```
 1 import matplotlib.pyplot as plt
 2 import pandas as pd
 3 import xlrd
 4 import seaborn as sns
 5 import numpy as np
 6
 7 # ----------------------------------------------------------------------
 8 # Step 1: Import the the Data_Set using Pandas (Data_Set_3.csv)
 9
10 us_marriage_divorce_data = pd.read_csv('Data_Set_3.csv')
11 # ----------------------------------------------------------------------
12 # Step 2: Extract each variable into separate dummy variables
13
14 years = us_marriage_divorce_data['Year'].values
15 marriages_per_capita = us_marriage_divorce_data['Marriages_per_1000'].values
16 marriages_per_capita_cor = marriages_per_capita[~np.isnan(marriages_per_capita)]
17
18 divorces_per_capita = us_marriage_divorce_data['Divorces_per_1000'].values
19 divorces_per_capita_cor = divorces_per_capita[~np.isnan(divorces_per_capita)]
20
21 marriages = us_marriage_divorce_data['Marriages'].values
22 marriages_cor = marriages[~np.isnan(marriages)]
23
24 divorces = us_marriage_divorce_data['Divorces'].values
25 divorces_cor = divorces [~np.isnan(divorces )]
26
27 population = us_marriage_divorce_data['Population'].values
28 population_cor = population [~np.isnan(population )]
29 # ----------------------------------------------------------------------
30 # Step 3: Create a line plot showing the number of marriages and divorces per capita in the U.S. betwee
31
32 plt.figure(1)
33 plt.plot(years,marriages_per_capita)
34 # ----------------------------------------------------------------------
35 # Step 4: Label both of the lines and show the legend.
```

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36 #Comment :Don't forget to label your axes!
37
38 plt.figure(2)
39 plt.plot(years,marriages_per_capita)
40 plt.xlabel('Years')
41 plt.ylabel('Marriage')
42 plt.title('Marriage per capita')
43
44 # --------------------------------------------------------------------
45 # Step 5: Label both of the lines and show the legend.
46
47 plt.figure(3)
48 plt.plot(years,divorces_per_capita)
49 plt.xlabel('Years')
50 plt.ylabel('Divorce')
51 plt.title('Divorce per capita')
52
53 # --------------------------------------------------------------------
54 # Step 6: Compare marriage and divorce over time. Show the legends
55
56 fig, ax = plt.subplots()
57 plt.figure(4)
58 ax.plot(years,marriages_per_capita, label='marriages_per_capita')
59 ax.plot( years,divorces_per_capita, label='marriages_per_capita')
60 plt.legend(loc='lower right')
61 # --------------------------------------------------------------------
62 # Step 7: Estimate the distribution of Marriages and Divorces over time
63
64 fig, ax = plt.subplots()
65 plt.figure(5)
66 ax.hist(divorces_per_capita_cor, bins=10)
67
68
69 fig, ax = plt.subplots()
70 plt.figure(6)
```

```
71 ax.hist(marriages_per_capita_cor, bins=10)
72 # ----------------------------------------------------------------------
73 # Step 7: Find the relationship between the Marriages and Divorces over time with population size
74
75 fig=plt.figure(7)
76 plt.plot(population, marriages)
77
78 fig=plt.figure(8)
79 plt.scatter(years, marriages_per_capita, s=population/1000000)
80
81
82 fig=plt.figure(9)
83 plt.plot(population, divorces)
84
85 fig=plt.figure(10)
86 plt.scatter(years, divorces_per_capita, s=population/1000000)
87 plt.show()
88
89
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```