matplotlib-customising-grpahs-workbook-answers

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1 MATPLOTLIB CUSTOMISING GRAPHS WORKBOOK ANSWERS

Remember, there are different ways to write code to get the same answer, so your answer can be correct and different to the answer example!

If you feel stuck and want some in person help, then have a look at the events page to join in a workshop https://swamphen.co.uk/events.

In [ ]:
```
# import matplotlib as plt
import matplotlib.pyplot as plt
```

1.0.1 We are going to re-vist some of the graphs from the previous workbook and add information to them to make them more useful!

In [ ]:
```
# create a list of numbers 1-10 and produce a line plot
# add a red * to mark each data point
number = list(range(1, 11))
print(number)

plt.plot(number, 'r*')
```

In [ ]:
```
# create a list of the even numbers between 1 and 20 and produce a line graph
# plot these as green dots joined by a dotted line
even = list(range(2,21,2))
print(even)
plt.plot(even, 'go-')
```

1.0.2 look at the last 2 graphs and that if the x axis is not specified it is assumed to be th

1.0.3 index number of the point plotted on the y axis.

1.0.4 So, plotting 2 different lists of 10 numbers each gives the same x axis

In [ ]:
```
# create a list of strings with your favourite book title and plot as a line graph
# with a black dashed line of width 6 and square markers
book = ['the', 'scarlatti', 'inheretance']
plt.plot(book, 'k--s', linewidth = 6)
```

```
In [ ]: # then increase the size of the marker to 15 so they can be seen with the thicker line
        plt.plot(book, 'k--s', linewidth = 6, markersize = 15)

In [ ]: # now represent your book data as a histogram with green bars
        plt.hist(book, color = 'g')

In [ ]: # copy and paste the following data
        # this is the darwin data set used in the course 'using lists on real data'
        darwin = [49.0, -67.0, 8.0, 16.0, 6.0, 23.0, 28.0, 41.0, 14.0, 29.0, 56.0, 24.0, 75.0,

In [ ]: # create a suitable graph to represent this data, including axis labels
        # remember the values represent the height difference between cross-fertilised
        # and self-fertilised plants in units of 0.125 inches
        plt.plot(darwin, 'g.')
        plt.xlabel('sample number')
        plt.ylabel('height difference (0.125 inches)')

In [ ]: # is a line graph a good representation of this data?

        # no, as there is no link between the data points

In [ ]: # copy and paste the following data
        state = [0,1,1,0,0,0,1,1,1,1,0,0,0,0,0,0,1,1,1,1,1,0]

In [ ]: # this is a section of data from a motion sensor taken at second intervals starting at
        # 0 = no motion, 1 = motion
        # produce a suitable fully labelled graph to represent this data
        plt.plot(state, 'b.-')
        plt.xlabel('time(s)')
        plt.ylabel('state')

In [ ]: # put a label on this graph with a green arrow pointing to the first time motion is de
        plt.plot(state, 'b.-')
        plt.xlabel('time(s)')
        plt.ylabel('state')
        plt.annotate('first motion', xy = (1,1), xytext = (3,0.8),
                     arrowprops=dict(facecolor = 'green'))
```