Elementary Forecasting with the forecast R Library and AirPassengers Dataset

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1. Setup

```
suppressMessages(lapply(c('tidyverse', 'magrittr', 'knitr', 'kableExtra', 'forecast'),
                        function(x) library(x, character.only = TRUE)))
```

2. Data

```
AirPassengers # R dataset: Monthly International Airline Passengers, 1949-1960
```

```
##      Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
## 1949 112 118 132 129 121 135 148 148 136 119 104 118
## 1950 115 126 141 135 125 149 170 170 158 133 114 140
## 1951 145 150 178 163 172 178 199 199 184 162 146 166
## 1952 171 180 193 181 183 218 230 242 209 191 172 194
## 1953 196 196 236 235 229 243 264 272 237 211 180 201
## 1954 204 188 235 227 234 264 302 293 259 229 203 229
## 1955 242 233 267 269 270 315 364 347 312 274 237 278
## 1956 284 277 317 313 318 374 413 405 355 306 271 306
## 1957 315 301 356 348 355 422 465 467 404 347 305 336
## 1958 340 318 362 348 363 435 491 505 404 359 310 337
## 1959 360 342 406 396 420 472 548 559 463 407 362 405
## 1960 417 391 419 461 472 535 622 606 508 461 390 432
```

3. Forecast

```
fcast       <- forecast(AirPassengers, h = 12*10)
fcast_means <- fcast$mean # Forecasting 10 years.

fcasts_matrix           <- round(matrix(fcast_means, 10, 12))
colnames(fcasts_matrix) <- month.abb
rownames(fcasts_matrix) <- 1961:1970

kable(fcasts_matrix, booktabs = TRUE) %>%
  kable_styling(full_width = TRUE)
```

Table 1. Monthly Forecasts of International Airline Passengers, 1961-1970

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1961	442	403	548	650	525	550	498	443	592	692	552	573
1962	434	452	478	645	597	534	488	496	515	686	627	555
1963	497	459	415	561	663	533	557	503	447	596	696	555
1964	483	451	466	489	658	606	540	493	500	518	689	630
1965	484	515	473	425	572	673	540	562	507	450	599	699
1966	551	501	464	476	498	667	613	546	497	504	521	692
1967	613	501	530	483	433	580	681	545	567	510	452	601
1968	609	570	515	474	485	505	675	619	550	500	506	523
1969	531	634	515	541	491	439	586	687	549	570	513	454
1970	463	629	585	525	482	491	511	681	623	553	502	508

```
autoplot(fcast, geom = "line", alpha = 0.7) +
  theme_light() +
  theme(#panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())
```