```
// T48mixDesPoi.sce
// MIXTURE ESTIMATION (descriptive, Poisson)
// Experiments
// - change simulated parameters
// - change initial parameters
// ---------------------------------------------------------------------
exec("ScIntro.sce",-1),
getd(), mode(0)

nd=500;                                                          // 1
ni=1;                                 // weight for initial data    // 2
// PARAMETERS                                                    // 3
lamS=[.2 5 29];                       // component parametrs        // 4
nc=length(lamS);                      // number of components       // 5
alS=[.3 .3 .4];                       // parameters of pointer model // 6
                                                                 // 7
// SIMULATION                                                    // 8
for t=1:nd                                                       // 9
  jS=sampCat(alS);                    // pointer value              // 10
  cS(t)=jS;                           // stor pointer value         // 11
  y(t)=sampPoi(lamS(jS));             // output generation          // 12
end                                                              // 13
                                                                 // 14
```

```
// ESTIMATION                                                    // 15
// initialization                                                // 16
ka=[1 1 1]*ni;                          // initial counter      // 17
lamE=[1 10 20];                         // initial parameters   // 18
S=lamE.*ka;                             // statistics for given pE // 19
                                                                 // 20
// time loop                                                     // 21
for t=1:nd                                                       // 22
  for j=1:nc                                                     // 23
    q(j)=poiss(y(t),lamE(j));           // proximity            // 24
  end                                                            // 25
  w=q/sum(q);                           // weights              // 26
  wt(:,t)=w;                            // remember weights     // 27
  for j=1:nc                                                     // 28
    S(j)=S(j)+w(j)*y(t);                // update of            // 29
    ka(j)=ka(j)+w(j);                   //   statistics         // 30
    lamE(j)=S(j)/ka(j);                 // parameter estimates  // 31
    lamEt(t,j)=lamE(j);                 // remember             // 32
  end                                                            // 33
end                                                              // 34
                                                                 // 35
// RESULTS                                                       // 36
tx=['b';'r';'g'];                                                // 37
```

```
set(scf(1),'position',[600 10 600 800]) // evolution of par. est.       // 38
  title 'Evolution of the estimated parameters'                         // 39
for j=1:nc                                                              // 40
  subplot(3,1,j)                                                        // 41
  plot(lamEt,'-')                                                       // 42
  xlabel('component '+string(j))                                        // 43
end                                                                     // 44
                                                                        // 45
disp 'The final parmeter estimates are'                                 // 46
disp(lamE)                                                              // 47
                                                                        // 48
[nill,cp]=max(wt,'r');                  // accuracy of classification   // 49
disp 'Accuracy of classification'                                       // 50
ACC=acc(cS,cp)                                                          // 51
```

Description of the program

- Row 2 sets the strength of prior information (n_i is as if the number of prior data from which the information has been gained).
- Rows 4–6 define parameters of the task.
- Rows 8–13 perform simulation - generation from Poisson distribution of individual components.
- Rows 17–19 prepare initialization of the task

  - Row 19 computes the statistics to be in accord with the values of initial the parameters

- Rows 21–34 run the time loop.
  - Row 24 computes the proximities.
  - Rows 26–27 construct the component weights.
  - Rows 29–32 update the statistics and recompute the values of the point estimates pf the parameters.