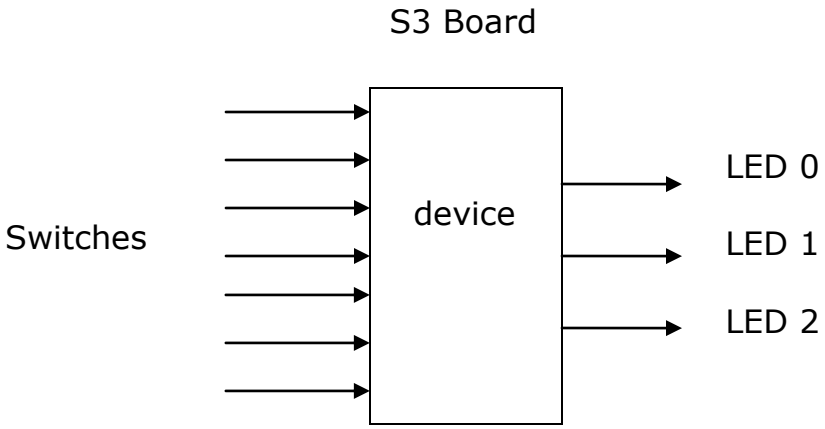
Electrical and Computer Engineering
ECE-C302

Quiz 1

Implement a 7-inputs and 3-outputs device. The outputs are a binary vector representing the number of one's appearing at the input ports ranges from 0 to 7.



Solution

```
Entity device is
Port (x : in std_logic_vector(0 to 6);
       Z: out std_logic_vector(2 downto 0));
End device;

Architecture beh of device is
Begin
Process(x)
Variable count : integer;
Begin
Count := 0;
For I in 0 to 6 loop
    If x(i) = '1' then count := count + 1; end if;
End loop;
Case count is
```

```
When 0 => z <= “000”;
When 1 => Z <= “001”;
When 2 => z <= “010”;
When 3 => Z <= “011”;
When 4 => z <= “100”;
When 5 => Z <= “101”;
When 6 => z <= “110”;
When 7 => Z <= “111”;
When others => null;
End case;
End process;
```