硬體描述語言設計與模擬

Homework #2
Title :7seg display

班級：電子二 B

學號：B10713138

姓名：蔡尚哲

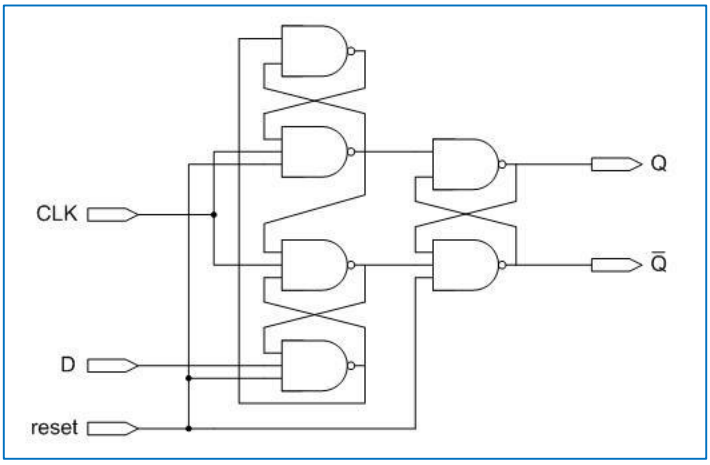
教師：許明華老師

繳交日期：2019/10/14

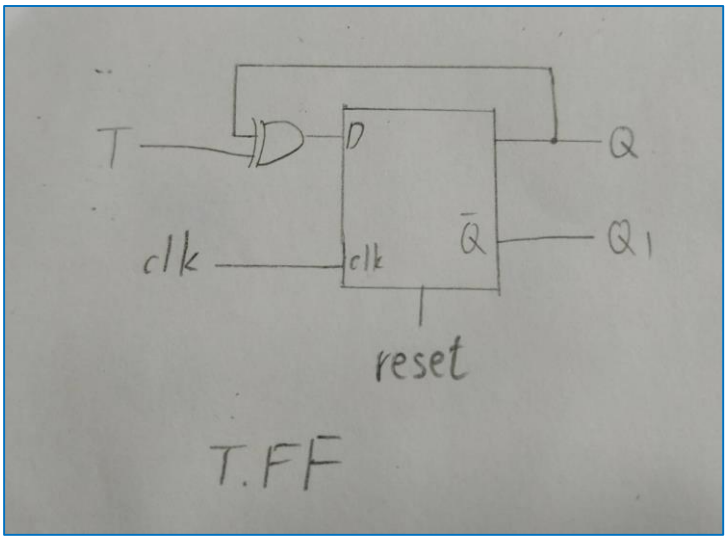
電路原理

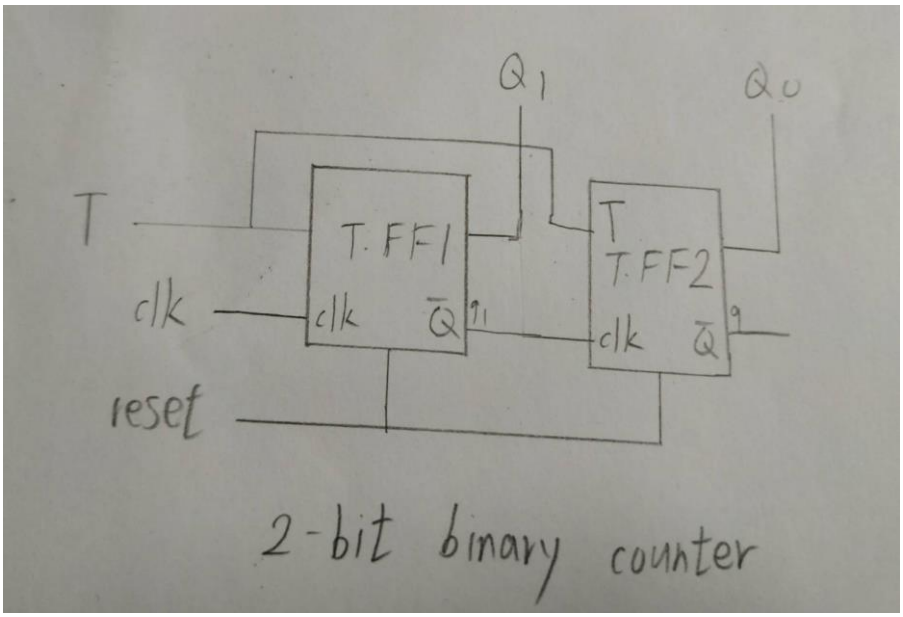
藉由 2bit binary counter 與 2-to-4 decoder 來輪流掃描，一定的頻率下，因視覺暫留的影響，會造成七段顯示器視覺上常亮的效果，而 4bits 4-to-1 MUX 用來選擇輸入的數字，再利用 BCD-to-segment decoder 把 BCD 碼轉成七段顯示器的字型碼，組合成一個 4 位元七段顯示器電路。

電路架構

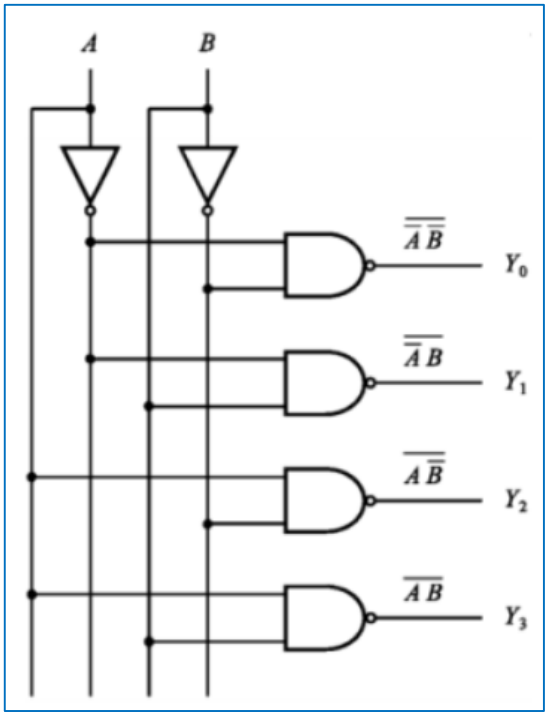


D.FF

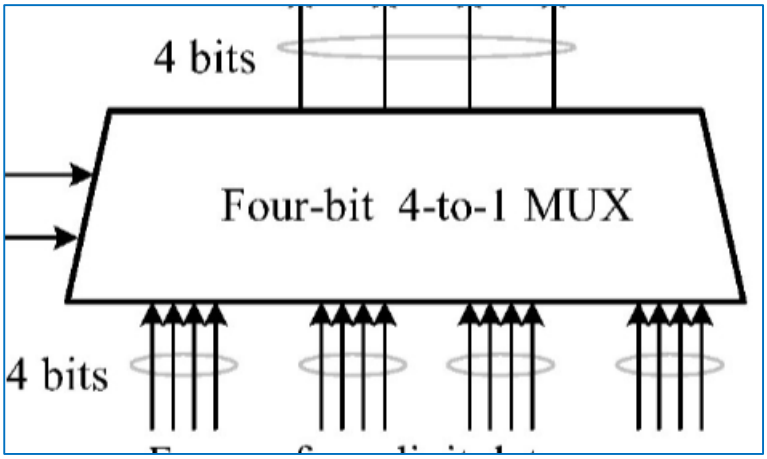




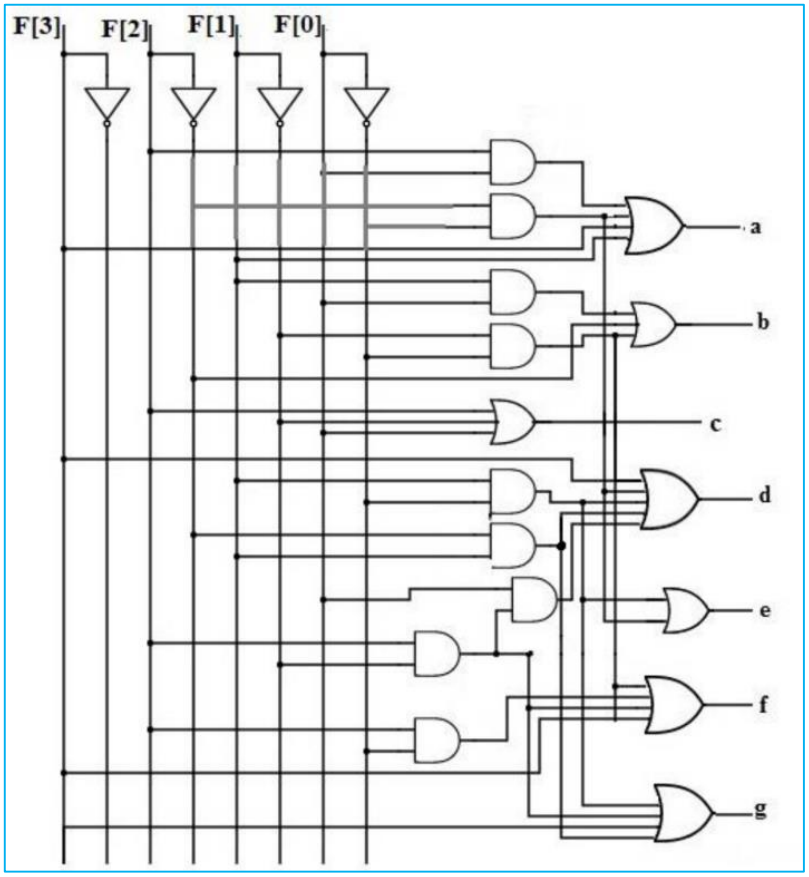
2-bit binary counter



2-to-4 decoder

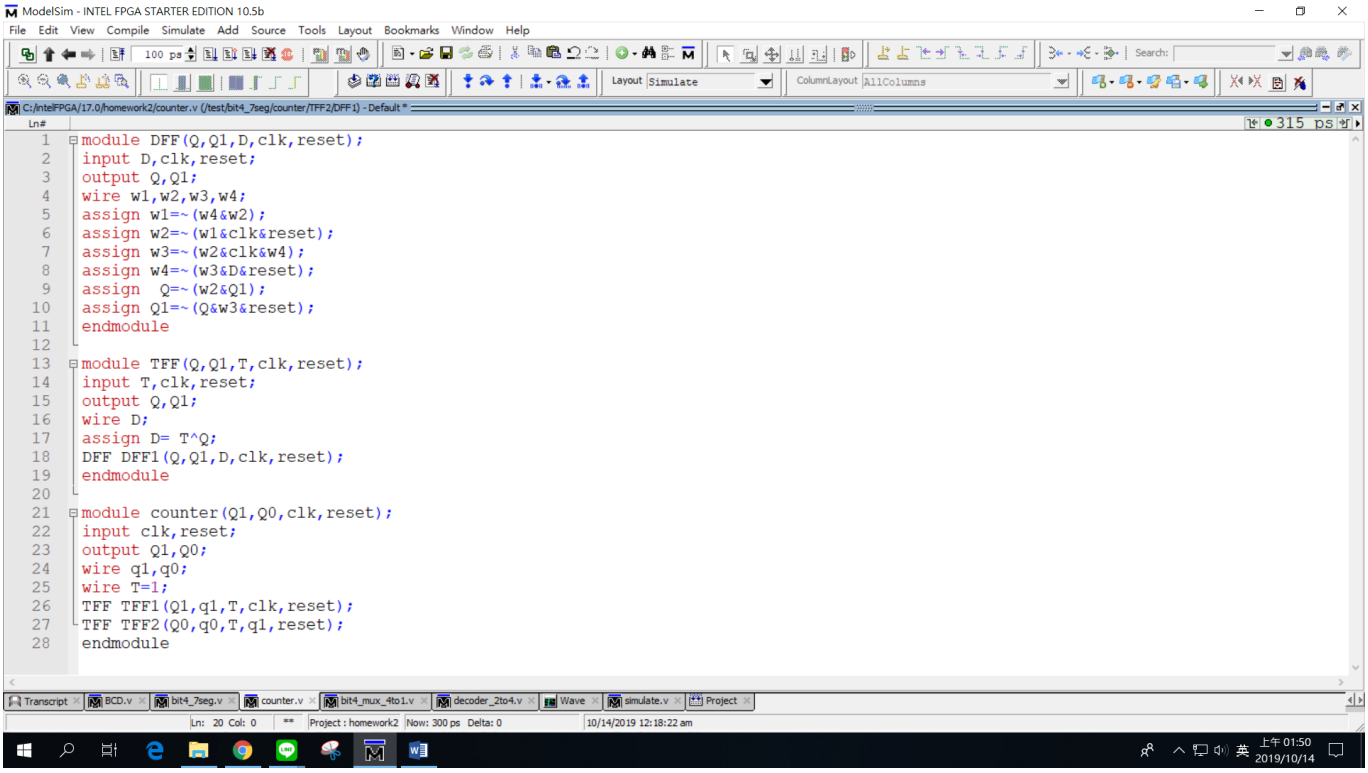


4bits 4-to-1 MUX

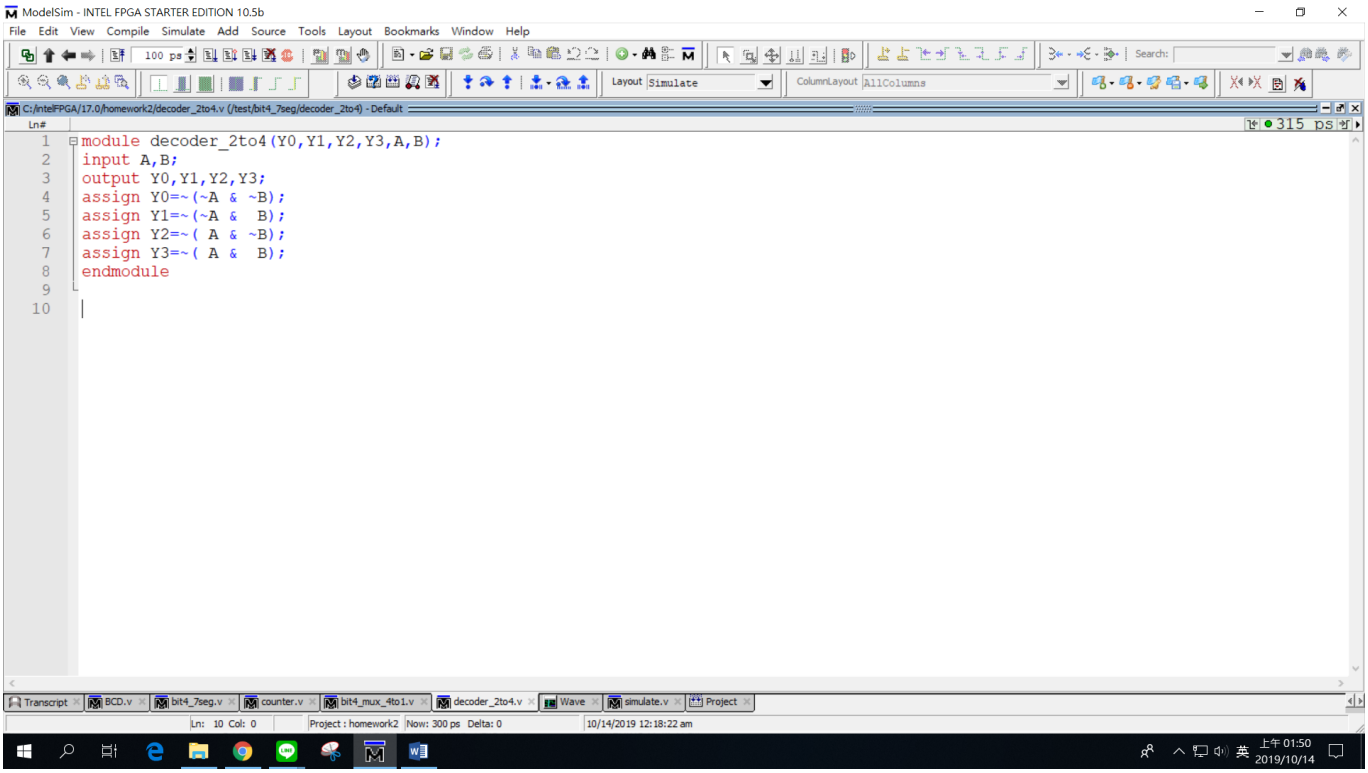


BCD-to-segment decoder

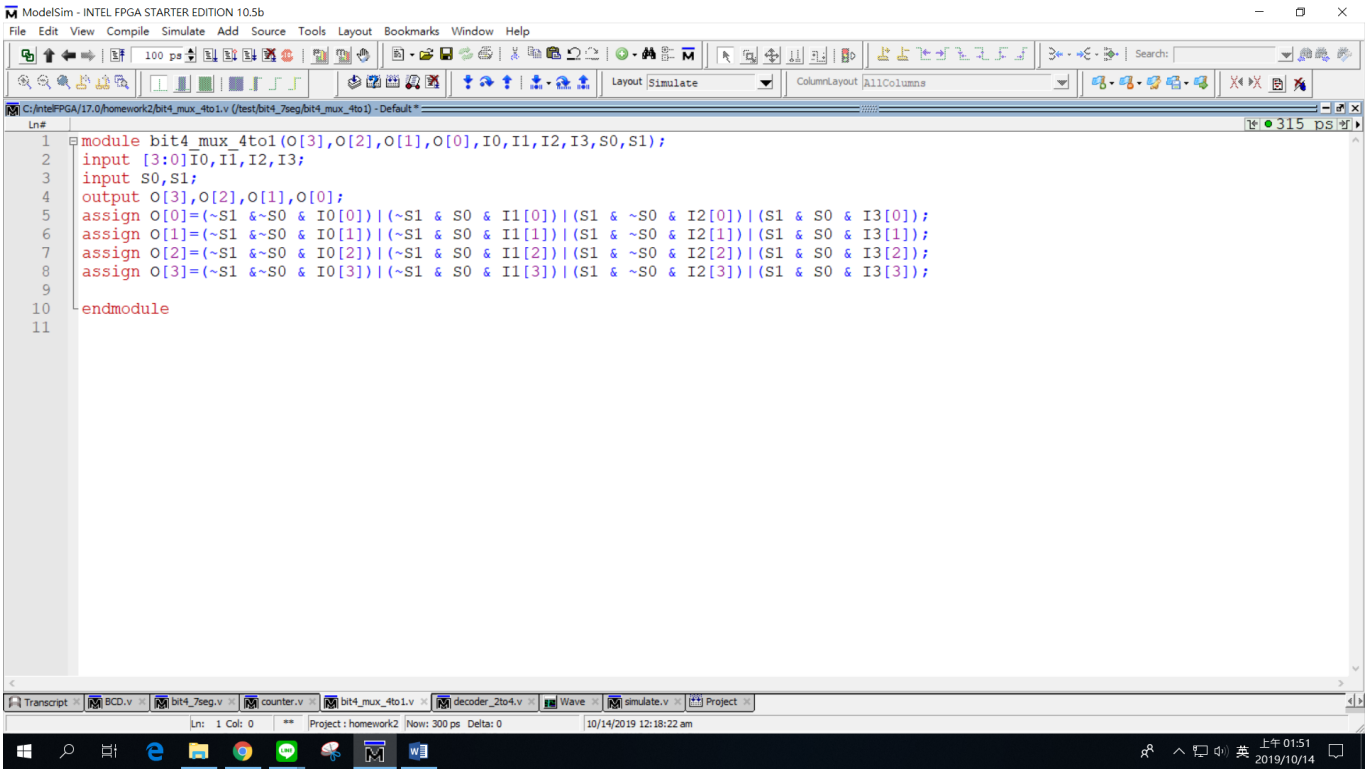
程式擷取畫面



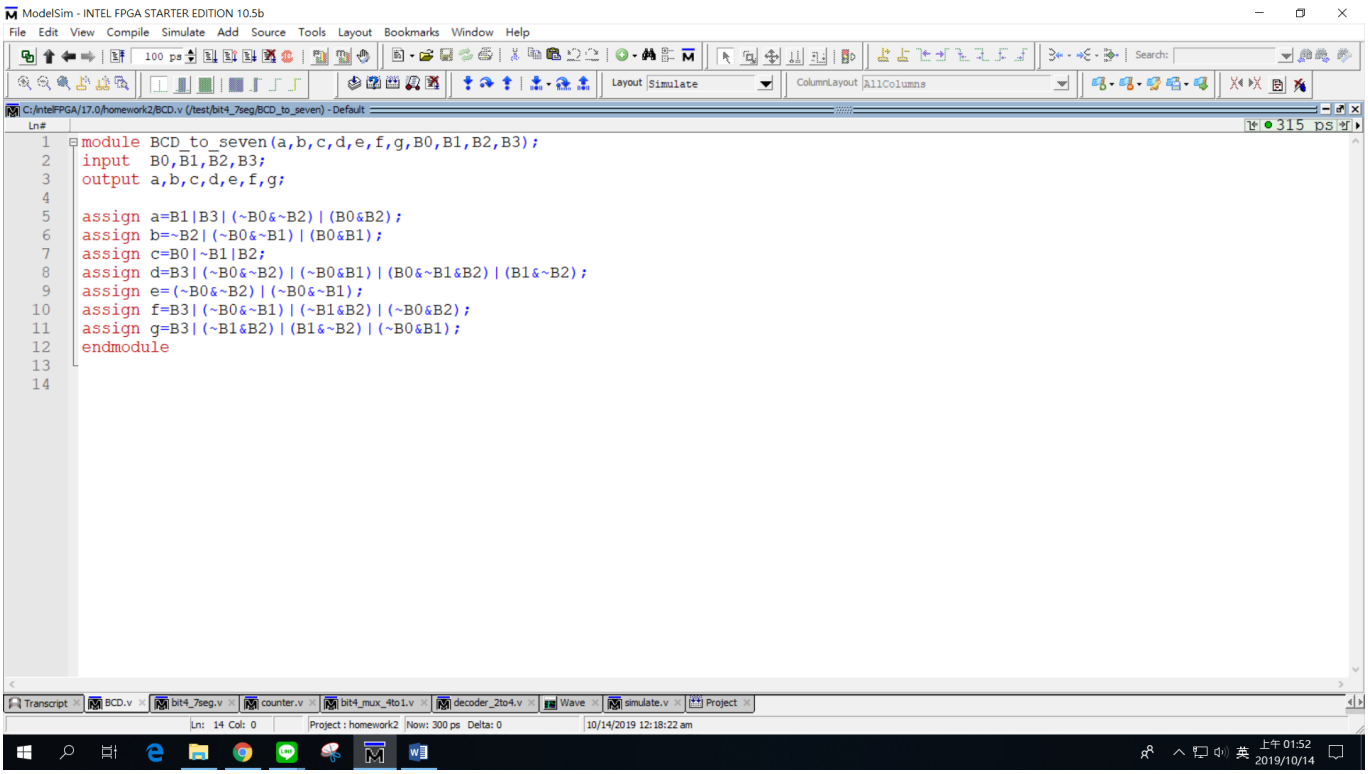
2bit binary counter



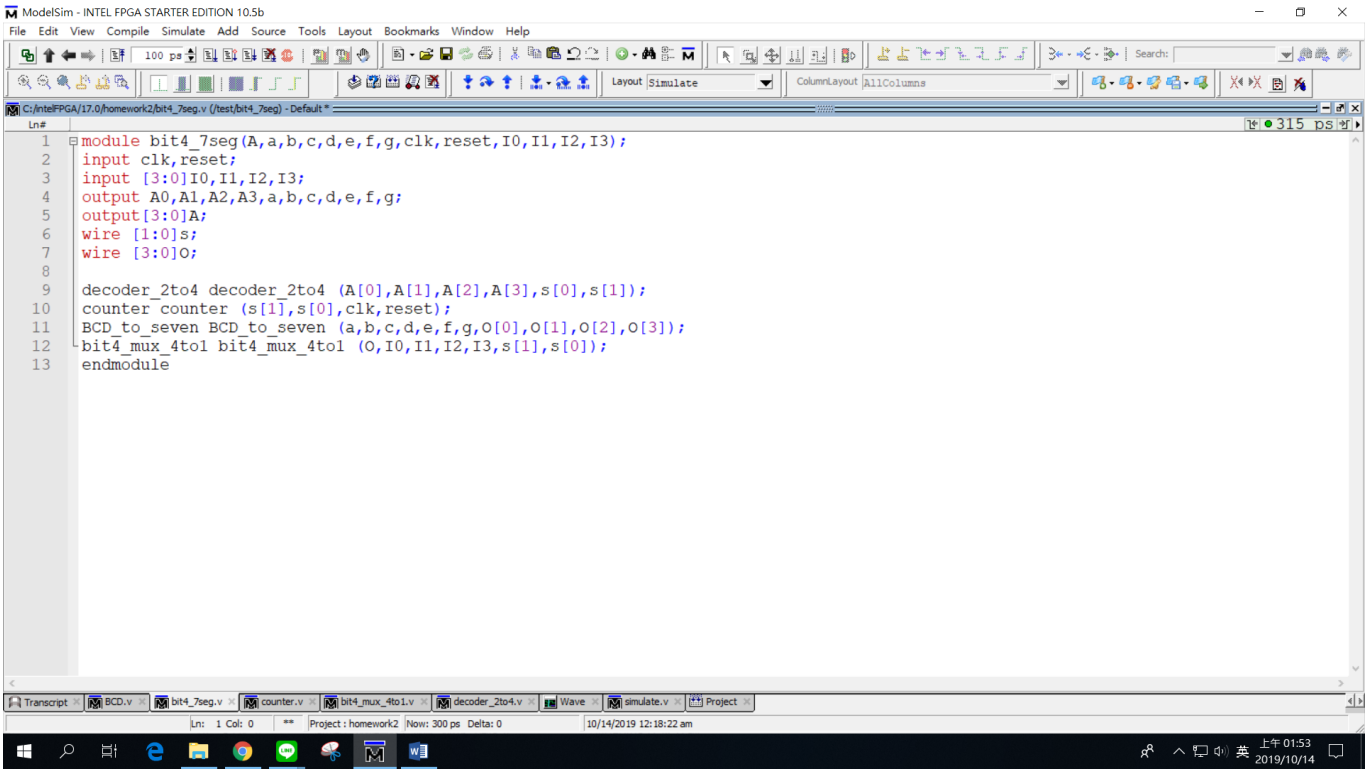
2-to-4 decoder



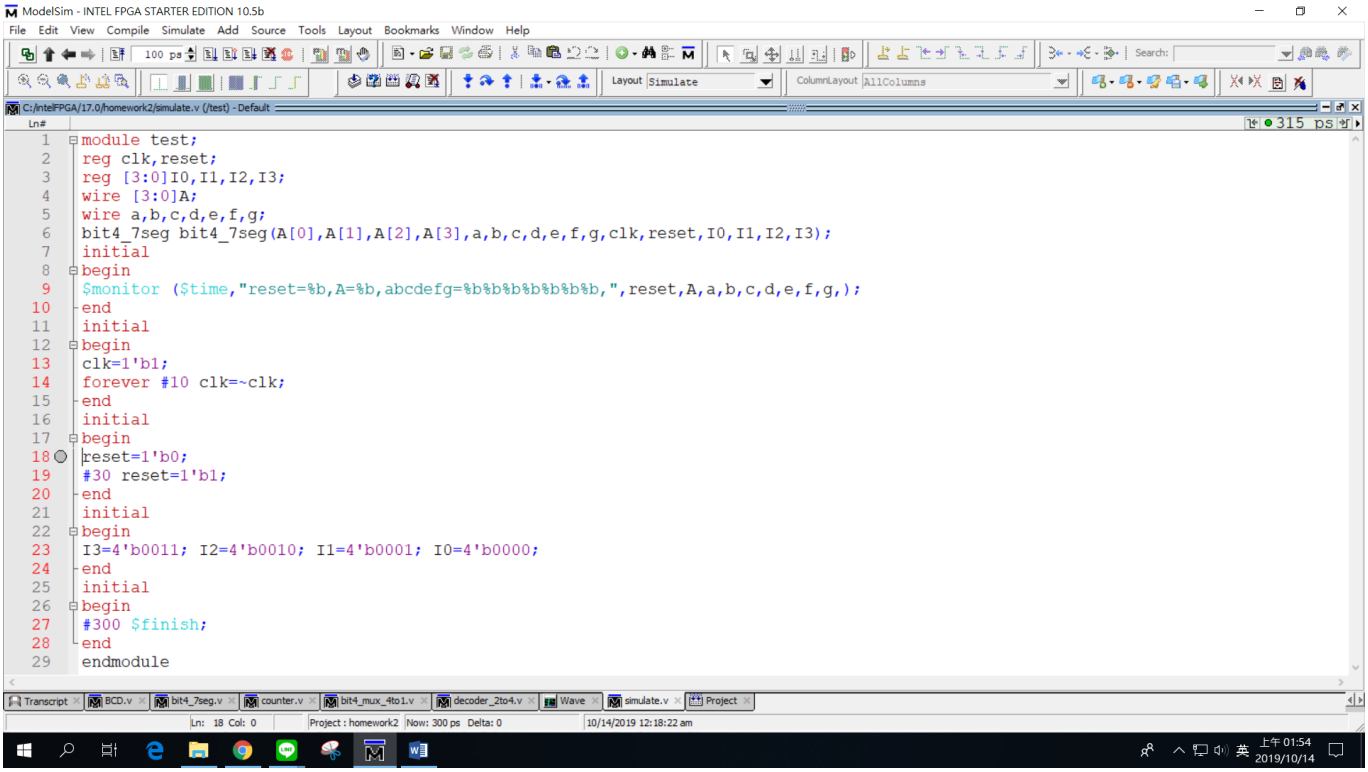
4bits 4-to-1 MUX



BCD-to-segment decoder

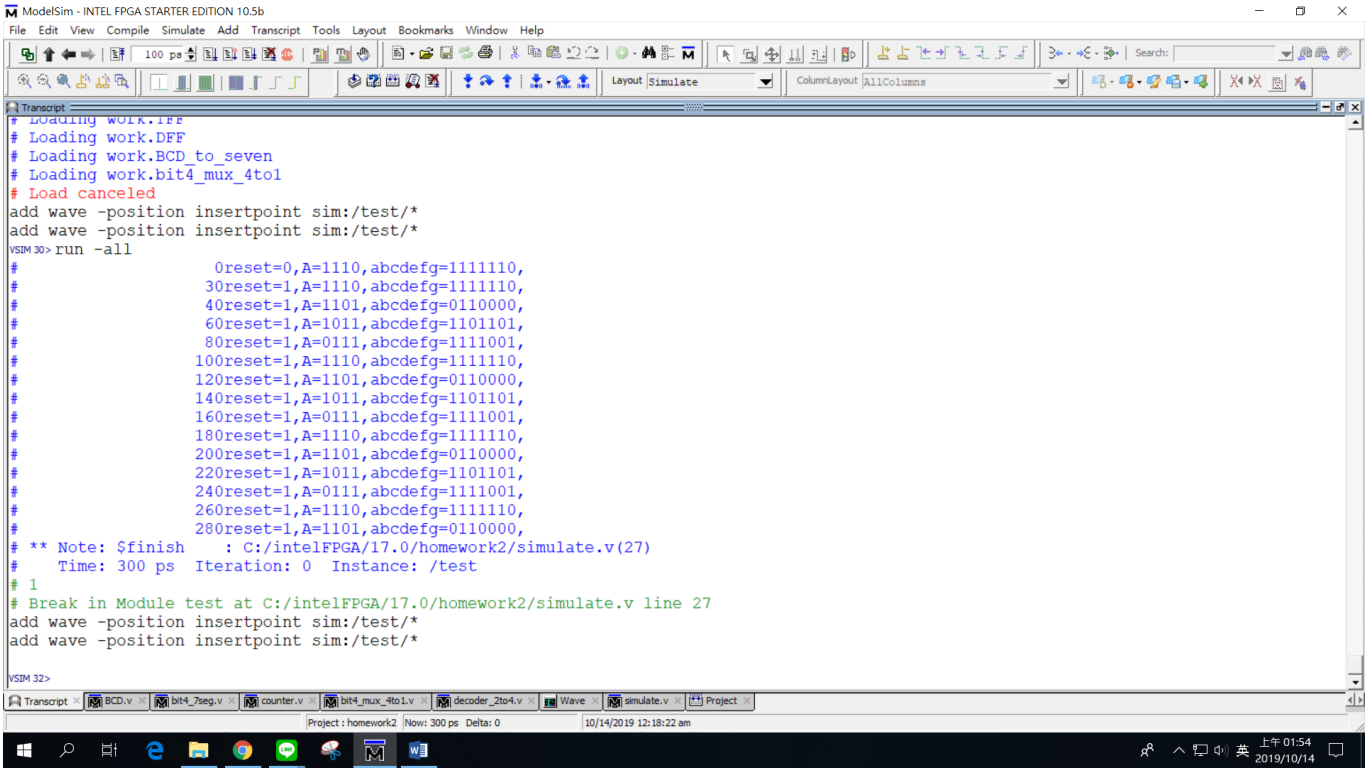


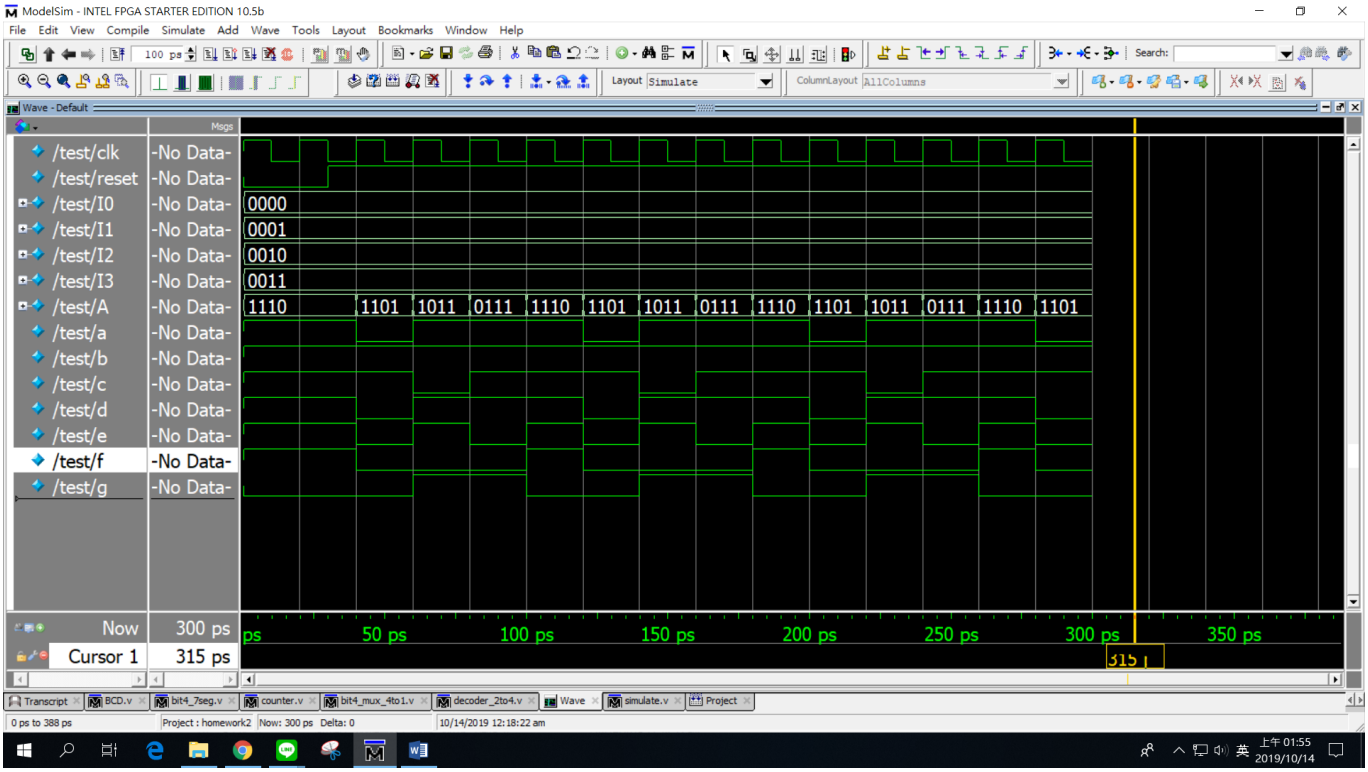
7seg display



Simulate

執行結果





A=1110 顯示 1　A=1101 顯示 2

A=1011 顯示 3　A=0111 顯示 4

心得

這次的作業花了不少時間，沒有做好規劃與整理，整個處理起來很沒有效率，需要除錯時，因為程式中的許多自己沒整理清楚的名稱，導致眼花撩亂，不知道該從哪方面下手，常常取一些無意義的名稱，是我的一個很嚴重的壞習慣，讓我這次吃足了苦頭，相信有了這一次的經驗，一定能夠讓我在之後能夠警惕自己，別再犯相同的錯誤。