Exercise: decomposition

Earlham College
BUS 323 - Fall 2025 - Labadie

In this activity, you will practice performing time series decomposition and producing forecasts for the deomposed time series object using datasets in the `fpp3` package.. Please turn in your code with answers in comments, or a document with your answers and plots (Word doc or a PDF generated from Markdown, for example).

1. We will use the Bricks data from `aus_production` (Australian quarterly clay brick production 1956–2005) for this exercise.
   (a) Use an STL decomposition to calculate the trend-cycle and seasonal indices.
   (b) Compute and plot the seasonally adjusted data.
   (c) Use a naïve method to produce forecasts of the seasonally adjusted data.
   (d) Use `decomposition_model()` to reseasonalise the results, giving forecasts for the original data.
   (e) Do the residuals look uncorrelated? (use `gg_tsresiduals()`)
   (f) Repeat with a robust STL decomposition. Does it make much difference?
   (g) Compare forecasts from `decomposition_model()` with those from `SNAIVE()`, using a test set comprising the last 2 years of data. Which is better?