Introduction to Insurance Mathematics (STK 3505/4505)
Exercises 7

Problem 1 As in Problem 2 of Exercises 5 let us cast a glance at the following Danish fire insurance data collected at Copenhagen Reinsurance in the period between 06/01/1990 and 06/15/1990:

Date	Loss in DKM
06/03/1990	2.475248
06/04/1990	1.815182
06/06/1990	1.495050
06/06/1990	2.042904
06/07/1990	1.070957
06/07/1990	1.237624
06/11/1990	2.062706
06/14/1990	1.017327
06/15/1990	1.650165
06/15/1990	15.284653

The fire losses in the table are based on millions in Danish Krone. Suppose that the dynamics of claim numbers $N(t)$ follows a renewal process. Approximate

$$Var\left[N(t)\right]$$

for $t = 5$ in years by exploiting asymptotic properties of renewal processes and by using the sample mean and variance of the above data as (rough) estimators for the mean and variance of inter-arrival times of the fire losses.

Problem 2 Based on the data of Problem 1 approximate

$$P(N(t) \geq 1050)$$

by means of the central limit theorem for renewal processes and compute the expected total claim amount for $t = 5$ years.