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# === lineConfiguration.ipynb ===

#%%
%matplotlib notebook
#get_ipython().run_line_magic('matplotlib', 'notebook')


#%%
# Dependencies
import matplotlib.pyplot as plt
import numpy as np


#%%
# Set x axis and variables
x_axis = np.arange(0, 10, 0.1)
sin = np.sin(x_axis)
cos = np.cos(x_axis)


#%%
# ------------------------------------------------------------------------------
# The .hlines() method takes in three parameters:
# - the Y value across which the line will be drawn
# - the X value where the line will start
# - the X value where the line will end
#
# The `alpha=` keyword accepts a number between 0 and 1
# ------------------------------------------------------------------------------

# Draw a horizontal line with 0.25 transparency
plt.hlines(0, 0, 10, alpha=0.25)


#%%
# ------------------------------------------------------------------------------
# `pyplot.plot` returns a list of the lines that were added to the plot.
# This bit of code is using argument unpacking to select only the first
# line from that list of lines. Thus calling the `sine_handle` is a
# reference to the lines object. ** Note the commma after the handle **
#
# `plt.plot()` can take in more parameters than just the X and Y values
# for the line being charted. These are optional arguments
# ------------------------------------------------------------------------------

# Assign plots to tuples that stores result of plot

# Each point on the sine chart is marked by a blue circle ( marker='o')
sine_handle, = plt.plot(x_axis, sin, marker ='o', color='blue', label="Sine")

# Each point on the cosine chart is marked by a red triangle ( marker = '^')
cosine_handle, = plt.plot(x_axis, cos, marker='^', color='red', label="Cosine")


#%%
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# ------------------------------------------------------------------------
# The `plt.legend()` method allows the user to create a legend for their chart
# The `loc` argument is used to set the location of the legend on the chart
# ------------------------------------------------------------------------

# Adds a legend and sets its location to the lower right
plt.legend(loc="lower right")


#%%
# `plt.savefig()` saves a version of the chart to an external file
# Saves an image of our chart so that we can view it in a folder
plt.savefig("../Images/lineConfig.png")
plt.show()
```