CSE232_HW_4

1-) Using a 8-bit random number generator, design a system that has two buttons X and Y. and a 8-bit output Q which is initially 0. Pressing the button X show the minimum number of the most recent three data. Pressing the button Y show the maximum number of the most recent three data. Pressing both buttons cause the average of the most recent three data. (60p)

a-) Capture a high-level state machine
b-) Create a data-path
c-) Connect the data-path to a controller
d-) Derive the controller's FSM

2-) Convert the following C code, which calculates the average of maximum and minimum value of the numbers within an array A consisting of 256 8-bit values, into a high-level state machine. (40p)

```
Inputs: byte A[256], bit go
Outputs: byte max, min, ave, bit done
while(1) {
while(!go);
 done = 0;
i = 0;
 max = 0;
min = 255;
if( a[i] < min )
            {
            min = a[i];
             }
 if( a[1] > max )
           {
           max = a[i];
           }
 i = i + 1; }
ave = (max + min)\2;
done = 1;
}
```

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