Loblolly pine tree data activity

#Description The Loblolly data frame has 84 rows and 3 columns of records of the growth of Loblolly pine trees.

#Format height a numeric vector of tree heights (ft).

age a numeric vector of tree ages (yr).

Seed an ordered factor indicating the seed source for the tree. The ordering is according to increasing maximum height.

```
head(Loblolly)
```

```
   height age Seed
1    4.51   3  301
15  10.89   5  301
29  28.72  10  301
43  41.74  15  301
57  52.70  20  301
71  60.92  25  301
```

```
model <- lm(height ~ age, data = Loblolly)
cat("Tree height =",coef(model)[1],"+",coef(model)[2],"*Age")
```

```
Tree height = -1.31 + 2.59 *Age
```

```
summary(model)
```

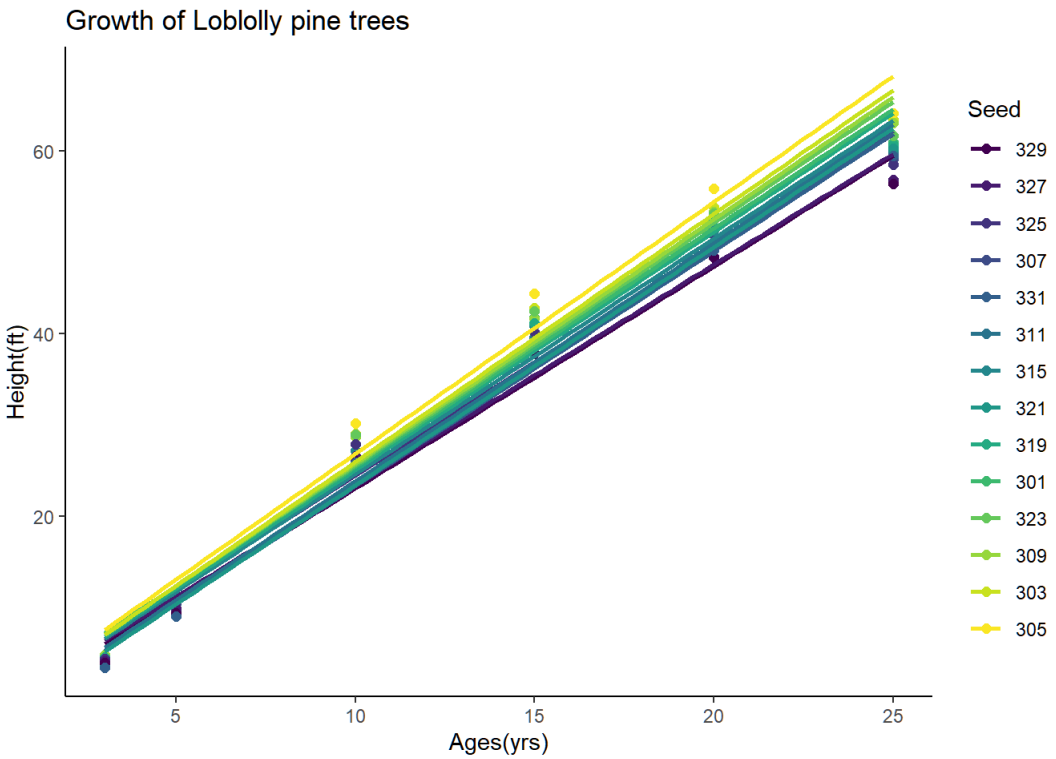
```
Call:
lm(formula = height ~ age, data = Loblolly)

Residuals:
   Min     1Q Median     3Q    Max
-7.021 -2.167 -0.439  2.054  6.855

Coefficients:
            Estimate Std. Error t value            Pr(>|t|)
(Intercept)  -1.3124     0.6218   -2.11               0.038 *
age           2.5905     0.0409   63.27 <0.0000000000000002 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.95 on 82 degrees of freedom
Multiple R-squared:  0.98,  Adjusted R-squared:  0.98
F-statistic: 4e+03 on 1 and 82 DF,  p-value: <0.0000000000000002
```

```
ggplot(Loblolly,aes(x = age, y = height, color = Seed, group = Seed)) +
  geom_point(size = 2) +
  geom_smooth(method = "lm", formula = y ~ x,se = FALSE) +
  labs(title = "Growth of Loblolly pine trees", x = "Ages(yrs)", y = "Height(ft)") +
  theme_classic()
```



#Interpret: From the graph and summary, we can tell tree's height has a strong linear relationship with tree's age.

#Repo URL: https://github.com/MA615-2025Fall-Tingji/Class-8-Sep19