`for`-loop assignment

DataCamp showed you the most simple way to use `for`-loops in `R`, perhaps in ways that weren't very useful. Here's an example of a way that I use `for`-loops in order to evaluate the prediction interval (confidence intervals for predictions) of my dengue fever forecasts. Start off by reading in the `annual-dengue-data.csv` that you downloaded from Moodle.

1. Separate the data into `train_data` and `test_data`, with `train_data` containing the years 2000-2009 and `test_data` containing the years 2010-2014.

2. Fit a linear model for `dengue_rate` in `train_data` using all of the variables except for `year` and assign it to `dengue_fit`.

3. Check out your model fit. What's the strongest predictor of your data?

4. Predict the values of `dengue_rate` for `test_data` and have the output include standard errors (use `?predict.lm` to see the options). Assign it to `dengue_preds`.

5. This one is the tricky part if you've never done it before. Make a `for`-loop that creates a prediction interval for each value in `dengue_preds` using the mean and standard error (there are a couple ways of doing this).

6. How often does the 95% prediction interval cover the observed value?

7. If you have time, can you find a linear model that makes better prediction intervals?