24-12-20

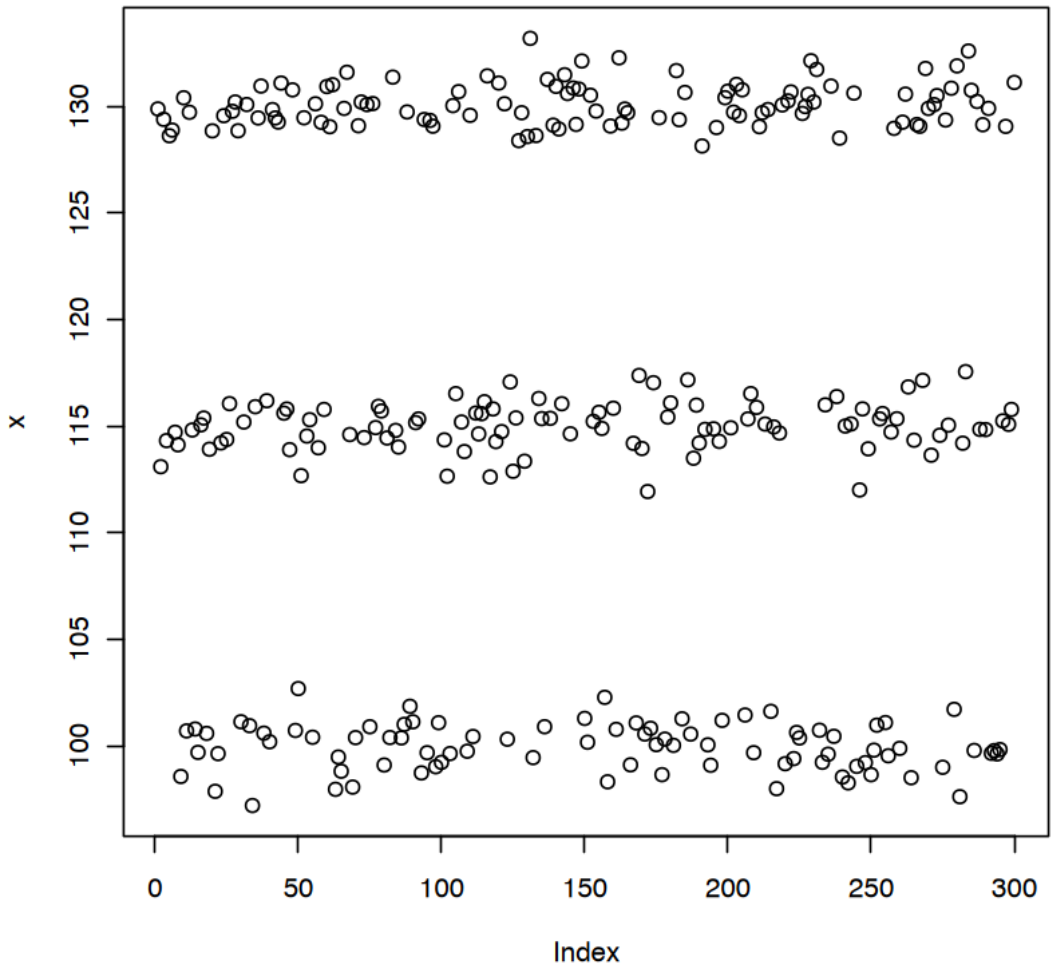
December 20, 2024

[11]:
```
n <- 300
x <- c()
mu_vec <- c(0,15,30) +100
for (i in 1:n) {

  sim = sample(1:3, 1)
  x[i] <- rnorm(1, mu_vec[sim], 1)

}

plot(x)
```



[25]:
```
rgumbel <- function(n)
{
  return(-log(-log(runif(n, 0, 1))))
}


### mcmc
mu_mcmc <- rnorm(3,0,2)
mu_mcmc
z_mcmc <- sample(1:3,n, replace=T)
pi_mcmc <- c(1/3,1/3,1/3)
for(i in 1:1)
{
```

```
  ### simulo zeta
  log_prob_non_norm <- c()

  log_prob_non_norm[1] <- log(pi_mcmc[1]) + dnorm(x[i], mu_mcmc[1], 1, log=T)
  log_prob_non_norm[2] <- log(pi_mcmc[2]) + dnorm(x[i], mu_mcmc[2], 1, log = T)
  log_prob_non_norm[3] <- log(pi_mcmc[3]) + dnorm(x[i], mu_mcmc[3], 1, log = T)

  #prob = exp(log_prob_non_norm) / sum(exp(log_prob_non_norm))

  #prob_2 = exp(log_prob_non_norm - log(sum(exp(log_prob_non_norm))))
  #c = max(log_prob_non_norm)

  #prob_3 <- exp(log_prob_non_norm - (c + log(sum(exp(log_prob_non_norm-c))) ))
  #print(prob_3)

  z_mcmc[i] = which.max(log_prob_non_norm + rgumbel(3))
  #ßz_mcmc[i] = sample(1:3, 1, prob = prob_3)



}
```

1. -0.25456018555621 2. 1.95109993722572 3. 0.57393765608394

```
[1] 2.438460e-124  1.000000e+00  1.166228e-77
```

[30]:
```
s_1 = runif(10,0,10)
s_2 <- runif(10, 0, 10)

coords = cbind(s_1,s_2)
dist = as.matrix(dist(coords))
dist
```

A matrix: 10 x 10 of type dbl

	1	2	3	4	5	6	7	
1	0.000000	1.469602	2.954812	4.041988	3.245549	3.935212	2.070203	
2	1.469602	0.000000	3.993539	5.477681	2.182342	5.373934	3.515683	
3	2.954812	3.993539	0.000000	4.052099	6.100445	2.561370	1.937901	
4	4.041988	5.477681	4.052099	0.000000	6.661569	1.943910	2.417225	
5	3.245549	2.182342	6.100445	6.661569	0.000000	7.072881	5.237609	
6	3.935212	5.373934	2.561370	1.943910	7.072881	0.000000	1.865035	
7	2.070203	3.515683	1.937901	2.417225	5.237609	1.865035	0.000000	
8	6.635561	7.834859	3.871048	5.314563	9.872602	3.493160	4.844118	
9	5.141500	5.845411	7.183162	4.280489	5.473936	6.031817	5.266439	
10	4.620825	5.635784	6.168969	2.887278	5.813175	4.718262	4.232023	

[28]:
```
coords
```

s_1	s_2
9.9613041	9.64814950
5.5811955	2.27508323
5.1289582	9.60013312
7.1104846	2.99204718
2.2254824	7.75294237
1.9056562	1.82756740
5.3623012	9.13550004
1.8497864	3.88987119
6.1691086	5.34753424
0.3426076	8.36274141
5.2862326	1.95951928
7.8064966	9.82214498
7.7211069	9.39276333
5.9076135	7.53791941
3.7172122	9.29925240
3.5079245	7.72370062
2.2101343	4.54276720
9.5996613	5.36452899
7.1689920	3.98865264
6.5569344	0.50301261
9.1516077	1.60449562
5.9576888	9.03427989
0.0545593	1.01255187
6.6138108	7.41411947
8.8885429	0.04495449
2.6515932	8.49869333
7.0823780	0.42796235
9.2977731	6.35516302
4.2682963	8.30642607
8.0552763	0.99851720
...	...
6.28976213	1.001990
2.19516466	6.514714
7.51072092	3.820690
2.94221824	8.304044
0.62451377	7.832030
7.50320387	8.390007
0.40388339	4.194671
8.42073914	6.046306
2.80563347	9.996020
8.75476230	5.382752
0.70001498	2.225464
3.01566351	5.430700
4.26946378	5.752431
8.87857596	6.969928
0.73617717	8.746675
0.01365849	2.605635
2.40845966	2.054206
9.10664389	7.370329
4.65929205	2.501159
6.72692143	4.278814
1.92438004	1.924407

A matrix: 100 x 2 of type dbl