

2. Here are the 15 test patterns and the reasons that I chose them:

- (1) Patterns that are teacher's example: (immediately accessible)
  - a. (255, 255)
  - b. (76, 95)
- (2) Patterns that tests if "flag\_zero" works: ( $Y = E = 0$ )
  - a. (0, 0)
  - b. (0, 34)
- (3) Patterns that test if every bit of "Y" works properly:
  - a. (1, 101)  $\rightarrow Y = 11001010$
  - b. (2, 21)  $\rightarrow Y = 10101000$
  - c. (17, 10)  $\rightarrow Y = 10101010$
  - d. (22, 31)  $\rightarrow Y = 10101010$  (truncates 10)
  - e. (128, 255)  $\rightarrow Y = 11111111$  (truncates 0000000)
- (4) Patterns that test if "E" works properly:
  - a. (1, 1)  $\rightarrow E = 0$
  - b. (13, 157)  $\rightarrow E = 10$
  - c. (128, 255)  $\rightarrow E = 15$
- (5) Patterns that test "Y" truncation and expects Y ends with 0:
  - a. (5, 101)  $\rightarrow$  original number ends with one 1
  - b. (5, 199)  $\rightarrow$  original number ends with two 1s
  - c. (119, 17)  $\rightarrow$  original number ends with three 1s

3. After reading the testbench, task, in my understanding, is a way of bundling multiple actions. In this way, we only need to call the task name to perform repetitive actions.

4.

