report Duration : 15 minutes**  **Activities:**   1. **Studying Advanced Time Series Techniques (2 hours):**    * Dived into advanced techniques for time series analysis and forecasting.    * Explored methods such as ARIMA (AutoRegressive Integrated Moving Average) and SARIMA (Seasonal ARIMA) for handling more complex time series patterns. 2. **Reading Academic Papers on ARIMA (1 hour):**    * Read research papers that delve into the mathematical details and statistical properties of ARIMA models.    * Focused on understanding the concepts of stationarity, differencing, and autoregressive/moving average components. 3. **Hands-on: Implementing ARIMA in Python (30 minutes):**    * Installed necessary libraries for ARIMA modeling in Python, such as **statsmodels** and **pmdarima**.    * Loaded a real-world time series dataset and performed necessary preprocessing.    * Implemented an ARIMA model, tuned hyperparameters, and made predictions.    * Evaluated the model's performance using appropriate metrics. 4. **Updating Documentation (15 minutes):**    * Documented the process of implementing ARIMA, including data preparation, model creation, and evaluation.    * Added references to the academic papers for future in-depth reading.   **Challenges:** Understanding the mathematical intricacies of ARIMA, especially related to the integration and differencing of time series data, required dedicated effort. Selecting the right order for the ARIMA model and interpreting the diagnostic plots posed challenges during the implementation phase. | | |