#this assignment is the first assignment of a class I took from the cognitive science department ("introduction to probabilistic programming"), in this class, probabilistic programming and some algorithms (eg Bayesian networks, HMM, etc.) were explained using webppl, a js based language.

#HOMEWORK 1

2.11.2020

### Question 1:

Trying to apply probabilities and making if sentence to find prob. after new information

~~~~

var y = function(){

var grey=flip (0.3)

var revol=grey ? flip(0.9) : flip(0.2)

var hair=grey ? flip(0.5): flip (0.05)

if ((revol == true) && (hair == true))

return true

else return false

}

viz(repeat(100,y))

~~~~

### Question 2.a:

Trying to apply probabilities to the diseases and making if sentence to find prob. of the desired probabilities that are depended to pre-conditions

~~~~

var x = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

if ((dyspnea && smoke) == true)

return (LungCancer)

else return false}

viz(repeat(100,x))

var a = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

if ((dyspnea && smoke) == true)

return bronshit

else return false

}

viz(repeat(100,a))

var z = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

if ((dyspnea && smoke) == true)

return tuberclos

else return false

}

viz(repeat(100,z))

~~~~

### Question 2.b:

Trying to apply probabilities to the diseases and making if sentence to find prob. of the desired probabilities that are NOT depended to pre-conditions:

~~~~

var x = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

return Xrayabnormal }

viz(repeat(100,x))

~~~~

### Question 2.b:

Trying to apply probabilities to the diseases and making if sentence to find prob. of the desired probabilities that are depended to pre-conditions:

~~~~

var x = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

if ((visitasia==true) && (Xrayabnormal==true))

return (LungCancer)

else return false}

viz(repeat(100,x))

var a = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

if ((visitasia==true) && (Xrayabnormal==true))

return bronshit

else return false

}

viz(repeat(100,a))

var z = function() {

var smoke= flip(0.5)

var visitasia= flip(0.01)

var bronshit= smoke ? flip(0.6) : flip (0.3)

var LungCancer = smoke ? flip (0.1) : flip(0.01)

var tuberclos= visitasia ? flip (0.05) : flip (0.01)

var Xrayabnormal = (tuberclos || LungCancer) ? flip(0.98) : flip(0.05)

var dyspnea = (tuberclos || LungCancer) ? flip (0.7) : ((bronshit) ? flip(0.8) : flip (0.1))

if ((visitasia==true) && (Xrayabnormal==true))

return tuberclos

else return false

}

viz(repeat(100,z))

~~~~

