2022 Digital IC Design Homework 3

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| NAME | | 洪緯宸 | | | | | |
| Student ID | | E14086020 | | | | | |
| **Simulation Result** | | | | | | | |
| Functional simulation | Pass (encoder) | | Pass (decoder) | Gate-level simulation | Pass (encoder) | | Pass (decoder) |
| (your pre-sim result) encoder/decoder  img0 | | | | (your post-sim result) encoder/decoder  img0 | | | |
| (your pre-sim result) encoder/decoder  Img1 | | | | (your post-sim result) encoder/decoder  Img1 | | | |
| (your pre-sim result) encoder/decoder  Img2 | | | | (your post-sim result) encoder/decoder  Img2 | | | |
| **Synthesis Result** | | | | **encoder** | | **Decoder** | |
| Total logic elements | | | | 21202 | | 81 | |
| Total memory bit | | | | 0 | | 0 | |
| Embedded multiplier 9-bit element | | | | 0 | | 0 | |
| Simulation time img0 | | | | 526950 | | 61590 | |
| Simulation time img1 | | | | 524760 | | 61620 | |
| Simulation time img2 | | | | 309060 | | 61590 | |
| (your flow summary) encoder | | | | (your flow summary) decoder | | | |
| **Description of your design** | | | | | | | |
| Encoder 在read state先把值全部存到reg裡，在進行解析，我在前面多加了8個element用來給一開始的search pointer，避免他指到負的，再來美輸出一個就把string\_buffer往後移len+1個直到結束  Decoder 則是在每一個clock都把buffer往後移一位，buff[0] 則是根據cnt是否等於code\_len來判斷是chardata 還是buff[code\_pos]，一直下去就會直到正確答案。 | | | | | | | |

*Scoring = (Total logic elements + total memory bit + 9\*embedded multiplier 9-bit element)*