Lab 11 Activity

we will continue to look at salaries of university professors in 2008:

Variable	Description
rank	Assistant, Associate, or Full Professor
discipline	A = theoretical department, B = applied department
yrs.since.phd	Years since PhD
yrs.service	Years of Service
sex	Sex (Male or Female)
salary	nine-moth salary in dollars

Run the following code to name the data you will be using as `dat`:

```
library(carData)

dat <- Salaries
```

1. We want to test whether there is a difference in salaries (`salary`) between theoretical and applied departments (`discipline`). However, we also believe that this difference in salary should be moderated by how long someone has been at a certain department (`yrs.service`). Run a regression that tests these hypotheses.

- before interpreting the results, do you believe it meaningful to interpret the regression without centering `yrs.service`? Explain.
- Is the interaction term significant? What can you conclude about the difference in the relation between years of service and salary depending on the type of department?

2. Calculate the expected value of `Salary` for a professor in a theoretical department (`discipline` = A) with 15 years of service.

- Now do the same for a professor in an applied field (`discipline` = B).

3. Test whether predicted salaries of professors in applied and theoretical departments differ significantly at different values of years fo service. Test this at `yrs.service` = 0, 15, 30 and 45.

- What pattern do you observe as `yrs.service` increases?
- plot the simple slopes for professors in applied and theoretical departments. Do the sliple slopes coonfirm your observation in the previous question?