Lab #5

- 반드시 마감 기한을 지켜주세요.
  Please keep the due date in mind.
- 질문이 있으면 Lab 5 담당 조교 (최원종, starwars2008@kaist.ac.kr)로 연락주세요.
  If you have any question, feel free to mail TA. (WonJong Choi, starwars2008@kaist.ac.kr)

- This is your last Verilog lab on EE303A Digital System course.
- This project's purpose is to understand the sequential logic. This project is to design Synchronous Set/Reset D-Flip Flop. Input is R, S, D, CLK and output is Q, Q', val.
  - If R = 0, S = 0, positive CLK edge occurs, Q = D, Q' = D', val = 1.
  - If R = 1, S = 0, positive CLK edge occurs, Q = 0, Q' = 1, val = 1.
  - If R = 0, S = 1, positive CLK edge occurs, Q = 1, Q' = 0, val = 1.
  - If R = 1, S = 1, positive CLK edge occurs, Q = 1, Q' = 1, val = 0.
- Also design testbench is important, so design testbench of your Synchronous Set/Reset D-Flip Flop. your Testbench code must tests 8 cases.
  - Test case: R = 0, 1 / S = 0, 1 / D = 0,1 + positive CLK edge occurs
- Write your code on "DFF_SR.v", "tb_DFF_SR.v", "tb_DFF_SR.f".
- Also, write a report about result of your Synchronous Set/Reset D-Flip Flop within 3 pages.
- Please make 1 zip file which include "DFF_SR.v", "tb_DFF_SR.v", "tb_DFF_SR.f", "report_student number_name.pdf".
- Name of your zip file must be "Lab5_student number_name.zip"

- Your testbench must carry out results of test case. Output of the code is shown below
  - iverilog -o result tb_DFF_SR.v DFF_SR.v
  - vvp result
  - R = 0, S = 0, D = 0, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 1 is passed/failed.
  - R = 0, S = 0, D = 1, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 2 is passed/failed.
  - R = 1, S = 0, D = 0, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 3 is passed/failed.
  - R = 1, S = 0, D = 1, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 4 is passed/failed.
  - R = 0, S = 1, D = 0, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 5 is passed/failed.
  - R = 0, S = 1, D = 1, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 6 is passed/failed.
  - R = 1, S = 1, D = 0, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 7 is passed/failed.
  - R = 1, S = 1, D = 1, Q = (result of code), Q′ = (result of code), val = (result of code)
  - Case 8 is passed/failed.
  - Total score: (your score)
- If form of the output doesn't match with form shown above, you will get 0 points.