HOW THE CODE RUNS

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QUANTITATIVE ANALYSIS
Trading Strategy Creation and Evaluation

Description of the Strategy

The strategy uses exponentially weight moving averages (*specifically, their slope*) of the returns over the last `a` and `b` days (in our submission, 20 and 50). With a threshold `t`, we:

- buy if both EWMA are greater than `t`;
- sell if both EWMA are less than `t`.

Using a threshold allows us to avoid assets whose averages are very close to zero to cause rapid trading. Even a small threshold (in testing) moves the average holding period from approx. 2 days to 9 days, reducing turnover and transaction costs significantly.

To model this, we create an `Ownership` column that describes whether on that day, the asset is owned on a given `datenum`. The rule for doing so is described above.

Finally, the algorithm evaluates its performance using methods supplied in class.

Description of the Code
addLags, addEWMA

These functions add respectively lag in a variable, and exponentially weighted moving averages.

runSimpleStrategy.m

THRESHOLD The threshold is declared as `deltaThreshold = 0.001`, and there is a sell (`-t`) threshold under which we sell the asset, and a buy (`+t`) threshold above which we buy.

BUY AND SELL DECISIONS The following lines of code model the buying and selling decisions.

```
crsp.Buy = crsp.ewma20RET_derived > buyThreshold ...
 & crsp.ewma50RET_derived > buyThreshold;


crsp.Sell = crsp.ewma20RET_derived < sellThreshold ...
   & crsp.ewma50RET_derived < sellThreshold;
```

makeWeights.m

Uses the `Ownership` (which represents which assets are owned on that day, `1` or those that are not owned `0`) column to construct a `total` column (summing for each `datenum` the `Ownership`) to build the `w` column, short for weights.

Findings

To do.