In [1]:
```
import matplotlib.pyplot as plt
import numpy as np
```

In [2]:
```
# histrogram
```

In [5]:
```
data = np.random.normal(100,15,1000)
data
```

Out[5]:
```
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       112.4644526 , 122.45127389,  96.14184556, 116.55816161])
```
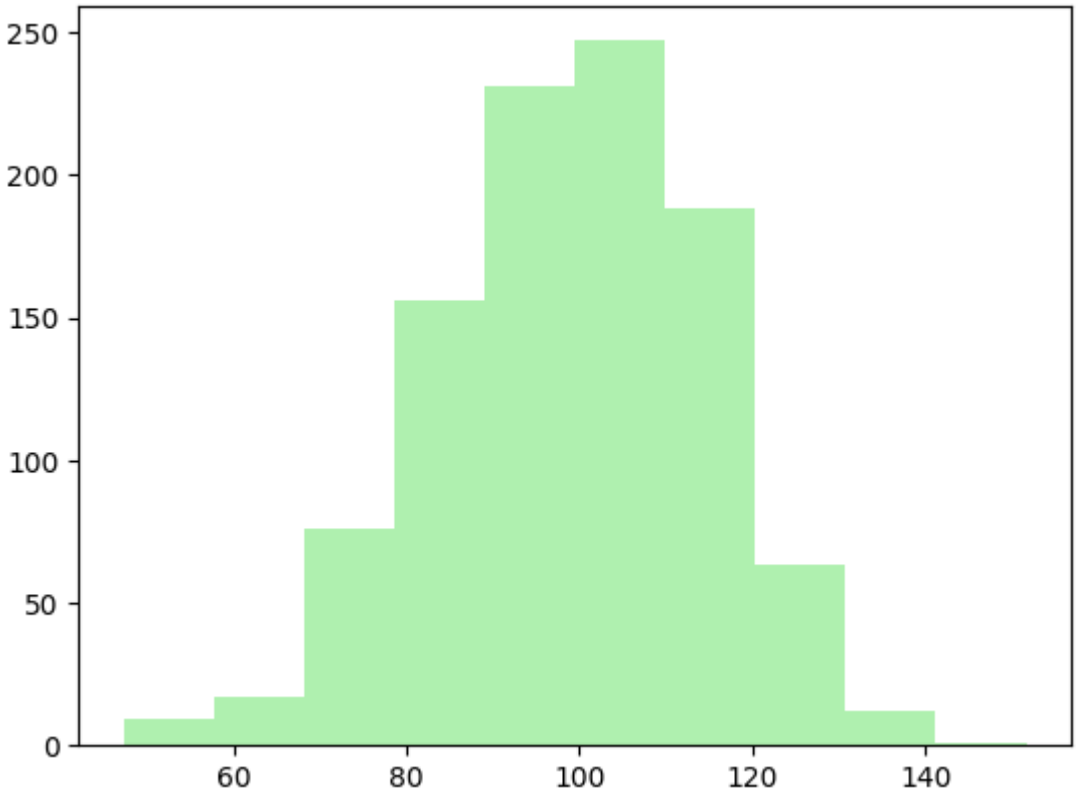

In [9]:
```
plt.hist(data,bins=10,color="lightgreen", alpha=0.7)

plt.show()
```



In [10]:
```
import pandas as pd
```

In [11]:
```
# Time Series Plot
dates = pd.date_range("2025-09-06",freq='D',periods=365)
dates
```

Out[11]:
```
DatetimeIndex(['2025-09-06', '2025-09-07', '2025-09-08', '2025-09-09',
               '2025-09-10', '2025-09-11', '2025-09-12', '2025-09-13',
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               ...
               '2026-08-27', '2026-08-28', '2026-08-29', '2026-08-30',
               '2026-08-31', '2026-09-01', '2026-09-02', '2026-09-03',
               '2026-09-04', '2026-09-05'],
              dtype='datetime64[ns]', length=365, freq='D')
```

In [12]:
```
np.random.seed(42)
```

In [13]:
```
values = np.cumsum(np.random.randn(365)) + 100
values
```

Out[13]:
```
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```

In [15]:
```
trends = np.linspace(0,20,365)
trends
```

Out[15]:
```
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```
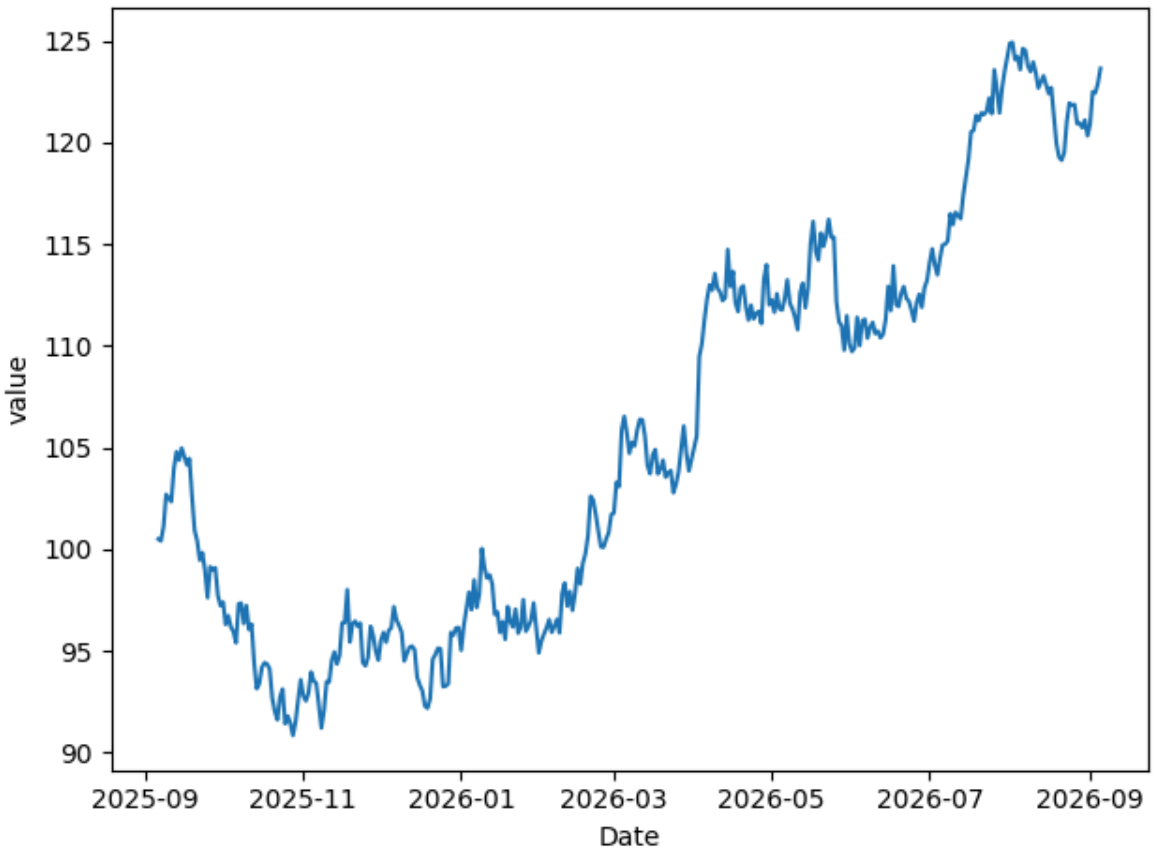
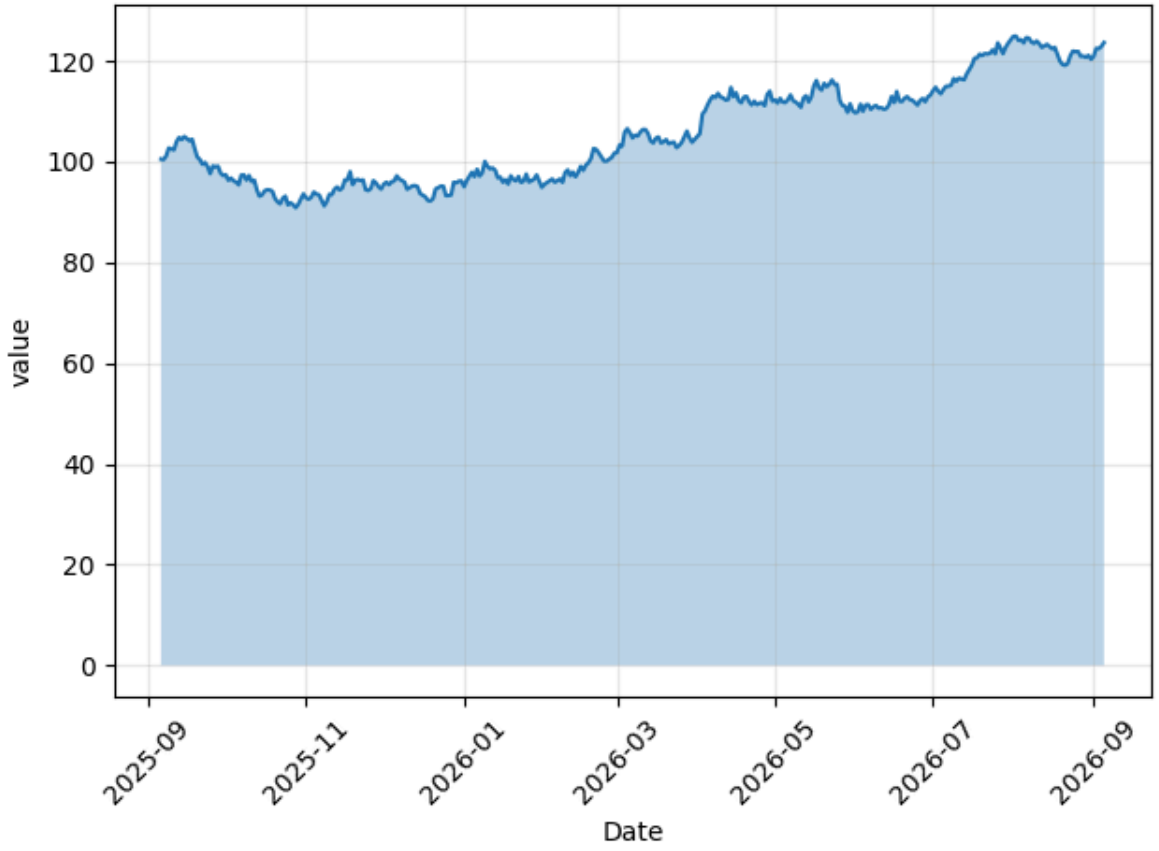

In [18]:
```
time_series = values + trends

plt.plot(dates,time_series, linewidth= 1.5)
#plt.fill_between(dates,time_series, alpha= 0.3)
plt.xlabel('Date')
plt.ylabel("value")
plt.tight_layout()
plt.show()
```

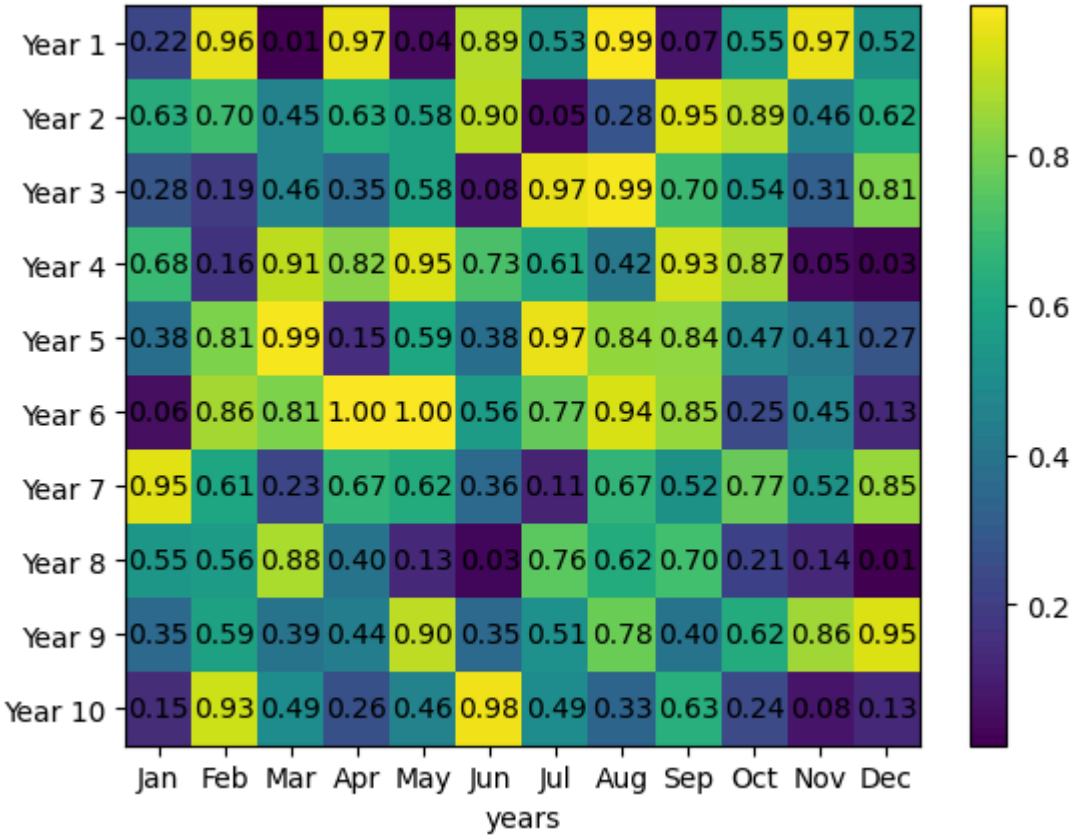


In [28]:
```
time_series = values + trends

plt.plot(dates,time_series, linewidth= 1.5)
plt.fill_between(dates,time_series, alpha= 0.3)
plt.xlabel('Date')
plt.ylabel("value")
plt.xticks(rotation=45)
plt.grid(True,alpha=0.3)
plt.tight_layout()
plt.show()
```

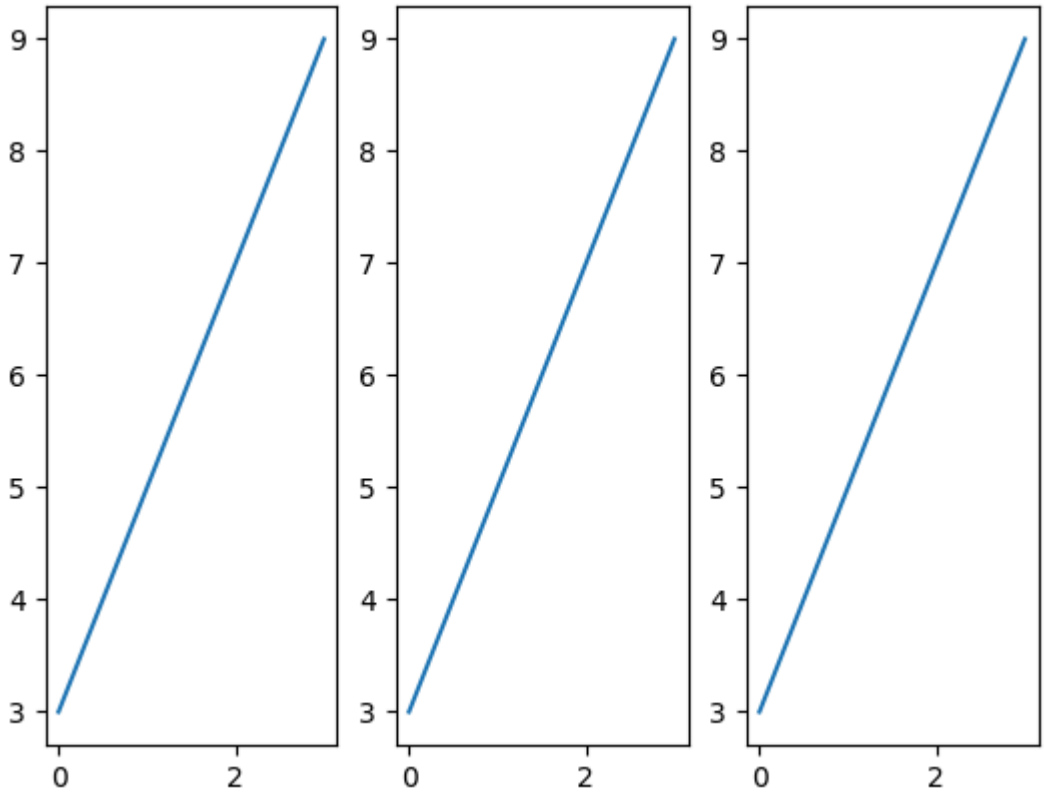


In [30]:
```
# Heatmap

data = np.random.rand(10,12)
months = ['Jan','Feb','Mar','Apr','May','Jun','Jul','Aug','Sep','Oct','Nov','Dec
years = [f'Year { i}'for i in range(1,11)]
```

In [41]:
```
im = plt.imshow(data,aspect='auto')
plt.colorbar(im)
plt.xticks(range(12),months)
plt.yticks(range(10),years)
plt.xlabel("Months")
plt.xlabel("years")

for i in range(10):
    for j in range(12):
        text= plt.text(j,i,f'{data[i,j]:.2f}',ha="center",va="center",color="bla


plt.show()
```



In [46]:
```
# Subplot

z1 = np.array([0,1,2,3])
z2 = np.array([3,5,7,9])

plt.subplot(1,3,1)
plt.plot(z1,z2)

z3 = np.array([0,1,2,3])
z6 = np.array([3,5,7,9])

plt.subplot(1,3,2)
plt.plot(z3,z6)

z4 = np.array([0,1,2,3])
z5 = np.array([3,5,7,9])

plt.subplot(1,3,3)
plt.plot(z4,z5)
plt.show()
```



In [ ]: