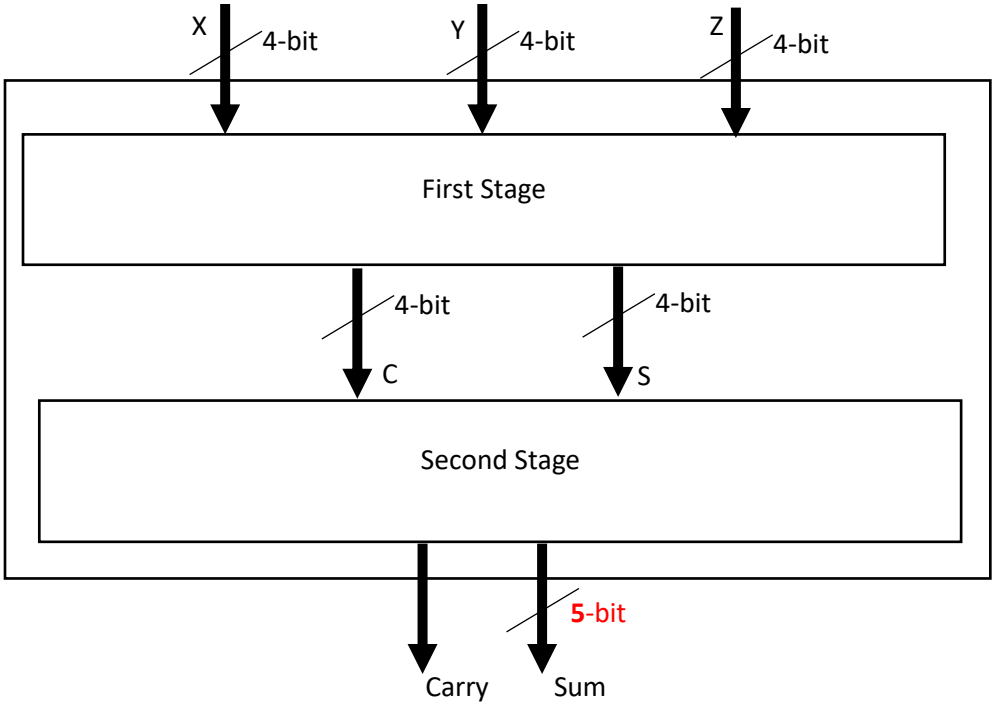
High Level Digital Design
1214-0420
Term Project

Objective: Design a three 4-bit numbers adder.

Details of the design: Ripple Carry Adder (RCA) performs addition of two n-bit numbers. Therefore, the adder shown in the figure below performs the addition in two stages as follows:

1- In the first stage, we need to reduce the problem of adding three numbers into adding two n-bit numbers. The 8-bits of S and C will be computed at the same time.
2- In the second stage, RCA is used to compute the summation and the carry.

Note: your design must be built up using the minimum number of Half Adders (HA).



Test Bench: For simplicity, the Test bench can be conducted using three different tuples only (eg. T1=(X= 1100, Y= 1101, Z=1110), T2=(X= 1111, Y= 1000, Z= 1001), T3=(X= 1110, Y= 0101, Z= 0111)).

Submission: In addition to the screen shots of the conducted testbench, you have to submit the .vhd and .vht files of your design and the testbench.

The work can be done by groups of three individuals at most.