

Error Correcting Codes

Suppose we want to send a message, and there's a chance the transmission of the message will introduce errors. We want to send extra redundant information so the receiver of the message can detect and correct the errors. This is called an **error detecting** or **error correcting code**.

We'll only consider binary messages.

Example: 3x repetition code

Repeat each number in the message 3 times.

A code is a **linear code** if it can be represented as a linear transformation.

- 1 Is the 3x repetition code a linear code?
- 2 How many errors can it detect and correct?
- 3 How efficient is it?