Preliminary problems. These problems should be completed before discussion on Friday.

(P1) Let $F_4 = \mathbb{Z}_2[z]/(z^2 + z + 1)$ as in Thursday’s lecture. Fill in the addition and multiplication tables for $F_4$, and verify that they coincide with those you found in discussion on Wednesday.

(P2) Find all irreducible polynomials in $\mathbb{Z}_2[z]$ of degree at most 3.