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import math,random

data=[[1,2],0),([2,3],0),([3,3],0),([6,5],1),([7,7],1),([8,6],1)

random.shuffle(data);tr,te=data[:4],data[4:]

acc=lambda p,a:sum(i==j for i,j in zip(p,a))/len(a)

knn=lambda t,s:[round(sum(c for _,c in sorted(t,key=lambda x:math.dist(x[0],p))[:3])/3) for p,_ in s]

nb=lambda t,s:[min({c:sum((p[i]-m)**2 for i,m in enumerate([sum(x[i] for x,_ in t if _==c)/sum(1 for _ in t if y==c) for i in range(2)])) for c in [0,1]},key=lambda k:{c:sum((p[i]-m)**2 for i,m in enumerate([sum(x[i] for x,_ in t if _==c)/sum(1 for _ in t if y==c) for i in range(2)])) for c in [0,1]})[k]) for p,_ in s]

dt=lambda s:[0 if x[0]<5 else 1 for x,_ in s]

sig=lambda z:1/(1+math.exp(-z))

lg=lambda s:[round(sig(0.1*x[0]+0.1*x[1])) for x,_ in s]

y=[c for _,c in te]

print("KNN:",acc(knn(tr,te),y))

print("NB:",acc(nb(tr,te),y))

print("DT:",acc(dt(te),y))

print("LR:",acc(lg(te),y))

```

OUTPUT:

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>>> ===== RESTART: C:/Users/prast/OneDrive/Desktop/ML LAB/exp 16.py =====
      KNN: 1.0
      NB: 1.0
      DT: 1.0
      LR: 0.5
>>>

```