R Program to Run RtoWINBUGS – This version reads the data from a text file on disk and Runs the Logit Model

# Attempt to Run simple Logit Copying Ernesto’s Code

library(arm)
setwd("C:/calvo")

# Read in data from STATA output

cx.file <- "c:/calvo/h106_data.txt"

# X[,1] = 1 if bush vote >= 50%
# X[,2] = 1 if Gore vote >= 50%
# X[,3] = Bush Percentage in CD
# X[,4] = Gore Percentage in CD
# X[,5] = Black Percentage in CD
# X[,6] = 1 if Southern State (11 states of Confederacy + OK + KY
# X[,7] = Hispanic Percentage in CD
# X[,8] = Median Family Income (in thousands) in CD
# X[,9] = Percent Owner-Occupied Housing
# X[,10] = DW-NOMINATE 1st Dimension
# X[,11] = DW-NOMINATE 2nd Dimension

# Standard fields and their widths
rcx.fields <- c("ybush", "ygore", "bushvote", "gorevote", "black", "south", "hispanic", "income", "owner", "dwnom1n", "dwnom2n")

rcx.fieldWidths <- c(9, 11, 10, 10, 11, 11, 11, 11, 11, 11, 11)

# Input File

TT <- read.fwf(file=rcx.file, widths=rcx.fieldWidths, as.is=TRUE, col.names=rcx.fields)

# Input File

nrow <- length(TT[,1])
ncol <- length(TT[1,])
data.inits = list(beta=runif(K,-2,2), delta=runif(N,-1,1))
data.parameters = c("beta")

wide.sim = bugs(data.data, data.inits,
data.parameters,"h106_logit_RtoWINBUGS_model.txt", n.chains=4,
n.thin=1, n.burnin=15000,n.iter=40000, debug=T)
detach(data)

WINBUGS MODEL

model
{
  # X[,1] = 1 if bush vote >= 50%
  # X[,2] = 1 if Gore vote >= 50%
  # X[,3] = Bush Percentage in CD
  # X[,4] = Gore Percentage in CD
  # X[,5] = Black Percentage in CD
  # X[,6] = 1 if Southern State (11 states of Confederacy + OK + KY
  # X[,7] = Hispanic Percentage in CD
  # X[,8] = Median Family Income (in thousands) in CD
  # X[,9] = Percent Owner-Occupied Housing
  # X[,10] = DW-NOMINATE 1st Dimension
  # X[,11] = DW-NOMINATE 2nd Dimension
  
  # PRIORS
  
  for (k in 1 : K) { beta[k] ~ dnorm(0,0.001)} # vague priors
  
  # LIKELIHOOD
  
  for (i in 1 : N) # loop over congressional districts
  {
    
    V[i,1] ~ dbern(p[i]);
    logit(p[i]) <- delta[i]
    delta[i] ~ dnorm(mu[i], 1.0)I(-4, 4)
    mu[i] <-
    
    # Borrowed From Simon Jackman
    
    llh[i] <- V[i,1]*log(p[i]) + (1-V[i,1])*log(1-p[i]);
  }
  sumllh <- sum(llh[]);
}


Log File From R2WINBUGS

display(log)
check(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/h106_logit_RtoWINBUGS_model.txt)
model is syntactically correct
data(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/data.txt)
data loaded
compile(4)
model compiled
inits(1,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits1.txt)
chain initialized but other chain(s) contain uninitialized variables
inits(2,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits2.txt)
chain initialized but other chain(s) contain uninitialized variables
inits(3,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits3.txt)
chain initialized but other chain(s) contain uninitialized variables
inits(4,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits4.txt)
model is initialized
gen.inits()
command #Bugs:gen.inits cannot be executed (is greyed out)
thin.updater(1)
update(15000)
set(beta)
set(deviance)
dic.set()
update(25000)
coda(*,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/coda)
stats(*)

Node statistics

<table>
<thead>
<tr>
<th>node</th>
<th>mean</th>
<th>sd</th>
<th>MC error</th>
<th>2.5%</th>
<th>median</th>
<th>97.5%</th>
<th>start</th>
<th>sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>beta1</td>
<td>0.9367</td>
<td>0.9276</td>
<td>0.007936</td>
<td>-0.8487</td>
<td>0.9292</td>
<td>2.786</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta2</td>
<td>-0.009257</td>
<td>0.007399</td>
<td>-6.201E-5</td>
<td>-0.02351</td>
<td>-0.009333</td>
<td>0.005378</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta3</td>
<td>0.3518</td>
<td>0.2819</td>
<td>0.002628</td>
<td>-0.2024</td>
<td>0.3525</td>
<td>0.9036</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta4</td>
<td>-0.01042</td>
<td>0.007947</td>
<td>7.365E-5</td>
<td>-0.02587</td>
<td>-0.01048</td>
<td>0.005365</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta5</td>
<td>-0.03526</td>
<td>0.01565</td>
<td>1.473E-4</td>
<td>-0.06583</td>
<td>-0.03528</td>
<td>-0.004603</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta6</td>
<td>0.001688</td>
<td>0.01218</td>
<td>1.024E-4</td>
<td>-0.02245</td>
<td>0.001803</td>
<td>0.02507</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta7</td>
<td>3.045</td>
<td>0.2649</td>
<td>0.002463</td>
<td>2.517</td>
<td>3.048</td>
<td>3.556</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>beta8</td>
<td>0.9247</td>
<td>0.2845</td>
<td>0.002645</td>
<td>0.3714</td>
<td>0.9249</td>
<td>1.486</td>
<td>15001</td>
<td>100000</td>
</tr>
<tr>
<td>deviance</td>
<td>320.0</td>
<td>12.08</td>
<td>0.004665</td>
<td>296.9</td>
<td>319.7</td>
<td>344.2</td>
<td>15001</td>
<td>100000</td>
</tr>
</tbody>
</table>

dic.stats()

DIC
Dbar = post.mean of -2logL; Dhat = -2LogL at post.mean of stochastic nodes

<table>
<thead>
<tr>
<th>Dbar</th>
<th>Dhat</th>
<th>pD</th>
<th>DIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>292.979</td>
<td>238.029</td>
<td>54.951</td>
<td>347.930</td>
</tr>
<tr>
<td>27.012</td>
<td>23.414</td>
<td>3.597</td>
<td>30.609</td>
</tr>
<tr>
<td>319.991</td>
<td>261.443</td>
<td>58.548</td>
<td>378.539</td>
</tr>
</tbody>
</table>

history(*,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/history.odc)

History
save(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/log.odc)
save(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/log.txt)

**Output Done While WINBUGS is Still Running**