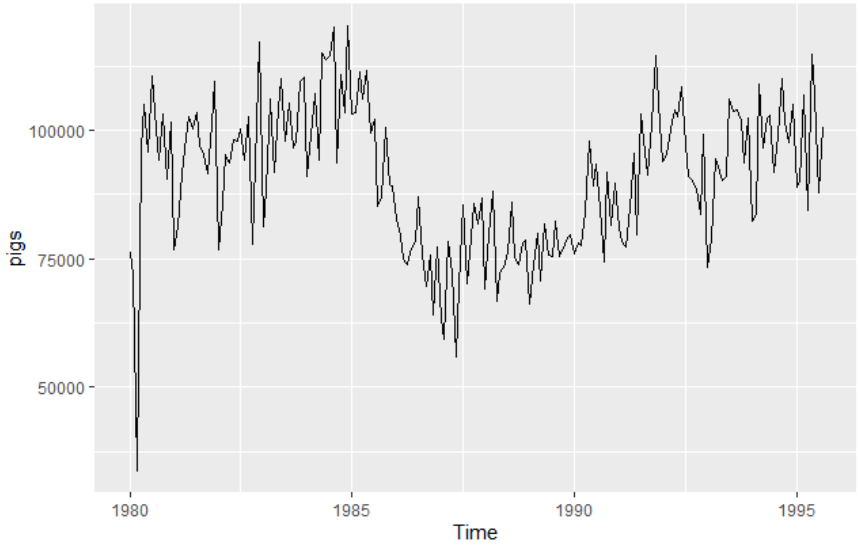
Module 3 Peer Assignment Sample Answers

Q1.

```
> head(pigs,24)
      Jan   Feb   Mar   Apr   May   Jun   Jul   Aug   Sep   Oct   Nov   Dec
1980 76378 71947 33873 96428 105084 95741 110647 100331 94133 103055 90595 101457
1981 76889 81291 91643 96228 102736 100264 103491 97027 95240 91680 101259 109564
```

Q2.

autoplot(pigs)

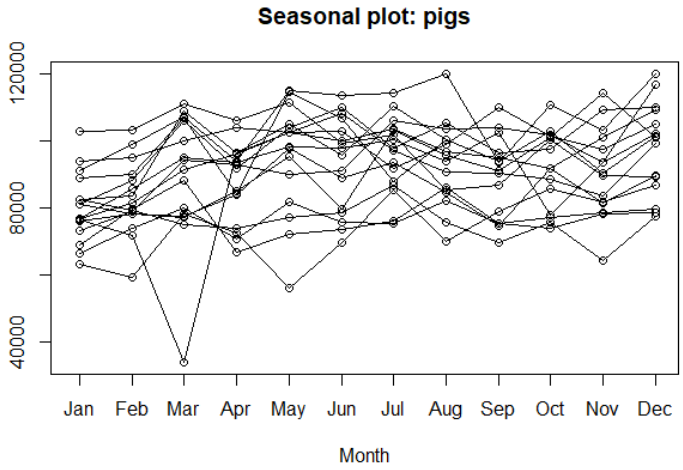


Q3.

The x-axis is time in months. The y-axis is the number of pigs slaughtered in Vitoria from Jan 1980 - Aug 1995. There seems to be an upward trend from around 1983 to 1985, a downward trend from 1985 to 1987, and then an upward trend from 1987 thru the end of the data in 1995.

Q4.

seasonplot(pigs)



Q5.

The y-axis is the number of pigs slaughtered. The x-axis is the month. Each line represents a year of data. For each year, there does not seem to be any discernible seasonal patterns.

(Bonus Points) Of note, there was a sudden drop of pigs slaughtered in March. Upon inspection of the data and using the min() command, the sudden drop happened in March of 1980.

Q6.

auto.arima(pigs)

Series: pigs
ARIMA(2,1,0)(2,0,0)[12]

Coefficients:

	ar1	ar2	sar1	sar2
	-0.6538	-0.4952	0.3886	0.1744
s.e.	0.0666	0.0703	0.0812	0.0878

sigma^2 estimated as 84366977: log likelihood=-1972.03
AIC=3954.06 AICc=3954.39 BIC=3970.21

Q7.

The model was ARIMA(2,1,0)(2,0,0). The best model used two lags for the autoregressive component, one level of differencing, and two seasonal autoregressive terms.

Q8.

3954.06

Q9.

The AIC is used to compare the goodness-of-fit among competing models.