Notes for laboratory session 1

EXERCISES A.

Write down an appropriate model and corresponding probability function, likelihood function and log likelihood for each of the following situations.

1. k events are observed in n subjects
2. A single measurement of systolic blood pressure (mmHg) x was recorded on an individual, and systolic blood pressure is known to have a variance of 5 $(\text{mmHg})^2$ in the population to which the individual belongs.
3. Total cholesterol (nmol/l) was measured once on each of n individuals, and total cholesterol is known to have variance 4 $(\text{nmol/l})^2$ in the population to which the individual belong.

EXERCISES B.

Write down the log-likelihood, derive the MLE of the model parameter of interest, and sketch the log likelihood function for the following sets of data.

1. Two events are observed in six subjects.
2. The following cholesterol measurements (nmol/l) are made on 10 individuals:
   6.0 , 6.2, 6.8, 5.3, 5.9, 6.1, 6.0, 7.0, 5.9, 6.3. Total cholesterol is known to have variance 4 $(\text{nmol/l})^2$ in the population to which the individual belong.