OCULUS 2021

Short Circuit

Team: Miracle Workers

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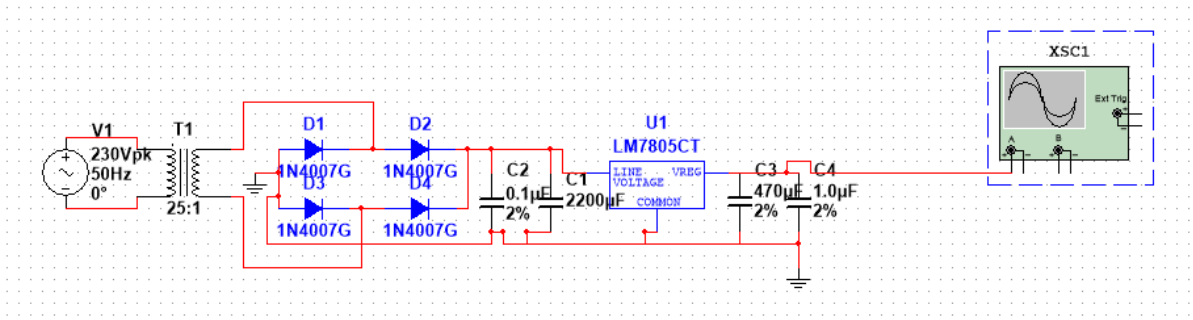
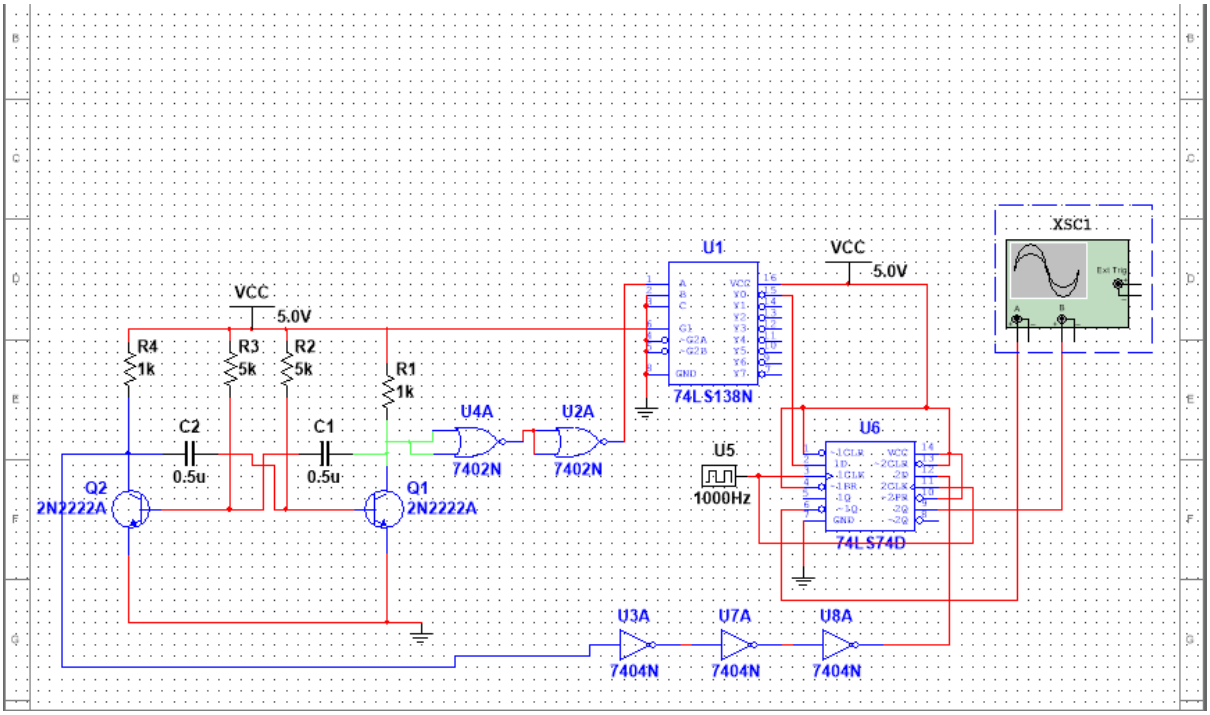
Problem Statement:

Mr. Shah is an engineering student. He has been given a college assignment to make a blinker circuit. He has decided to use ‘Decoder’ as one of the parts of the circuit because it has been lying around with him for a long time. Help him build the rest of the circuit by analysing the following block diagram.

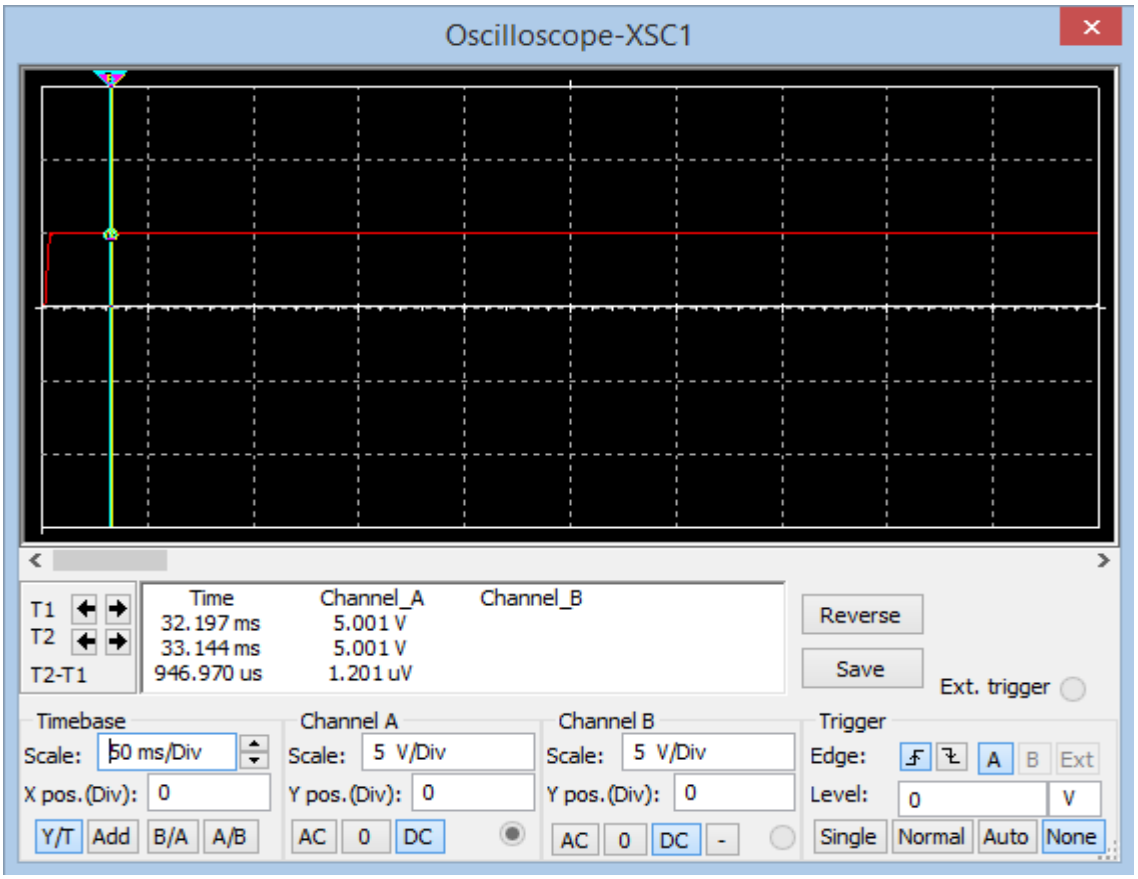
Circuit Diagram (Power Supply):



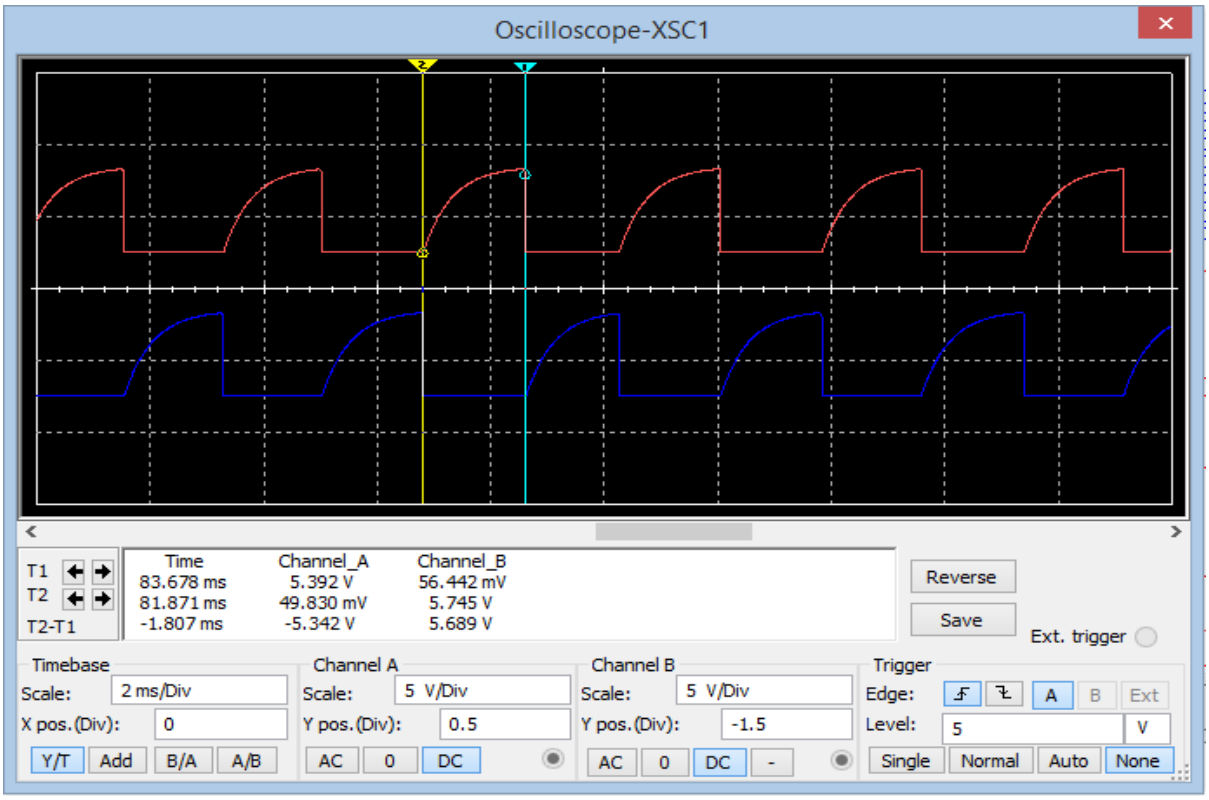
Circuit Diagram (Blinker):



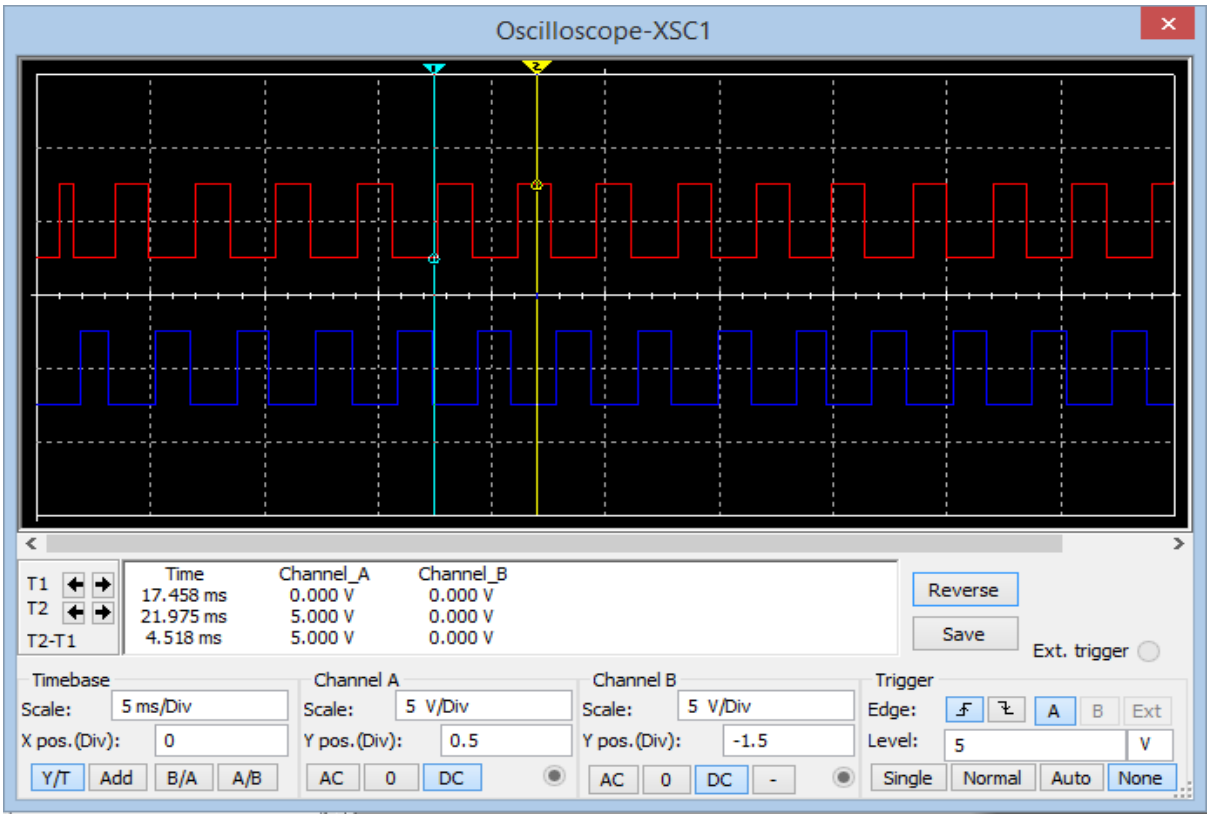
Stage 1 Output:



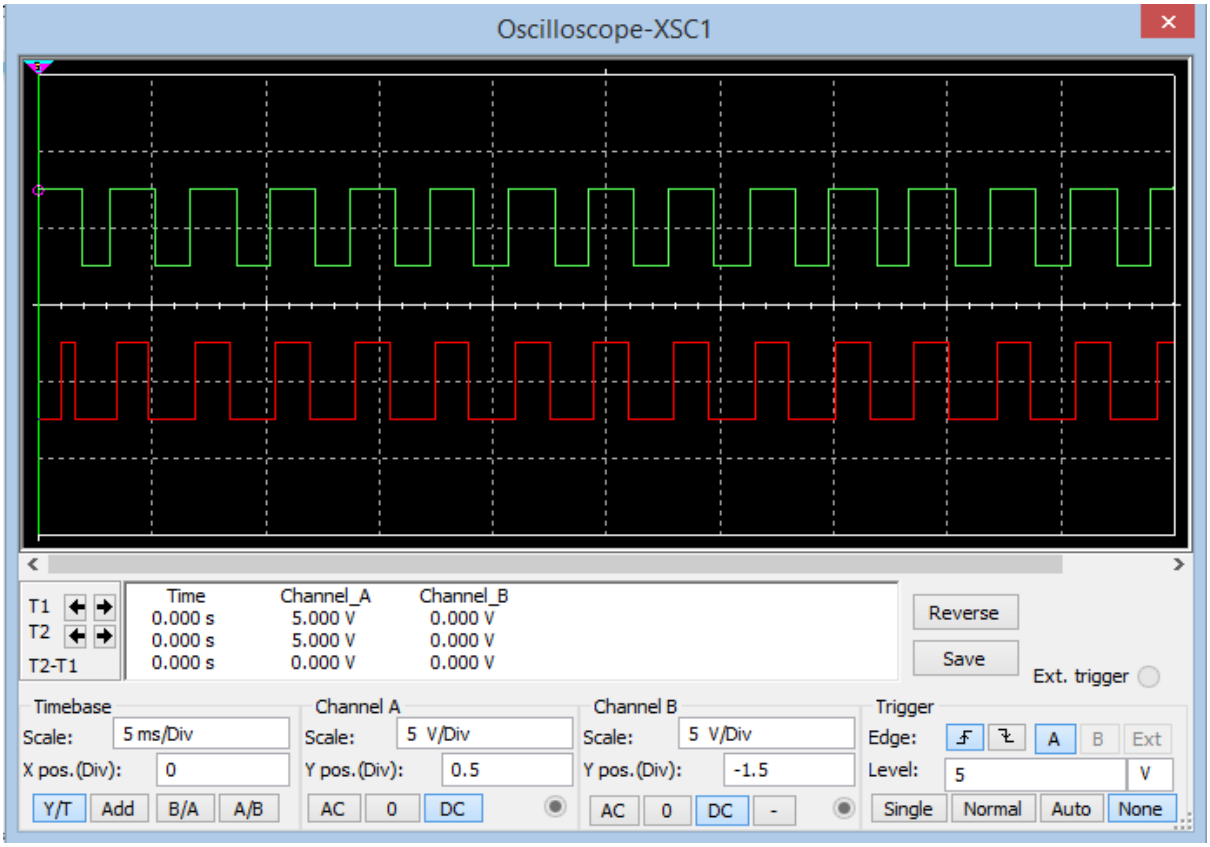
Stage 2 Output(OP1 and OP2):



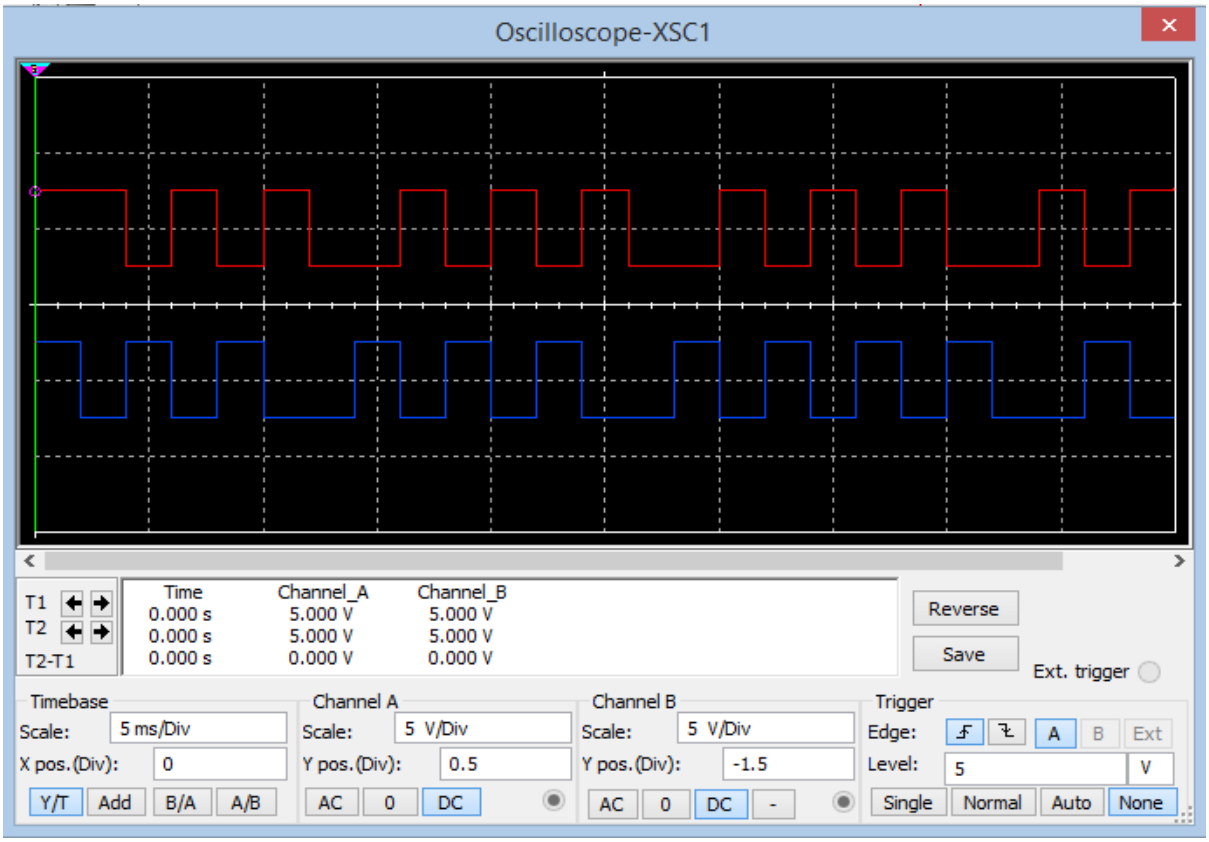
Stage 3 Output (OP3 and OP4):



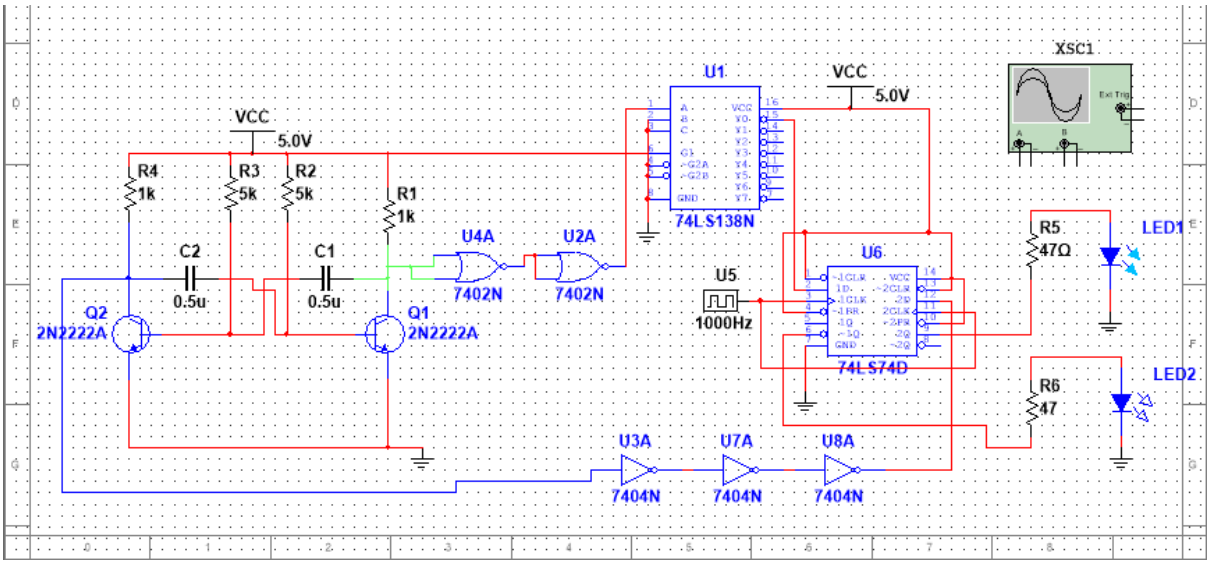
Stage 4 Output (E and F)



Stage 5 Output (LEDS)



Output (LED Blinking):



Inference:

1) We learnt how to implement a stable multivibrator using two discrete NPN transistors.

2) We also learnt how that how the universal gates can be used generate an square wave from a shark fin like waveform because of the hysteresis values present in the universal gates, whenever inputs cross a certain threshold its outputs becomes high.

3) Most Important thing what we learnt is that a decoder can be used a not gate if wired correctly apart from that fact that decoder can be used as an adder or sub tractor also.

CALCULATION: