Quiz-1 Solution

Question 1

(a) [2 marks]

The `aus_arrivals` dataset is a `tsibble` with 508 rows and 3 columns. It is a quarterly dataset, with the key variable being `origin`. The dataset comprises quarterly arrivals to Australia from Japan, New Zealand, the UK, and the US.

(b) [6 marks]

Observations from the time series plot (obtained by `autoplot` in `R`): [2 marks]

1. The number of arrivals to Australia is increasing over the entire series, with the exception of arrivals from Japan.
2. The series appears to have a seasonal pattern. The seasonal pattern from Japan appears to change substantially.
3. The number of visitors from New Zealand peaks sharply in 1988.
4. The number of visitors from Japan begins to decline after 1995.

Observations from the seasonal plot: [2 marks]

1. The seasonal pattern of arrivals appears to vary between each country.
2. Arrivals from the UK appear to be lowest in Q2 & Q3 and increase substantially for Q4 and Q1.
3. For NZ visits, the lowest period of arrival is in Q1 and the highest in Q3.
4. For Japan, Q2 seems to be the lowest for most of the year (at least from 1987 onward); before that, sometimes Q3 was lower than Q2.
5. For the US, variations seem to differ over the years.

Observations from the subseries plot: [2 marks]

1. The increase in UK arrivals is mostly seasonal, i.e., more arrivals are during Q1 and Q4, and the increase in Q2 & Q3 is comparatively less.
2. The increase in arrivals from NZ and the US appears similar across all quarters.

(c) [2 marks]

Unusual observations:

1. There is a spike in arrivals from the US in 2000 Q3, probably due to the Sydney Olympics.
2. Q3-Q4 2001 are unusual for the US, likely due to the 9/11 effect.
3. 1991 Q3 is also unusual for the US.