ABHISHEK SHARMA
Year : Third
Section : "3I"
Class Roll No.: 01
Enrolment No.: 12019009001127

ANALOG ELECTRONICS CIRCUIT LAB

DAY 2

ASSIGNMENT 2

DATE : 20.07.2021
Platform Used : Multisim Online Live Simulator

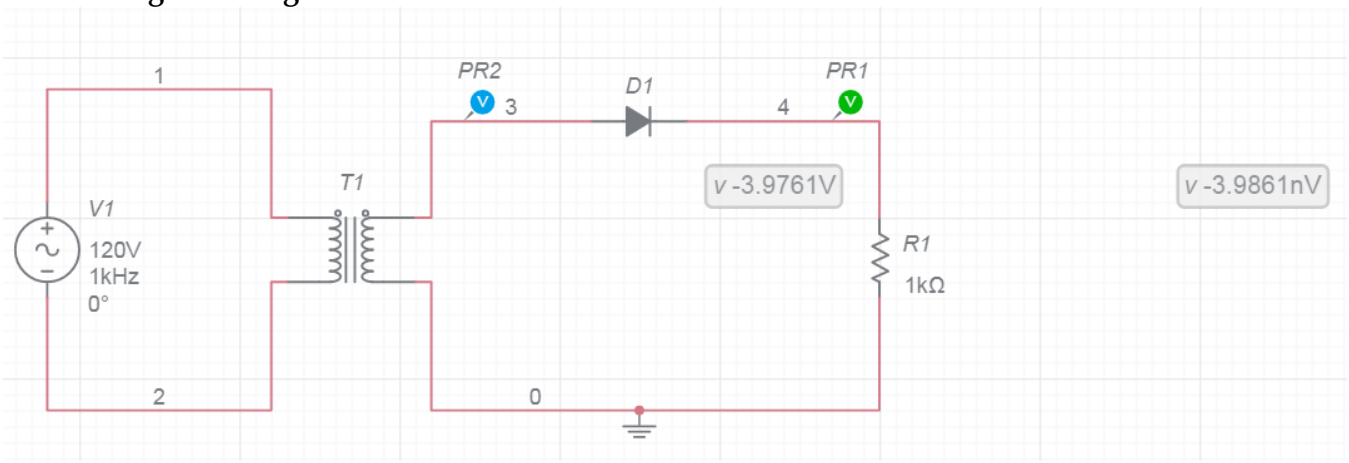
UNIVERSITY OF ENGINEERING & MANAGEMENT, KOLKATA
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

A. Draw the circuit of a Half wave Rectifier without using the capacitor.

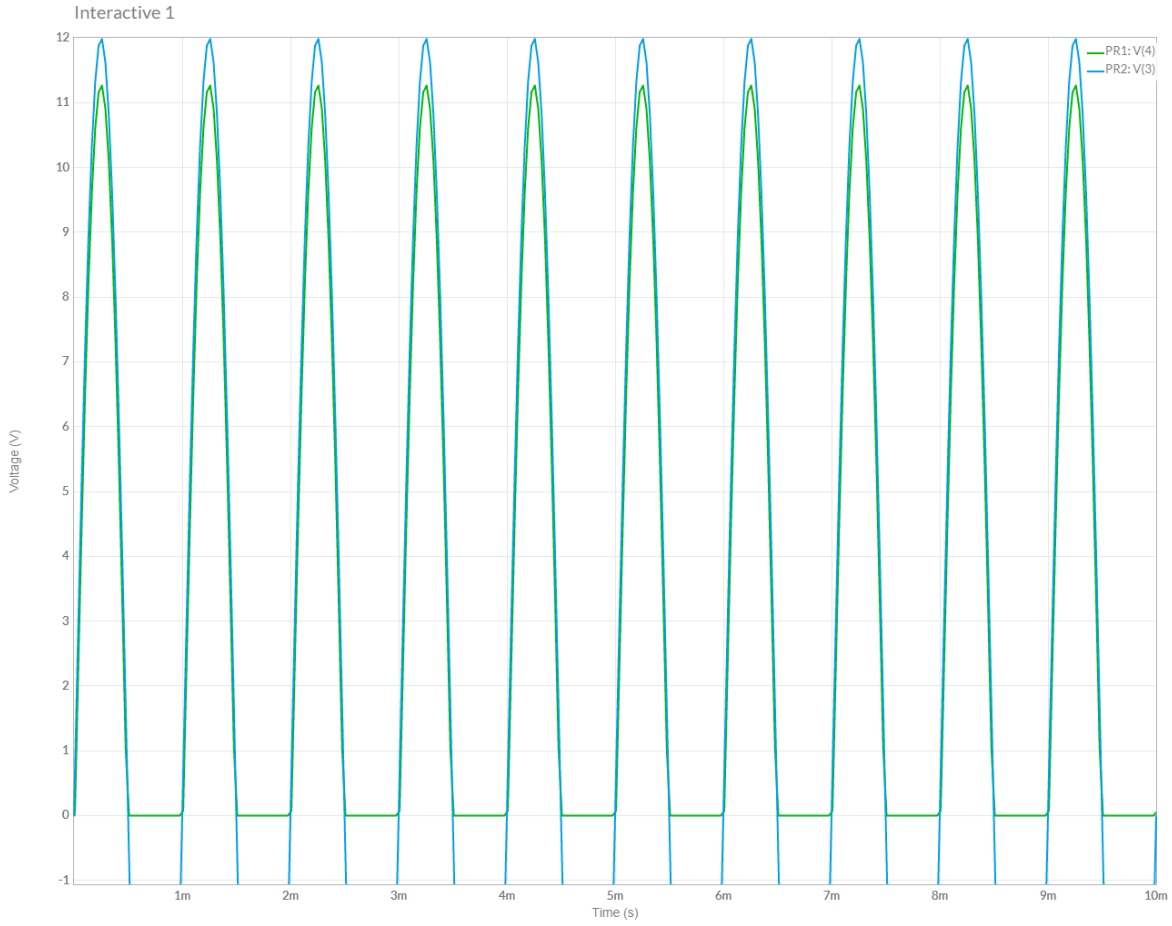
Requirements :

1. AC Power Source [120 V]
2. Diode
3. Resistor [1kΩ]
4. Transformer [1P1S]
5. Ground
6. Voltmeters

Circuit Diagram using Multisim Online Live Simulator :



Graphical Representation of the Voltage :

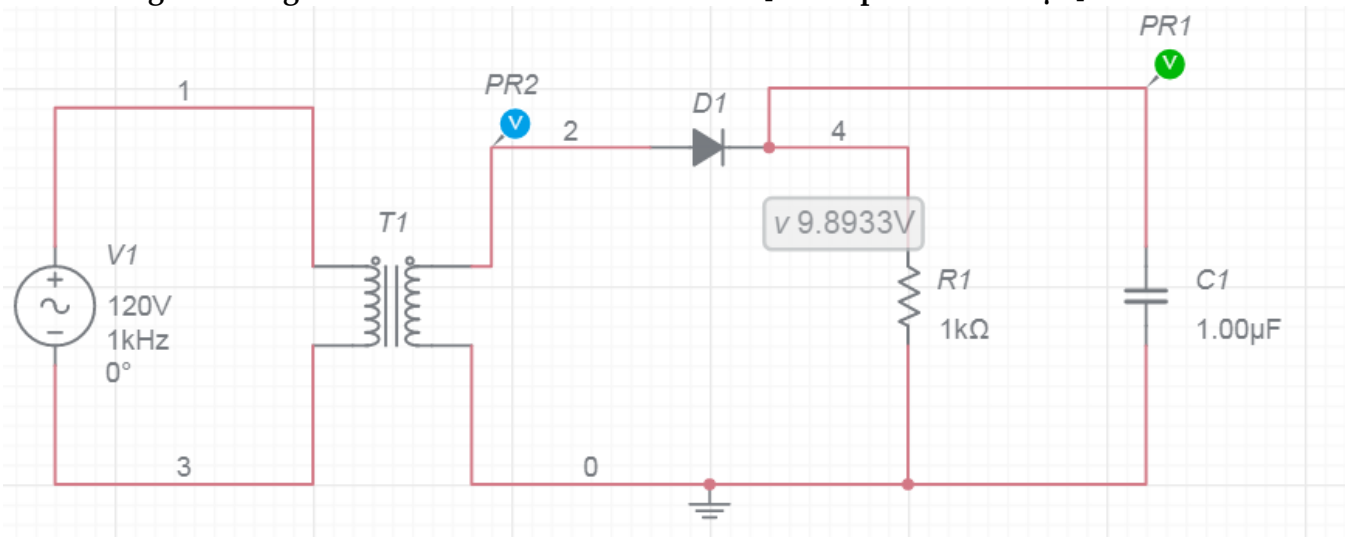


B. Draw the circuit of a Half wave Rectifier using the capacitor of different values and analyze.

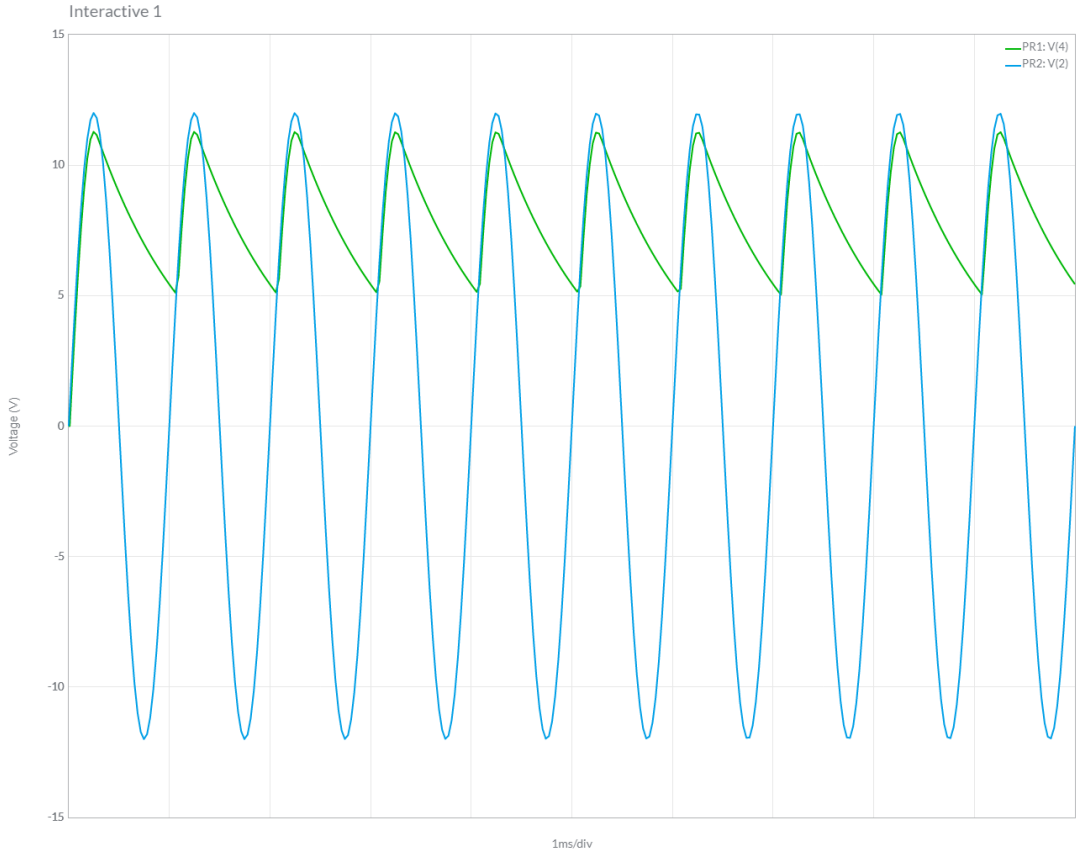
Requirements :

1. AC Power Source [120 V]
2. Diode
3. Resistor [1kΩ]
4. Transformer [1P1S]
5. Ground
6. Voltmeters
7. Capacitors [1µF, 4.5µF and 10µF]

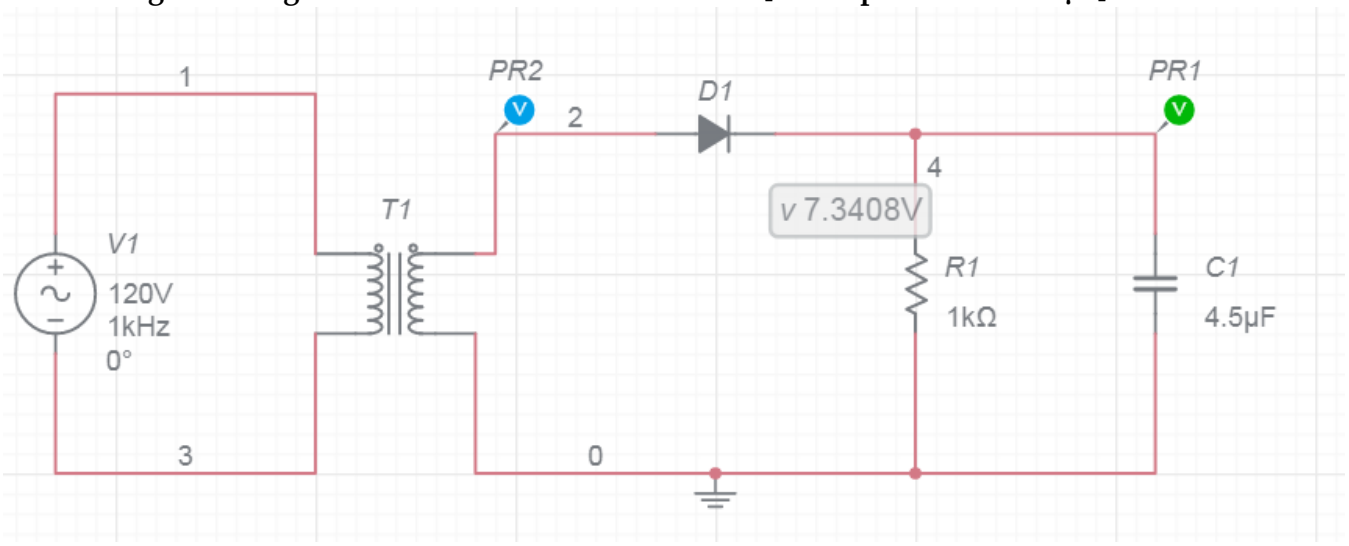
Circuit Diagram using Multisim Online Live Simulator : [For Capacitance of 1µF]



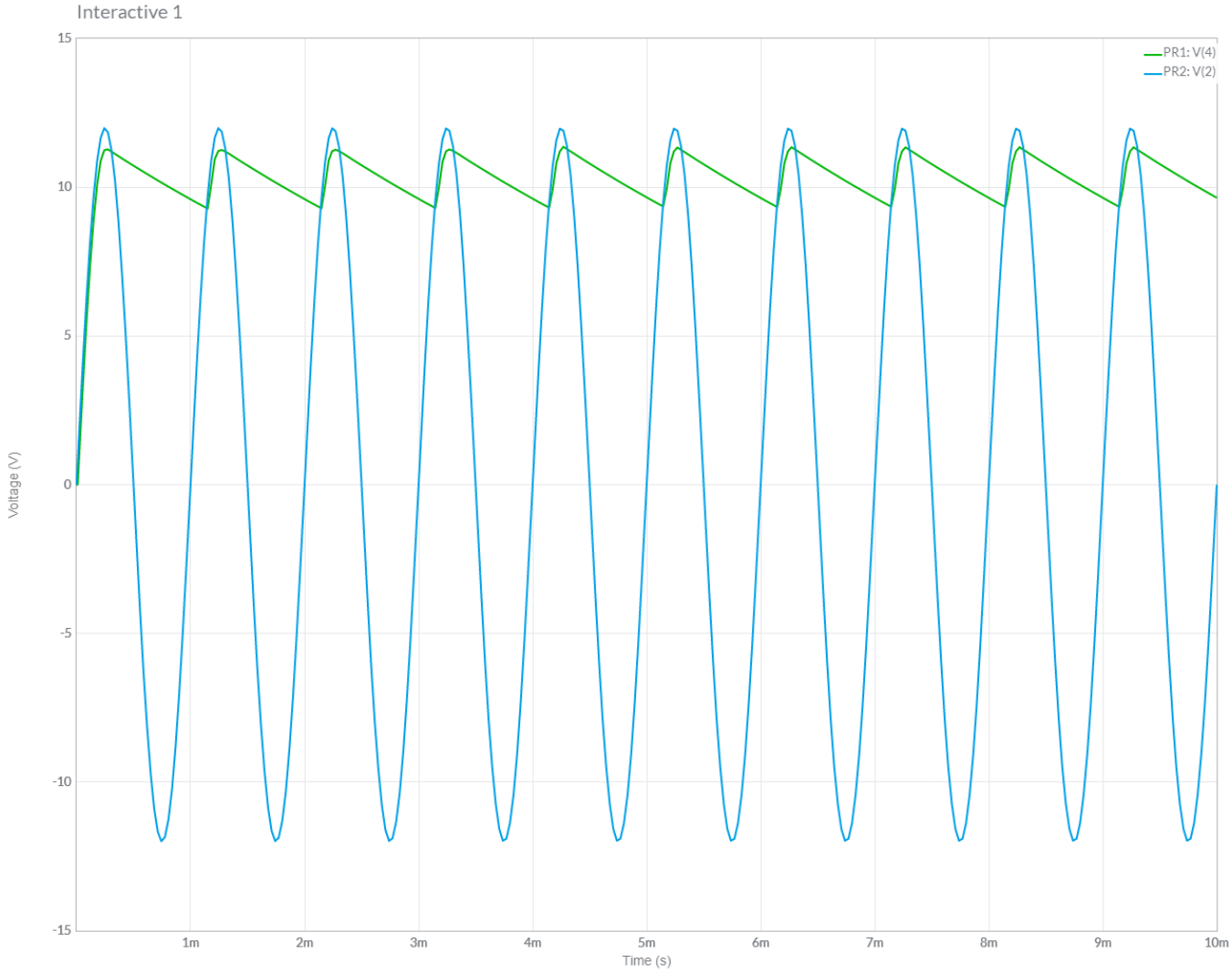
Graphical Representation of the Voltage :



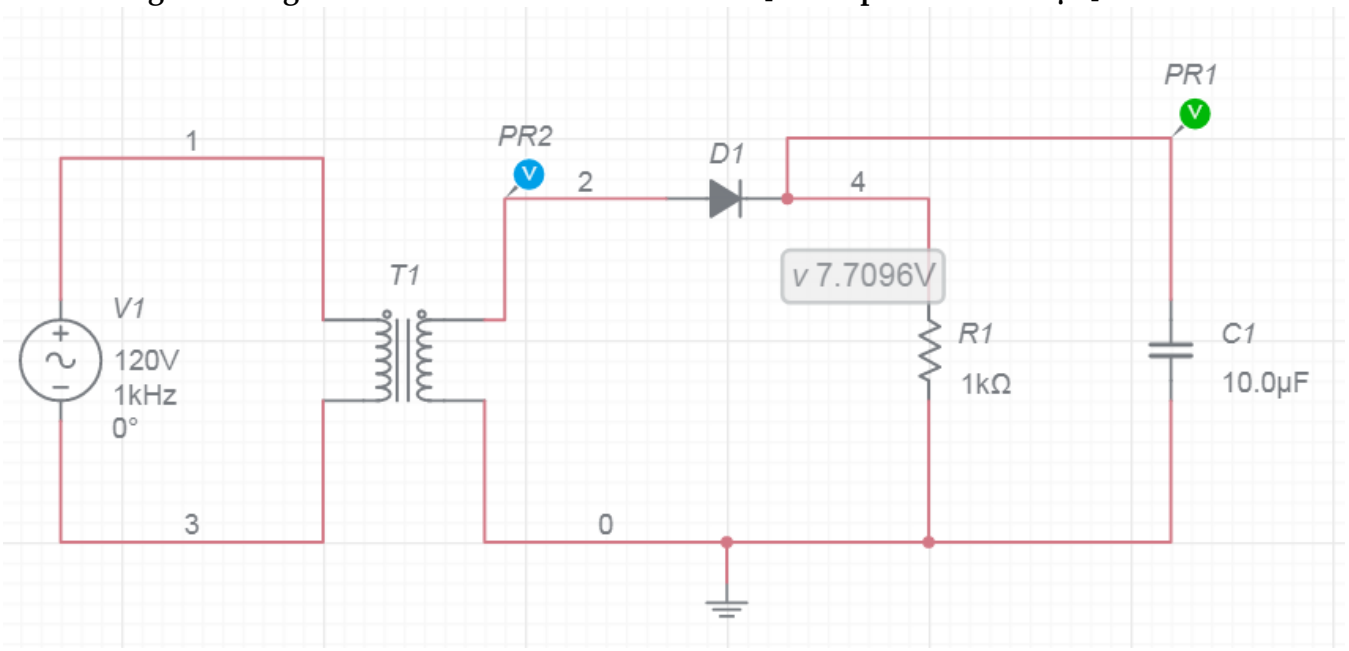
Circuit Diagram using Multisim Online Live Simulator : [For Capacitance of 4.5μF]



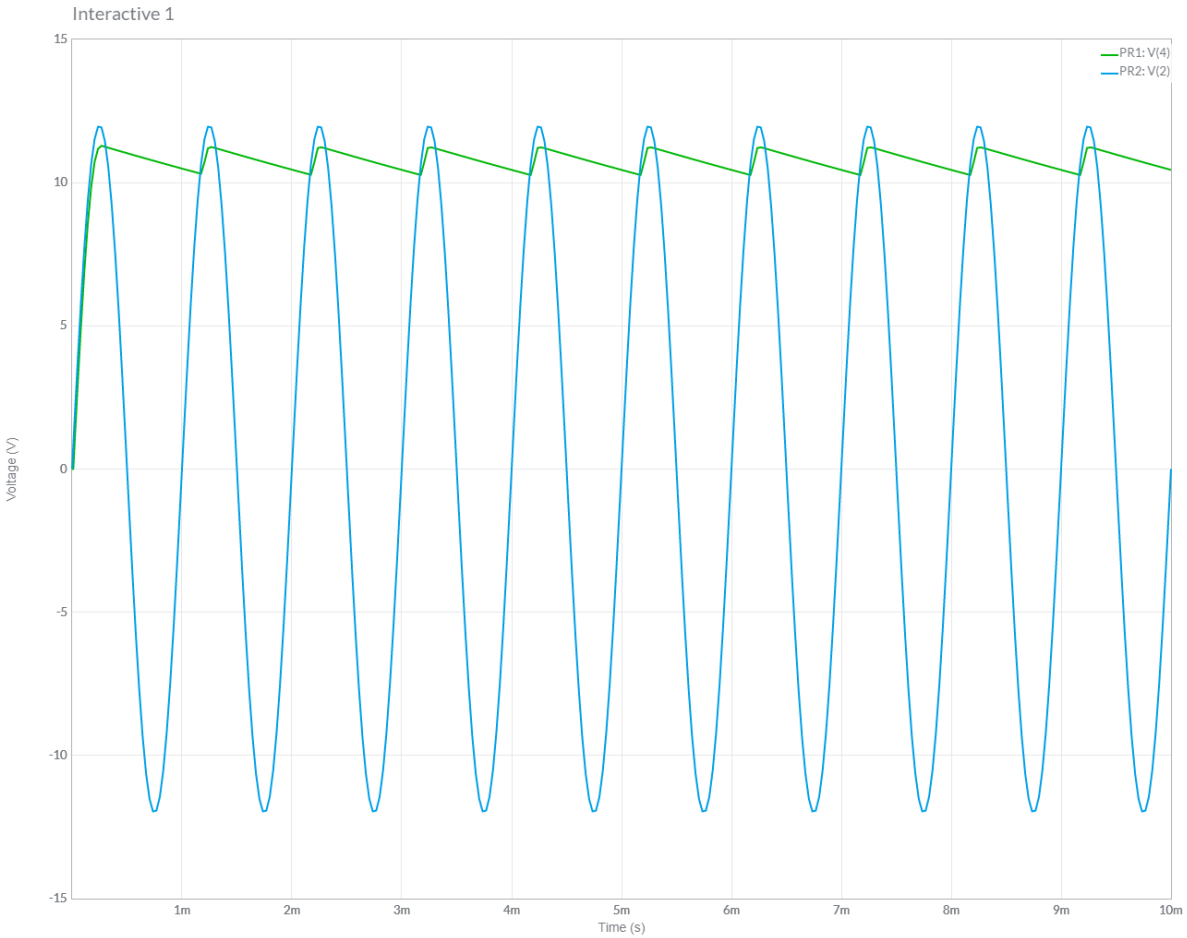
Graphical Representation of the Voltage :



Circuit Diagram using Multisim Online Live Simulator : [For Capacitance of 10μF]



Graphical Representation of the Voltage :



Observation :

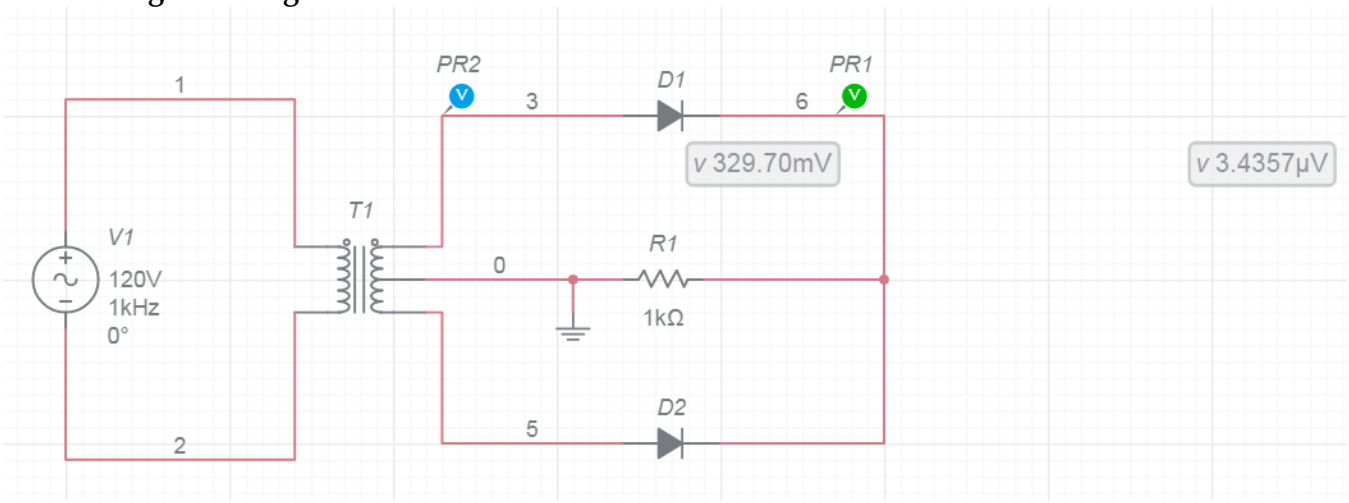
As the capacitance values increase, the AC voltage gets more bypassed by the capacitor and the resistor is having the pure DC voltage through the line. That's why the graph is considering to be like that and the voltage becomes more DC rather tends to be pure DC.

C. Draw the circuit of a Full wave Rectifier without using the capacitor.

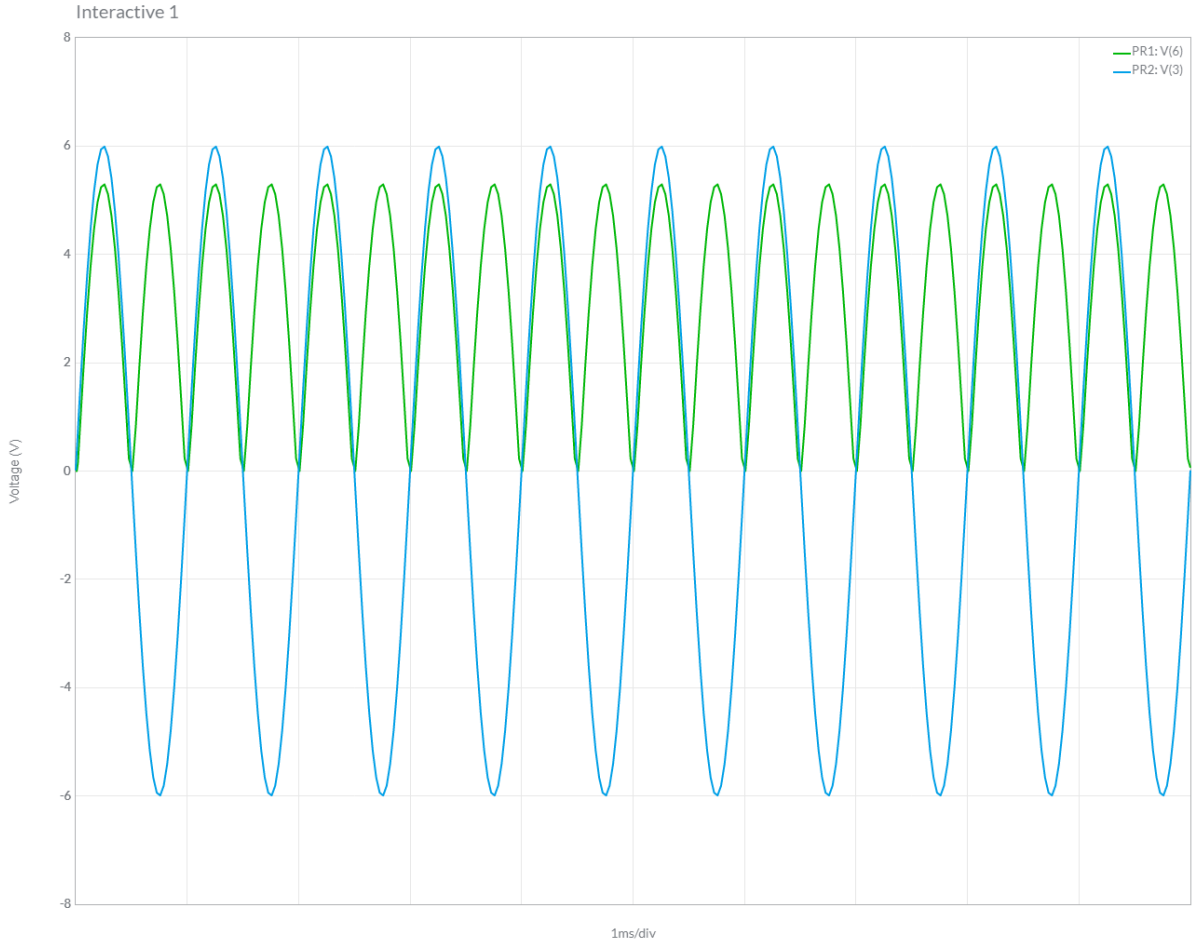
Requirements :

1. AC Power Source [120 V]
2. Diodes
3. Resistor [1kΩ]
4. Transformer [1P1S Centre Tapped]
5. Ground
6. Voltmeters

Circuit Diagram using Multisim Online Live Simulator :



Graphical Representation of the Voltage :

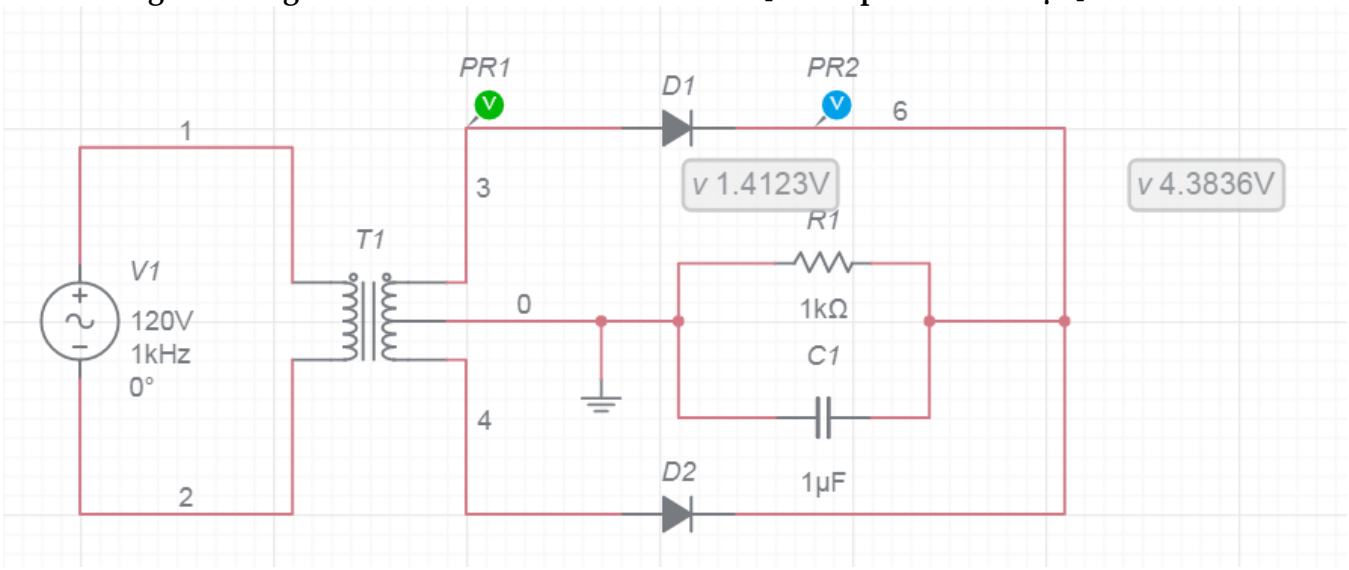


D. Draw the circuit of a Full wave Rectifier using the capacitor of different values and analyze.

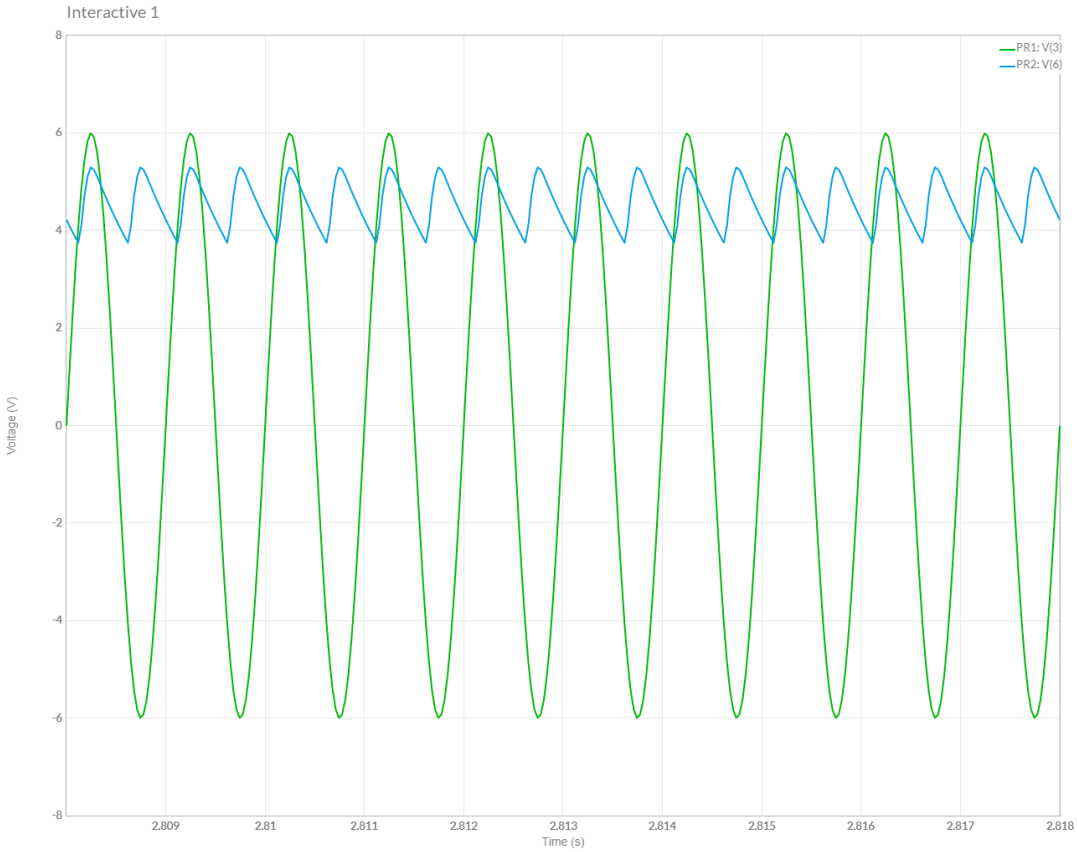
Requirements :

1. AC Power Source [120 V]
2. Diodes
3. Resistor [1kΩ]
4. Transformer [1P1S Centre Tapped]
5. Ground
6. Voltmeters
7. Capacitors [1µF, 5µF and 10µF]

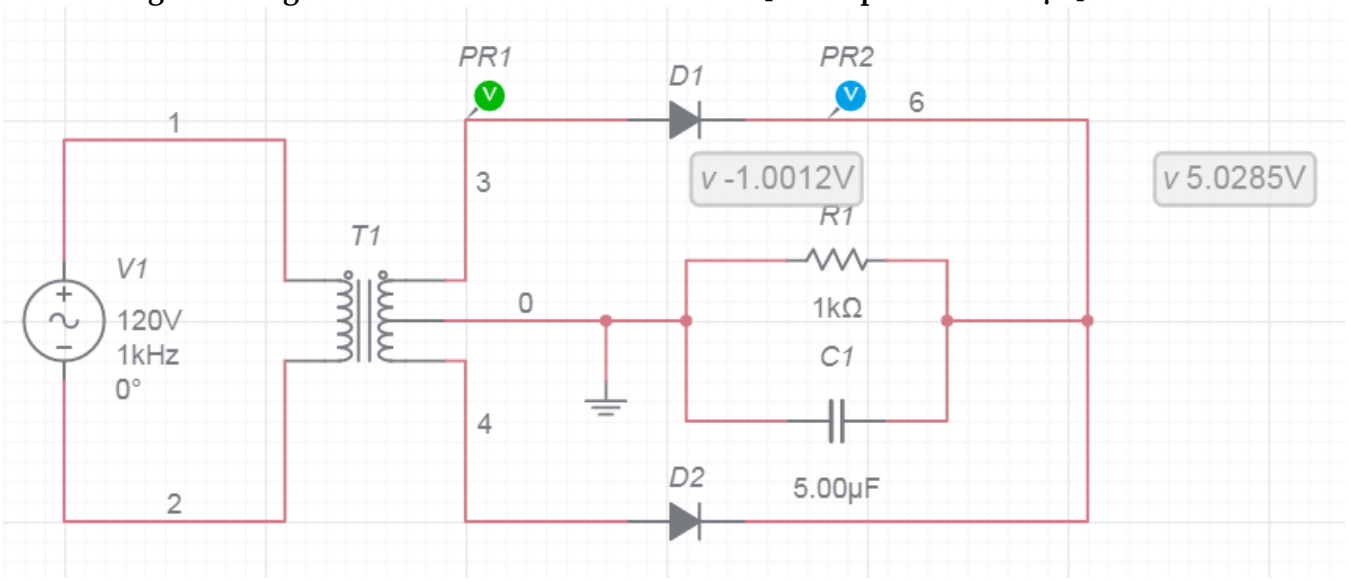
Circuit Diagram using Multisim Online Live Simulator : [For Capacitance of 1µF]



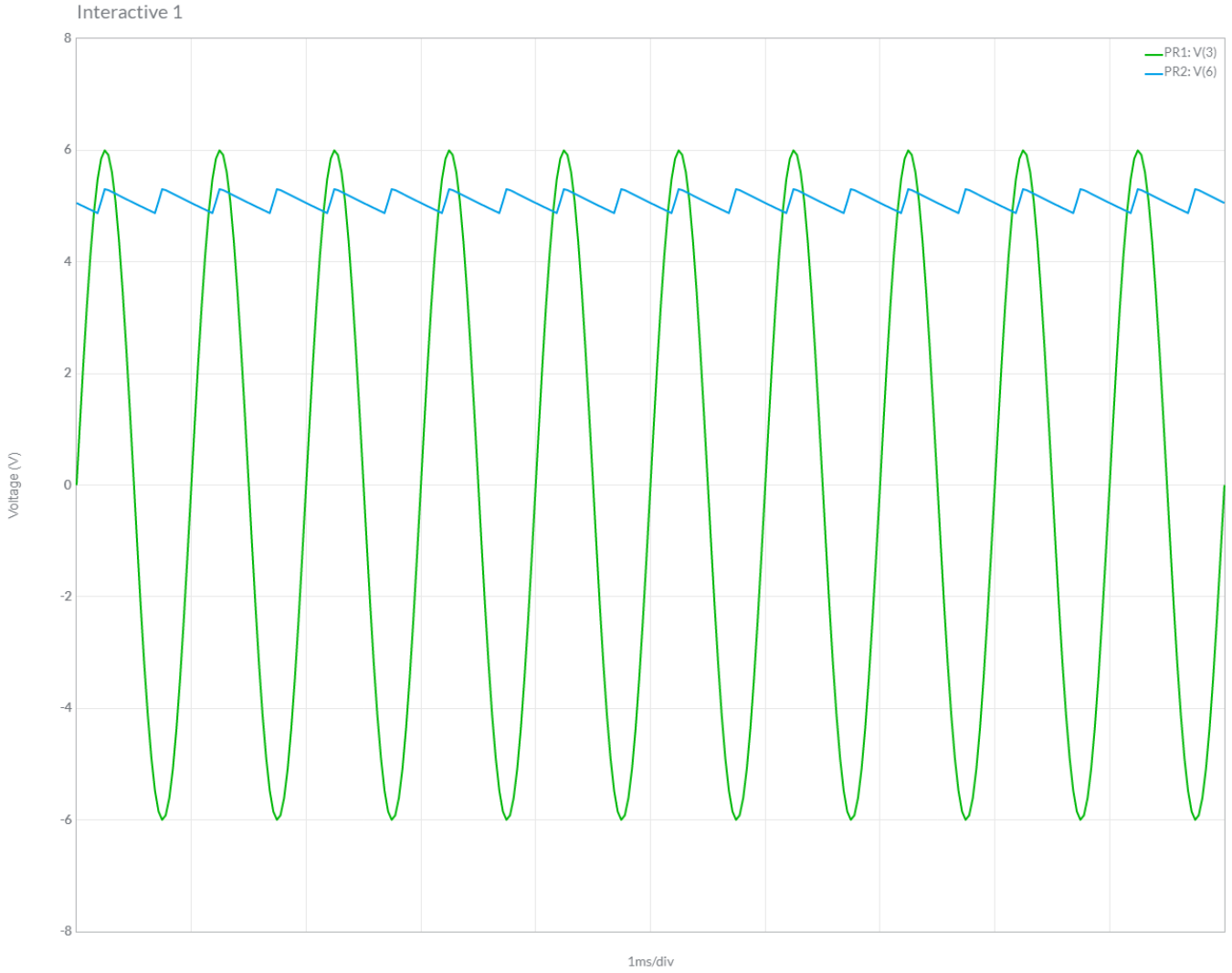
Graphical Representation of the Voltage :



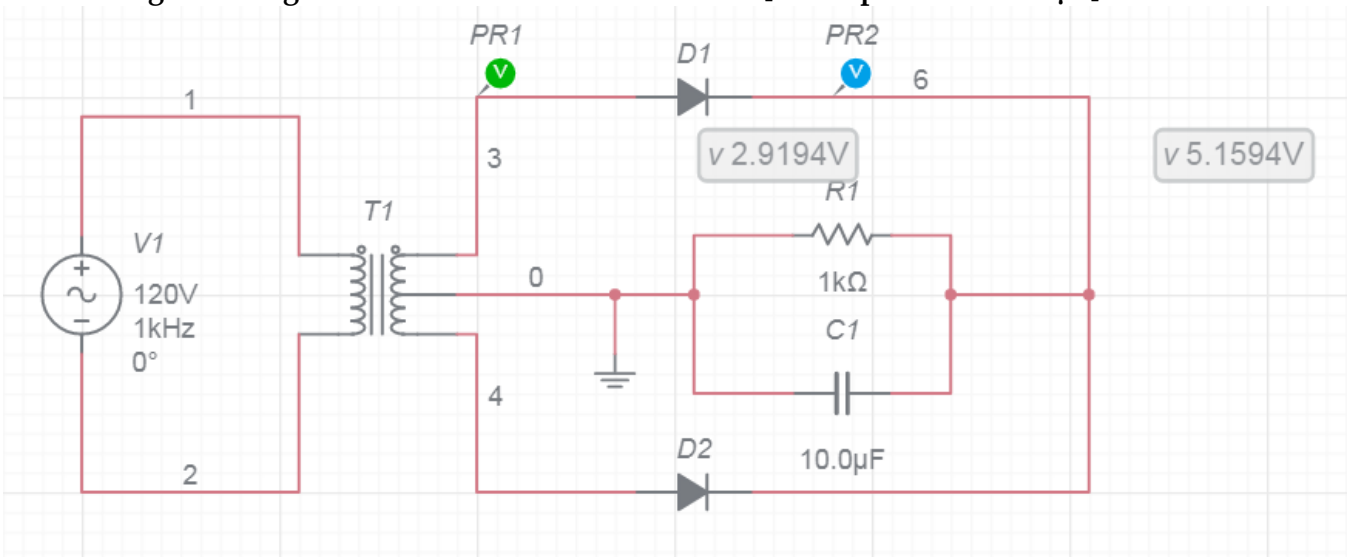
Circuit Diagram using Multisim Online Live Simulator : [For Capacitance of 5μF]



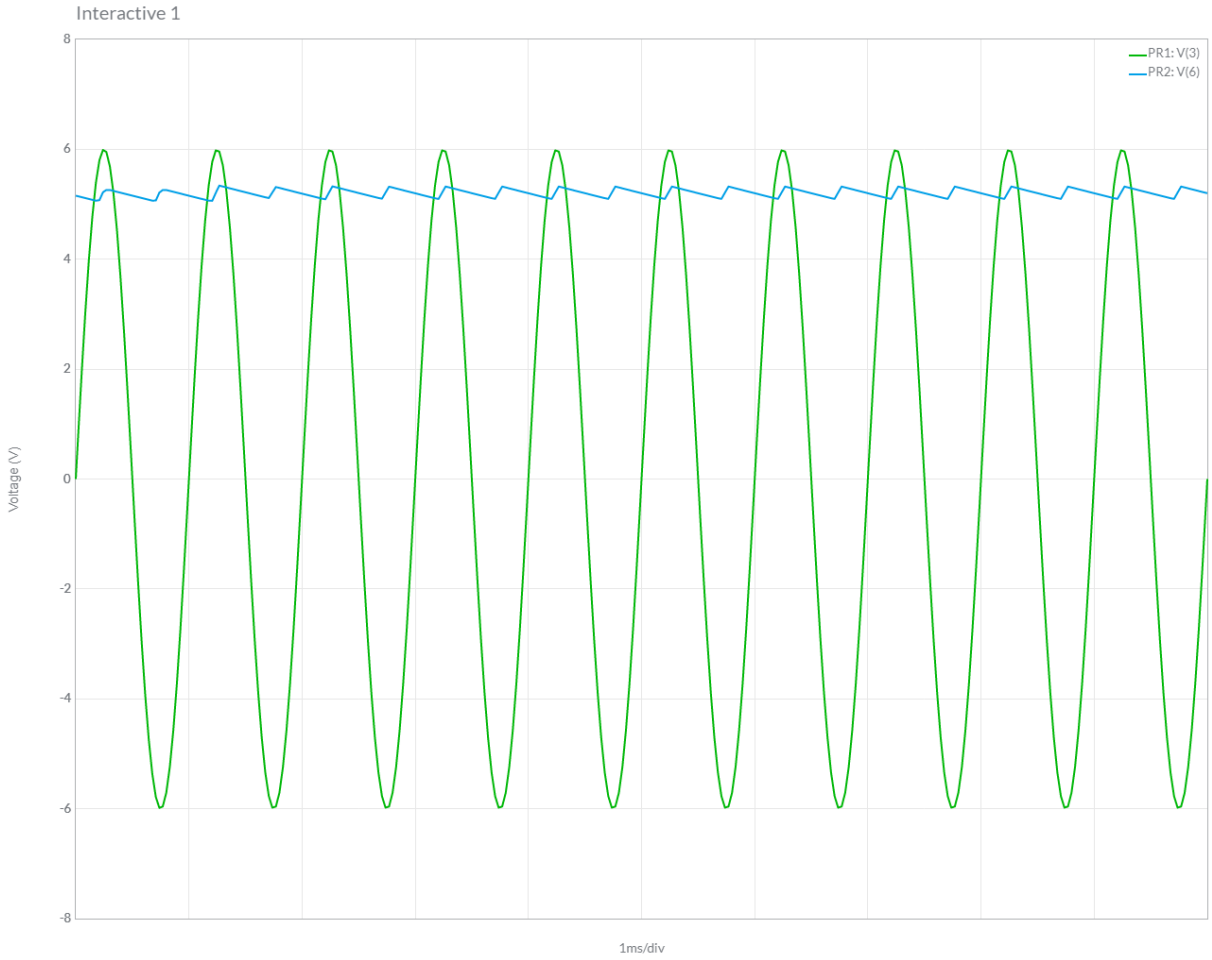
Graphical Representation of the Voltage :



Circuit Diagram using Multisim Online Live Simulator : [For Capacitance of 10μF]



Graphical Representation of the Voltage :



Observation :

As the capacitance values increase, the AC voltage gets more bypassed by the capacitor and the resistor is having the pure DC voltage through the line. That's why the graph is considering to be like that and the voltage becomes more DC rather tends to be pure DC.

For both the half and full wave rectifiers we have seen that capacitance decreased the ripple factor and make the voltage tends to be pure DC by increasing the value of the C.

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