IIT PALAKKAD

COMPUTER SCIENCE AND ENGINEERING
Indian Institute of Technology, Palakkad
CS4150: Computer Networks Lab
Lab 7 (Socket Programming and Hamming Codes)

29 Sep, 2019

Time: 60 hrs

1. Virtual network for this lab has 3 VMs namely **h1** (192.168.1.1) , **h2** (192.168.1.2), and **h3** (192.168.1.3).

   On machine **h1** write a program called `client` that takes two argument S and m; the first argument is a string, and the second argument is an integer. The program should output the binary (8-bit per character) of the string S. The program should then frame and code this data using a $(m+r, m)$ Hamming code (r should be the least possible for the given number of message bits m). Each Hamming code should be sent as a UDP packet to port X of **h2**, where $X \in [8560, 8570]$. **h2** will introduce a random 1-bit error in each Hamming code it receives and will then send the modified code to port Y of **h3**.

   On **h3**, write a program called `server` that accepts codes with 1-bit error sent by **h2**, corrects the error, assembles all the corrected codes together to obtain string S, prints S with a newline and waits for the next string. The division of marks for this lab is as follows.

   (a) Sending a binary string from **h1** and receiving the 1-bit error binary string at **h3**. [25]

   (b) Encoding and correcting errors using Hamming codes. [25]

   (c) Padding, pre-coding and framing. [25]

   (d) Encoding S as a binary character array at **h1** and recovering it at **h3**, printing S along with a new line at **h3** and waiting for the next string. [25]

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