**AI**

**LAB EXAM**

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Q1 Implement CSP in a way that it assign colors to each region, so that no neighbouring regions have same color.

**CODE:**

colors=["green","red","yellow"]

states=["WA","NT","SA","Q","NSW","V"]

def csp():

for green in colors:

csp.add("WA","T")

for red in colors:

csp.add("NT","SA")

for yellow in colors:

csp.add("Q","NSW")

for blue in colors:

csp.add("NSW","V")

print(colors)

**OUTPUT:**  


Q2 Write a python program to implement linear regression

**CODE:**

import numpy as np

import matplotlib.pyplot as plt

def estimate\_coef(x, y):

n = np.size(x)

m\_x = np.mean(x)

m\_y = np.mean(y)

SS\_xy = np.sum(y \* x) - n \* m\_y \* m\_x

SS\_xx = np.sum(x \* x) - n \* m\_x \* m\_x

b1 = SS\_xy / SS\_xx

b0 = m\_y - b1 \* m\_x

return (b0, b1)

def plot\_regression\_line(x, y, b):

plt.scatter(x, y, color="m", marker="o", s=30)

y\_pred = b[0] + b[1] \* x

plt.plot(x, y\_pred, color="g")

plt.xlabel('x')

plt.xlabel('y')

plt.show()

def main():

x = np.array([5, 7, 8, 7, 2, 17, 2, 9, 4, 11, 12, 9, 6])

y = np.array([99, 86, 87, 88, 111, 86, 103, 87, 94, 78, 77, 85, 86])

b = estimate\_coef(x, y)

print("Estimated coeefficient:\nb\_0 = {}\nb\_1 = {}".format(b[0], b[1]))

plot\_regression\_line(x, y, b)

if \_\_name\_\_ == "\_\_main\_\_":

main()

**OUTPUT:**



