Pass/Fail Homework 2

Use the last 3 digits of your personal number (PN) to select which question you have to answer. Modulo divide your 3 digits with the number of questions, in this case, 4, plus 1. The resulting number is the question that you should answer.

!!! (PN mod 3) + 1 !!!

For example, if your PN ends in 730, then (730 mod 3) + 1 = 2, meaning you must answer question 2.

Make sure you comment on the top of each file you submit, your PN, name and the question you are answering.

!!! IMPORTANT !!!

If you answer the wrong question, your submission will be invalid.

We can call you to explain your solution. If you cannot explain your answer, the homework will be invalid!

KTH has a zero-tolerance policy against cheating.

https://www.kth.se/en/student/stod/studier/fusk-1.997287

If you have questions or need clarifications, you can ask in the discussion forum in Canvas.

QUESTIONS

1.1 QUESTION 1

Given the code below, explain what the generated random constrained values will look, in terms of possible values and statistical distribution for **length**, **pktType** and **outPort** signals

```
length dist {5 := 2, [6:12] := 1};
pktType dist {A := 12.5, F := 37.5, N := 25, S := 25};
if (pktType == A) {
   outPort dist {2'b01 := 90, 2'b10 := 10};
} else if (pktType == F) {
   outPort dist {2'b01 := 90, 2'b10 := 10};
} else if (pktType == N) {
   outPort inside {[0:2]};
} else {
   outPort inside {[1:2]};
}
```

1.2 QUESTION 2

Given the code below, explain what the covergroup defines in terms of the possible values that signals 1 to 3 can take. How many bins will be created for each bin.

```
logic [2:0] signal1;
logic [3:0] signal2;
logic [1:0] signal3;
covergroup my_covergroup;
    // Coverpoints for individual signals
    coverpoint signal1 {
        bins zero = {0};
        bins non_zero = {1, 2, 3, 4, 5};
    }
    coverpoint signal2 {
        bins low_range = {[0:9]};
        bins high_range[] = {[10:15]};
    }
    coverpoint signal3;
endgroup
```

1.3 Question 3

Given the timing diagram below, draw the behavior of the bus. Consider the following three cases:

1. The bus is of net type tri
2. The bus is of net type trior
3. The bus is of net type triand