

Please solve the following exercises at home prior to the tutorial

Exercise

To secure our data against errors, we want to apply a Reed-Solomon Code. We use modulo 11, the message length is 4, the polynomial is evaluated at 6 positions (1, 2, ..., 6)

- Encode the message (1, 2, 0, 1)
- While reading an encoded message, a data loss (erasure) occurred, the received data are (4, 2, 1, ϵ , 4, 9). What message was originally sent? (Solution: (1, 2, 0, 1))
- While reading an encoded message we receive (4, 2, 1, 7, 4, 0). What message was originally sent?

Remark: Exercise c) requires you to perform many calculations, which results in plenty of potential for mistakes. For the best chance of success use the following suggestions:

- During calculations, reduce any numbers to the interval $[0;10]$ using modulo 11 as soon as possible. This avoids large numbers, and the exercise can be done without a calculator.
- Make a table for the multiplicative inverses for easy and fast look-up.
- In this exercise you must solve a linear system of equations (mod 11). This is the primary source of mistakes. If you do not get the original message at the end, plug in the solution in the original system to see if you miscalculated.