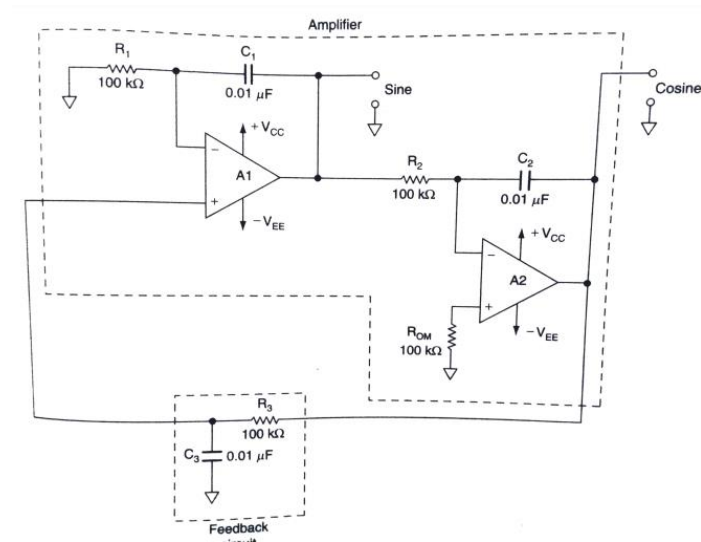


Name of the participant : USHA KOLA

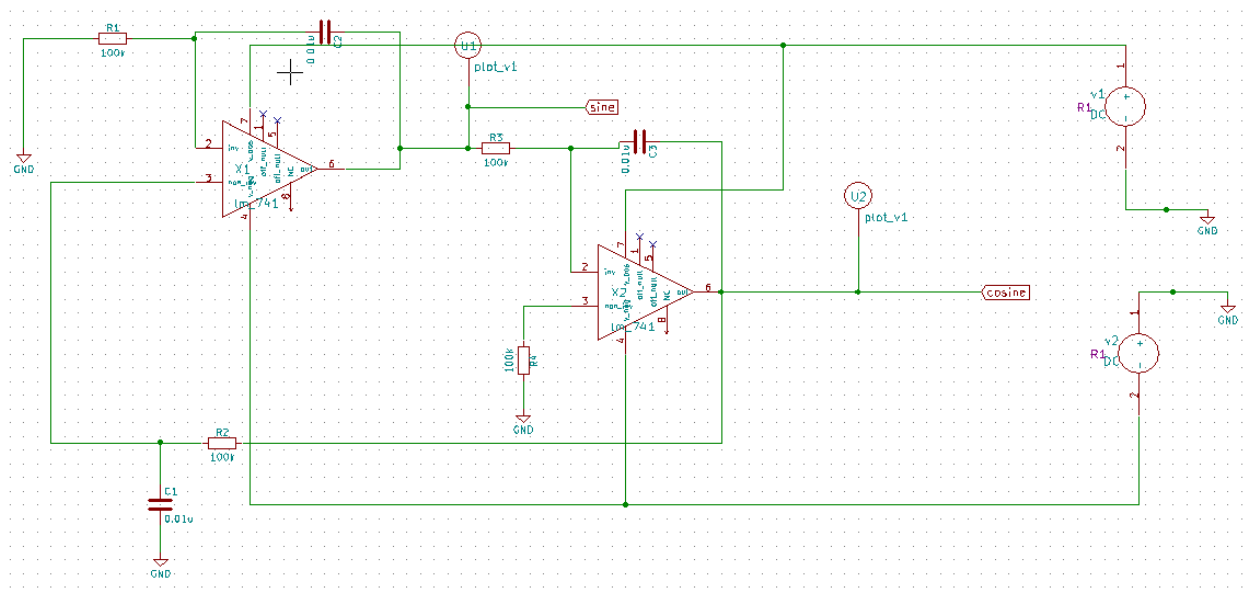
Title of the circuit : QUADRATURE OSCILLATOR

**Theory:** An Oscillator is a circuit which produces AC waveform. The quadrature oscillator is a circuit which produces two signals sine and cosine that are 90 degrees out of phase simultaneously. This is widely used in the field of communications as SSB generators and has applications in measurement systems.

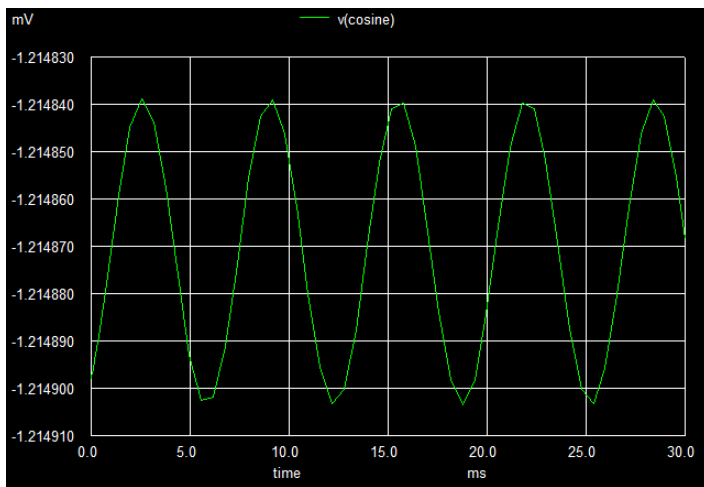
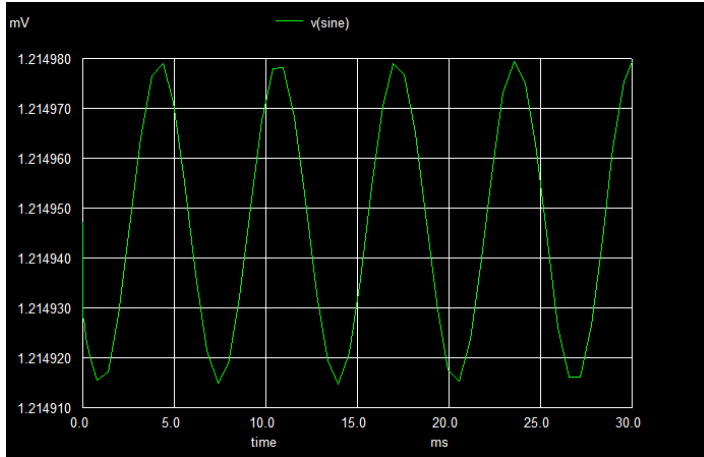
**Circuit Diagram:**



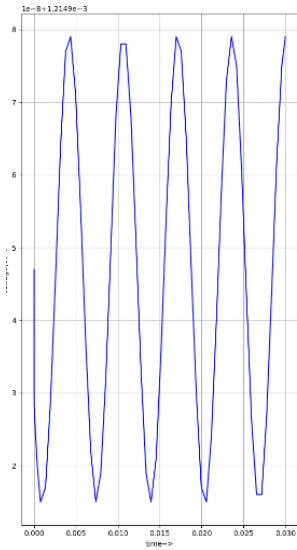
**Schematic:**



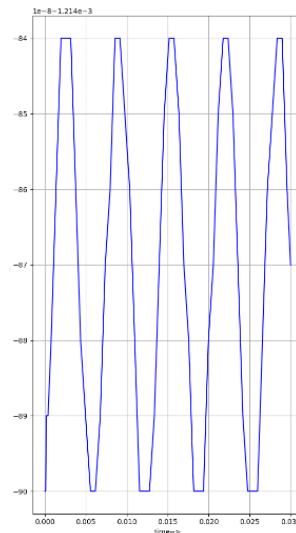
## Ngspice plots:



## Python plots:



Sine



cosine

**References:**

1. Op-amps and Linear Integrated circuits by Ramakanth A.Gayakwad 4th edition, Pearson Publication.



