**Theo Andonyadis**

This program graphs Ford and GM stocks by day and makes various analyses on them.

This preliminary bit creates a plot of the two stocks based on days, ford in red.

```
clc;clear;close all
c=datetime;
fprintf('Last run was %s\n',c)
```

Last run was 29-Jan-2022 18:10:51

```
load fordstock
load gmstock
plot(ford,"Color","R")
hold on
grid on
plot(gm,"Color","B")
title('Ford vs GM Closing Stock Prices Per Day')
xlabel('Days since January 1');
ylabel('Stock Price (Dollars)');
legend('Ford','GM','Location','southeast');
```
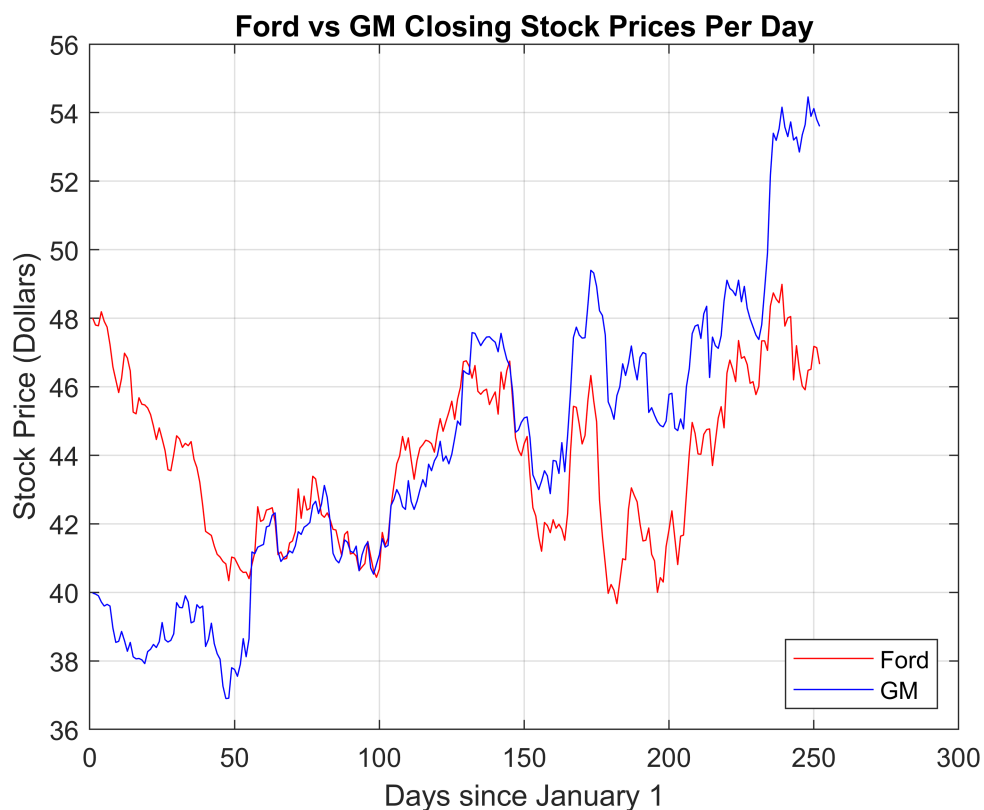

This code creates a logical array based on the GM stock, where 1's are days when the stock closed above $45 or below $40, and all other days are zeros. It stores the amount of these days in variable a1, then prints.

```
gmp1=(gm>45 | gm<40);
a1=sum(gmp1);
fprintf("There were %i days where the GM stock closed above $45 or below $40",a1)
```

There were 155 days where the GM stock closed above $45 or below $40

This code creates a logical array based on the GM stock, where 1's are days when the stock closed at or between $40 and $45, and all other days are zeros. It stores the amount of these days in variable a2, then prints.

```
gmp2=(gm<=45 & gm>=40);
gmp2;
a2=sum(gmp2);
fprintf("There were %i days where the GM stock closed between $40 and $45, inclusive",a2)
```

        There were 97 days where the GM stock closed between $40 and $45, inclusive

This code creates a logical array where 1's are days when Ford stock closed at a higher price than GM. It stores the amount of these days in variable a3, then prints.

```
ford;
gm;
fordogm=(ford>gm);
a3=sum(fordogm);
fprintf("There were %i days where the Ford stock closed higher than GM",a3)
```

        There were 114 days where the Ford stock closed higher than GM

This code creates a logical array where 1's are days when GM stock closed at a higher price than Ford. It then finds the location of the first 1 in this array, the first day which GM stock closed higher than Ford, then prints.

```
gmoford=(ford<gm);
a4=find(gmoford,1,'first');
find(gmoford);
fprintf("The Ford stock fell below GM for the first time on day %i",a4)
```

        The Ford stock fell below GM for the first time on day 56

This code finds the location of the last 1 in the array regarding the days when Ford stock closed higher than GM, determining the day when GM stock closed higher than Ford and never fell back below, then prints.

```
a5=find(fordogm,1,'last');
fprintf("The GM stock closed higher than Ford and never fell back on day %i",a5+1)
```

        The GM stock closed higher than Ford and never fell back on day 146