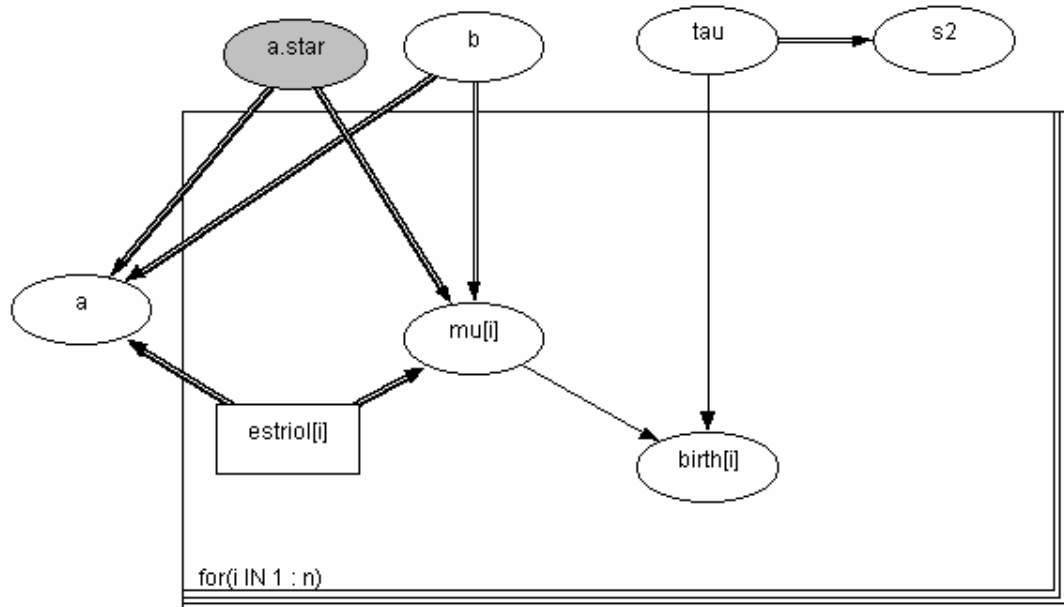


ΠΑΡΑΡΤΗΜΑ Β (2ου ΜΑΘΗΜΑΤΟΣ): ΠΑΡΑΔΕΙΓΜΑΤΑ WINBUGS

1 EXAMPLE 1: BIRTHWEIGHT & ESTRIOLE LEVEL

```
{
#      definition of likelihood function
#
  for (i in 1:n) {
    birth[i]~dnorm( mu[i], tau ); # random component
    mu[i]<-a.star+b*(estriol[i]-mean(estriol[])); # systematic component
                                                #      & link function
  }
#      prior distributions
#
  a.star~dnorm( 0, 1.0E-04 ); # normal prior for a
  b~dnorm( 0, 1.0E-04 ); # normal prior for b
  tau~dgamma( 1.0E-04 , 1.0E-04 ); # gamma prior for precision
  s2<-1/tau;
  a<-a.star-b*mean(estriol[]);
}
list(a.star=0.0, b=0.0, tau=1.0) # initial values

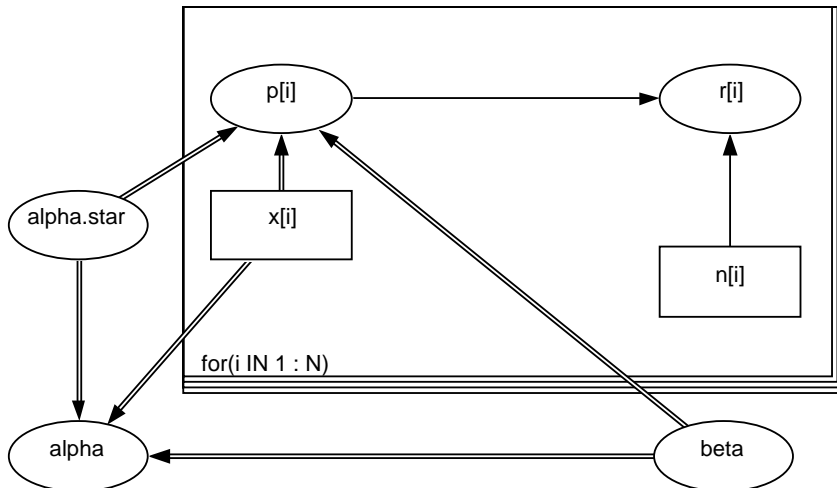
# data
list(n=31)
estriol[] birth[]
7      25
9      25
9      25
12     27
14     27
16     27
16     24
14     30
16     30
16     31
17     30
19     31
21     30
24     28
15     32
16     32
17     32
25     32
27     34
15     34
15     34
15     35
16     35
19     34
18     35
17     36
18     37
20     38
22     40
25     39
24     43
END
```



2 Example 2: BEETLES DATASET

```
model beetles;
{
  for (i in 1:N) {
    r[i] ~ dbin(p[i], n[i]);
    logit(p[i]) <- alpha.star + beta*(x[i]-mean(x[]));
    r.hat[i] <- p[i]*n[i]; # fitted values
  }
  alpha.star ~ dnorm(0.0, 1.0E-3);
  beta ~ dnorm(0.0, 1.0E-3);
  alpha <- alpha.star - beta*mean(x[]);
  odds.ratio <- exp( beta )
}
```

```
list(x = c(1.6907, 1.7242, 1.7552, 1.7842, 1.8113, 1.8369, 1.8610, 1.8839) n = c(59, 60, 62, 56, 63, 59, 62, 60) r = c(6, 13, 18, 28,
52, 53, 61, 60), N=8) #data
list(alpha.star=0, beta=0) #initial values
```



3 EXAMPLE 3: ΧΡΗΣΗ ΝΕΑΣ ΠΙΘΑΝΟΦΑΝΕΙΑΣ (ΓΕΝΙΚΕΥΜΕΝΗ POISSON)

```
model
{
  C<-10000
  for (i in 1:9) {
    zeros[i]<-0
    zeros[i]~dpois( lambda[i] )
    lambda[i]<- C - loglike[i]
    loglike[i] <- log(zeta)+(y[i]-1)* log(zeta+omega*y[i])-(zeta+omega*y[i])-logfact(y[i])
  }
  zeta~dgamma(0.001, 0.001)
  omega~dbeta(1,1)

  mean<-zeta/(1-omega)
  var<-zeta/pow(1-omega,3)
  DI<-1/((1-omega)*(1-omega))
}
```

DATA

```
list( y=c(24, 13, 7, 18, 2, 10, 3, 9, 16) )
```

INITS

```
list( zeta=1, omega=0.5 )
```

4 EXAMPLE 4: ΠΡΟΣΟΜΟΙΩΣΗ ΣΤΟ ΠΑΡΑΣΚΗΝΙΟ ΤΟΥ ΠΑΡΑΔΕΙΓΜΑΤΟΣ ESTRIOL

4.1 APXEIO script.odc

```
display('log')
check('c:/myfiles/courses/BUGS_course/01_presentations/Bugs_files/lec2/ex1_estriol_back/model.odc')
data('c:/myfiles/courses/BUGS_course/01_presentations/Bugs_files/lec2/ex1_estriol_back/data.odc')
data('c:/myfiles/courses/BUGS_course/01_presentations/Bugs_files/lec2/ex1_estriol_back/data2.odc')
compile(1)
inits(1, 'c:/myfiles/courses/BUGS_course/01_presentations/Bugs_files/lec2/ex1_estriol_back/inits.odc')

update(1000)
set(a)
set(b)
update(1000)
trace(*)
update(1000)
stats(*)
history(*)
density(*)
autoC(*)
quantiles(*)
dic.stats()
coda(*,output)
save('seedsLog')
```

4.2 APXEIO model.odc

```
{
#   definition of likelihood function
#
#   for (i in 1:n) {
#       birth[i]~dnorm( mu[i], tau ); # random component
#       mu[i]<-a.star+b*(estriol[i]-mean(estriol[])); # systematic component
#                                               # & link function
#   }
#   prior distributions
#
#   a.star~dnorm( 0, 1.0E-04 ); # normal prior for a
#   b~dnorm( 0, 1.0E-04 ); # normal prior for b
#   tau~dgamma( 1.0E-04 , 1.0E-04 ); # gamma prior for precision
#   s2<-1/tau;
#   a<-a.star-b*mean(estriol[]);
}
```

4.3 APXEIO data.odc

```
estriol[] birth[]
7      25
9      25
9      25
12     27
14     27
16     27
16     24
14     30
16     30
16     31
17     30
19     31
21     30
24     28
15     32
16     32
17     32
25     32
27     34
15     34
15     34
15     35
16     35
19     34
18     35
17     36
18     37
20     38
22     40
25     39
24     43
END
```

4.4 APXEIO data2.odc

```
list(n=31)
```

4.5 APXEIO inits.odc

```
list(a.star=0.0, b=0.0, tau=1.0) # initial values
```