

## AYTS 5001 – Week 9 Lab (Graded, 6 Marks)

Numerical Computing with NumPy + Data Preprocessing

Theme: Malazan Characters

Duration: 2 hours

Marks: 6

Submission: Notebook + cleaned dataset on GitHub

### Tasks

Task 1 — Light Data Preprocessing (2 marks)

(a) Handle missing values using column means.

(b) Standardise text: strip spaces and apply `.str.title()`.

Task 2 — Create NumPy Arrays (1 mark)

Convert Strength, Magic\_Power, Morale, Battles\_Fought, Victories into NumPy arrays.

Task 3 — Vectorised Computations (1 mark)

Compute Win Rate (%) and Power Index using NumPy only.

Task 4 — Correlation Analysis (1 mark)

Use `np.corrcoef` to compute correlations.

Task 5 — Ranking Champions (1 mark)

Sort characters by Power Index and display the top 3.

### Marking Rubric

- 2 marks – preprocessing (missing values + text cleaning)
- 1 mark – NumPy arrays created correctly
- 1 mark – Win Rate and Power Index
- 1 mark – correlation matrices
- 1 mark – correct top 3 champions