**High Integrity Systems Project**
**TSA Tasks 02**

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Let us continue with *Time Series Analysis*:

1. As stated yesterday, please set up a project organization for the two sub-groups, i.e. list of members, configuration management, Python setup (requirements.txt) etc.

2. All documents (written in LaTeX!), models, code etc. must be accessible to Dr. Butt and me and of course the group members!

3. Please summarize chapter 2 of the book *Modern time series forecasting with Python*! Explain the necessary mathematics.

4. Please explain the *data preprocessing* and give references.

5. Please explain the **mathematical** handling of *missing data*!

6. Please run the corresponding code of chapter 2, comment the code and explain it! Please explain also errors and how you solved them!

7. Please summarize chapter 3 of the book *Modern time series forecasting with Python*! Explain the necessary mathematics.

8. Please run the corresponding code of chapter 3, comment the code and explain it! Please explain also errors and how you solved them!

9. Please explain the handling of *outliers* in time series.

10. Please install *Matlab/Simulink* if not done already!

11. Please explore the possibilitities of *visualizing* time series.!

12. Show practical examples of *time series visualization* with Python and Matlab!

13. Please research the principal ideas of the *Kalman Filter*!

    - Mathematical foundation
    - Different variants
    - Practical examples in Matlab
    - Ptactical examples in Python

As usual: Please prepare the documentation in LaTeX!