STATISTICS 3
WS 2017 (Mag. Thomas Forstner)

Course-Number: 366.542

3) Suppose someone performed 10 tests (e.g. tests of the association between a specific outcome and 10 different potential prognostic factors on the same data set) and obtained the p-values below:

   0.0140, 0.2960, 0.9530, 0.0031, 0.1050, 0.6410, 0.7810, 0.9010, 0.0053, 0.4500

   Use two appropriate methods to control for a global type I error of 5%.

4) Suppose that a researcher tests the association between 7 common diseases (e.g. diabetes, asthma, cancer, multiple sclerosis, thyroid disease, liver disease, arthritis) and 6 candidate "risk factors" (pisces zodiac sign, purple as favourite colour, born between 0:00 and 1:00, red hair, first-name begins with letter "C", both parents born in summer) based on a large cohort (n= 10.000). The researcher decides to use Chi-square tests to test each individual association.

   a) How many Chi-square tests has the researcher to perform?
   b) How many "significant" results only by chance will occur if for each test a type I error of 5% is used?
   c) Describe an appropriate method to control for type I inflation in this situation.