2022 Digital IC Design Homework 2

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Functional Simulation Result					
Stage 1	Pass/Fail	Stage 2	Pass/Fail	Stage 3	Pass/Fail
Stage 1					

```
# --stage1 simulation--
#
# Setting1: PASS
#
# Setting2: PASS
#
# Setting3: PASS
#
# Setting4: PASS
#
# Setting5: PASS
#
# Setting6: PASS
#
# Setting7: PASS
#
# Setting8: PASS
#
# Setting9: PASS
#
# Setting10: PASS
#
```

Stage 2

```
# --stage2 simulation--
#
# Setting11: PASS
#
# Setting12: PASS
#
# Setting13: PASS
#
# Setting14: PASS
#
# Setting15: PASS
#
# Setting16: PASS
#
# Setting17: PASS
#
# Setting18: PASS
#
# Setting19: PASS
#
# Setting20: PASS
#
```

Stage 3

```
# --stage3 simulation--
#
# Setting21: PASS
#
# Setting22: PASS
#
# Setting23: PASS
#
# Setting24: PASS
#
# Setting25: PASS
#
# Setting26: PASS
#
# Setting27: PASS
#
# Setting28: PASS
#
# Setting29: PASS
#
# Setting30: PASS
#
```

Description of your design

先將 Set、Green、Yellow 和 Red 來分成不同的 state，並把 Set 和 Jump 寫在組合電路中，因為一旦 Set 或 Jump 拉高，都會突然改變當下的狀態，而 Stop 則用 if(!Stop)寫在最主要循序電路內的開頭來做控制，只要 Stop 為 0，此循序電路就會正常運作，如果為 1，就卡住不會進入此循序電路。而在正常情況下經 Set 後的狀態依次為 Green、Yellow、Red 再回 Green 來做循環，其中計數的方式會使用 g_tmp、y_tmp、r_tmp 先記住各燈號的 input，再利用 counter 從 0 開始每經一個 clock 就會 counter+1，直到等於該次 Set 的燈號 tmp 值-1，再轉換到下個 state。