import bayespy as bp

import numpy as np

import csv

from colorama import init

from colorama import Fore, Back, Style

init()

ageEnum = {'SuperSeniorCitizen':0, 'SeniorCitizen':1, 'MiddleAged':2, 'Youth':3, 'Teen':4}

genderEnum = {'Male':0, 'Female':1}

familyHistoryEnum = {'Yes':0, 'No':1}

dietEnum = {'High':0, 'Medium':1, 'Low':2}

lifeStyleEnum = {'Athlete':0, 'Active':1, 'Moderate':2, 'Sedetary':3}

cholesterolEnum = {'High':0, 'BorderLine':1, 'Normal':2}

heartDiseaseEnum = {'Yes':0, 'No':1}

with open('heart\_disease\_data.csv') as csvfile:

lines = csv.reader(csvfile)

dataset = list(lines)

data = []

for x in dataset:

data.append([ageEnum[x[0]],genderEnum[x[1]],familyHistoryEnum[x[2]],dietEnum[x[3]],lifeStyleEnum[x[4]],cholesterolEnum[x[5]],heartDiseaseEnum[x[6]]])

data = np.array(data)

N = len(data)

p\_age = bp.nodes.Dirichlet(1.0\*np.ones(5))

age = bp.nodes.Categorical(p\_age, plates=(N,))

age.observe(data[:,0])

p\_gender = bp.nodes.Dirichlet(1.0\*np.ones(2))

gender = bp.nodes.Categorical(p\_gender, plates=(N,))

gender.observe(data[:,1])

p\_familyhistory = bp.nodes.Dirichlet(1.0\*np.ones(2))

familyhistory = bp.nodes.Categorical(p\_familyhistory, plates=(N,))

familyhistory.observe(data[:,2])

p\_diet = bp.nodes.Dirichlet(1.0\*np.ones(3))

diet = bp.nodes.Categorical(p\_diet, plates=(N,))

diet.observe(data[:,3])

p\_lifestyle = bp.nodes.Dirichlet(1.0\*np.ones(4))

lifestyle = bp.nodes.Categorical(p\_lifestyle, plates=(N,))

lifestyle.observe(data[:,4])

p\_cholesterol = bp.nodes.Dirichlet(1.0\*np.ones(3))

cholesterol = bp.nodes.Categorical(p\_cholesterol, plates=(N,))

cholesterol.observe(data[:,5])

p\_heartdisease = bp.nodes.Dirichlet(np.ones(2), plates=(5, 2, 2, 3, 4, 3))

heartdisease = bp.nodes.MultiMixture([age, gender, familyhistory, diet, lifestyle, cholesterol], bp.nodes.Categorical, p\_heartdisease)

heartdisease.observe(data[:,6])

p\_heartdisease.update()

# Interactive Test

m = 0

while m == 0:

print("\n")

res = bp.nodes.MultiMixture([int(input('Enter Age: ' + str(ageEnum))), int(input('Enter Gender: ' + str(genderEnum))), int(input('Enter FamilyHistory: ' + str(familyHistoryEnum))), int(input('Enter dietEnum: ' + str(dietEnum))), int(input('Enter LifeStyle: ' + str(lifeStyleEnum))), int(input('Enter Cholesterol: ' + str(cholesterolEnum)))], bp.nodes.Categorical, p\_heartdisease).get\_moments()[0][heartDiseaseEnum['Yes']]

print("Probability(HeartDisease) = " + str(res))

#print(Style.RESET\_ALL)

m = int(input("Enter for Continue:0, Exit :1 "))