

## Part 2: Explanation of your code

One approach to solve this problem is to use error-correcting codes. Error-correcting codes are a type of code that can be used to transmit a message over a noisy channel, such as a channel with a limited number of bits that can be transmitted, like in this case. An error-correcting code is a code that can correct errors in the transmitted message, so that the receiver can recover the original message even if the transmitted message is corrupted.

There are many different error-correcting codes that can be used for this problem. Some examples include Hamming codes, Reed-Solomon codes, and Low-Density Parity-Check (LDPC) codes, Arithmetic coding and many more. In this case, we can use a Hamming code, which is a type of error-correcting code that can correct single-bit errors in the transmitted message.

- To encode the correct answers to the exam using a Hamming code, we can follow these algorithm steps:
  1. Start
  2. Divide the 20-bit array into 5 groups of 3 bits each & 1 group of 5 bit.
  3. Create one range loop in which starting from 0, stopped after 15 bits of list and loop step of 3.
  4. Created 3 bit lists to find out max occurrence of binary digit.
  5. Compute the max occurrence of binary bit in among the 3 bits and return that binary bit as a single bit.
  6. Then send last 5 bit same as original one.
  7. So, total we compreed 20 bits into 10 bits.
  8. It ends with returning the code

- To decode the correct answers to the exam using a Hamming code, we can follow these algorithm steps:
  1. Start
  2. Create one range loop in which starting from 0, stopped after 15 bits of list and loop step of 3
  3. Write a If condition for the first bit that checks if it is 0 or not
  4. If it is zero then again iterate through the 3 length loop to store three 0s inside answer array.
  5. If it is not zero then goes to step 5.
  6. Write a If condition for the next bit that checks if it is 1 or not
  7. If it is 1 then again iterate through the 3 length loop to store three 1s inside answer array.
  8. Step 2 to 6 will repeat until 15 bits is calculated.
  9. Last 5 bit will decode as it is and appended it to an array.
  10. It will ends with the returning the answers.