



# **SNS COLLEGE OF TECHNOLOGY**

(An Autonomous Institution)

**COIMBATORE-35**

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## **19EET101 / BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**I YEAR / I SEMESTER**

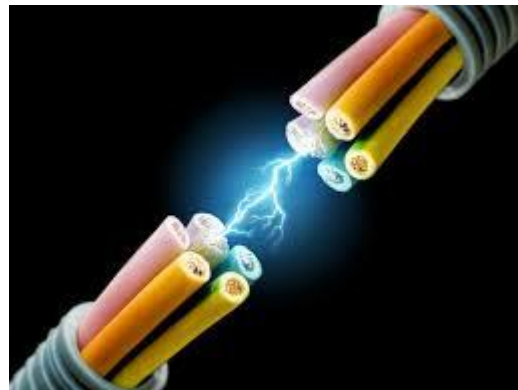
### **UNIT-I: ELECTRICAL CIRCUITS AND MEASUREMENTS**

## **CIRCUITS FUNDAMENTALS**



# TOPIC OUTLINE

- Circuit elements
  - Simple circuits
- Types of circuits
  - Basic elements





# CIRCUIT ELEMENTS

- Source:

A Voltage or a Current source which delivers Electrical energy

- Sink:

A Element which consumes Electrical energy

- Circuit:

A circuit consist of a source and a sink connected with wires forming a closed loop



# Would This Work?





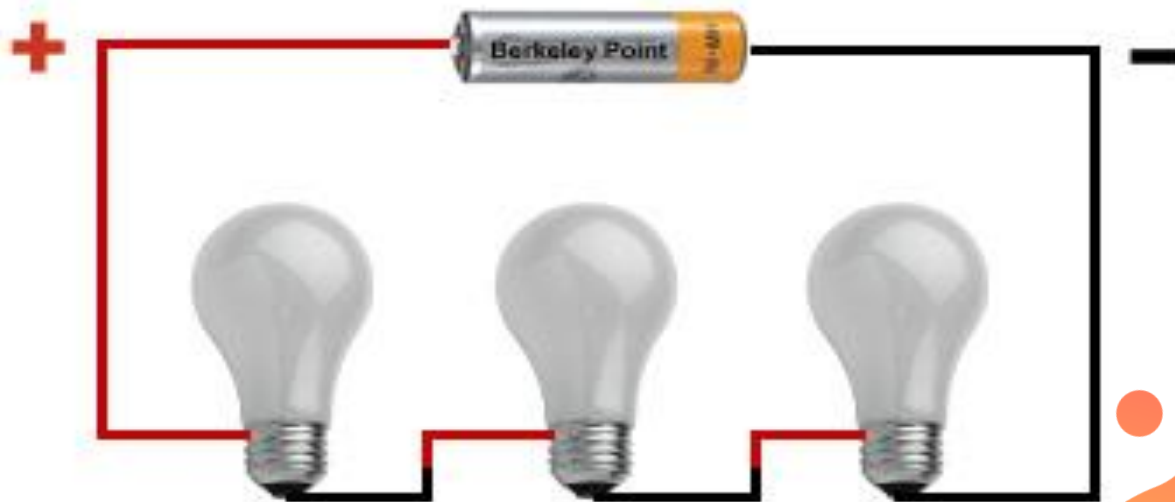
# Would This Work?





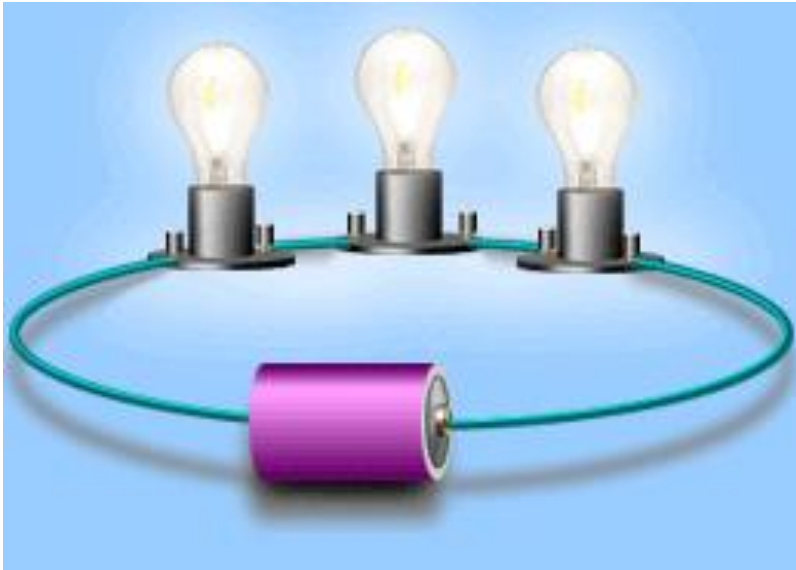
# SERIES CIRCUIT

- One pathway for current to flow
- Used in **decoration lights**





# SERIES CIRCUIT



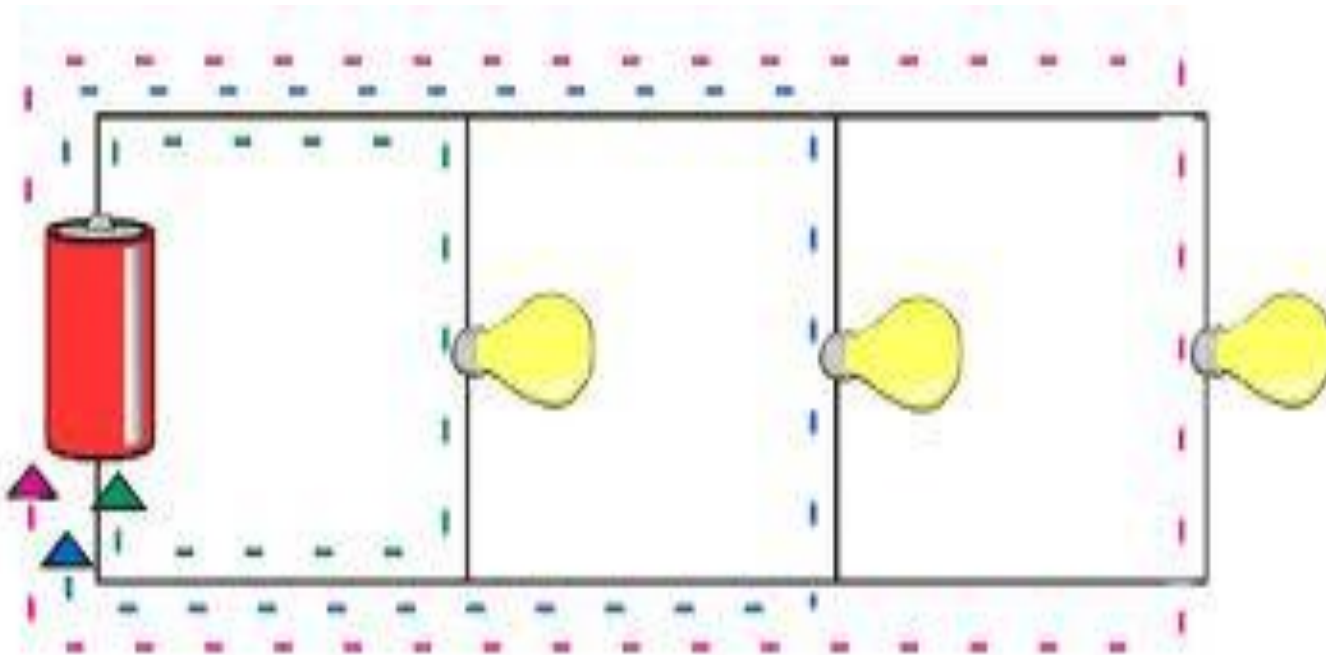
- Series circuit
  - All in a row
  - **1 path** for electricity
  - 1 light goes out and the circuit is broken



# PARALLEL CIRCUIT

More than one path way for current to flow.

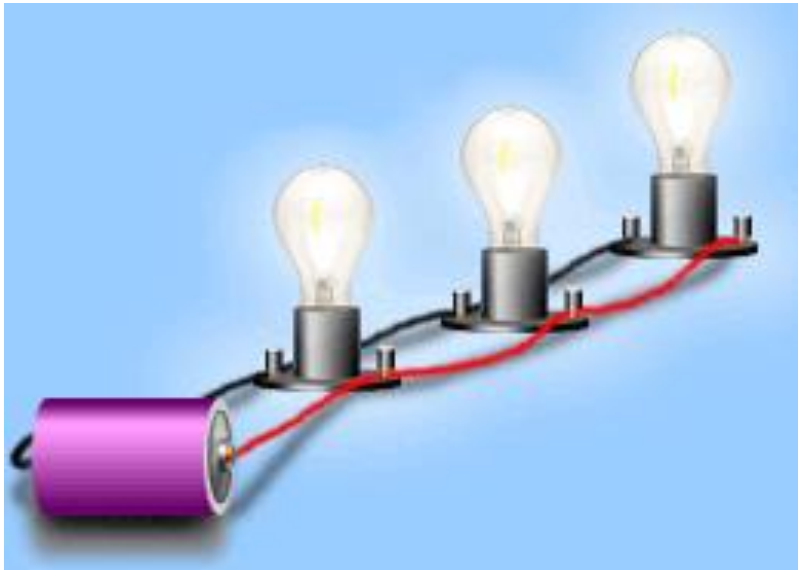
- Used in **electrical wiring** circuits.







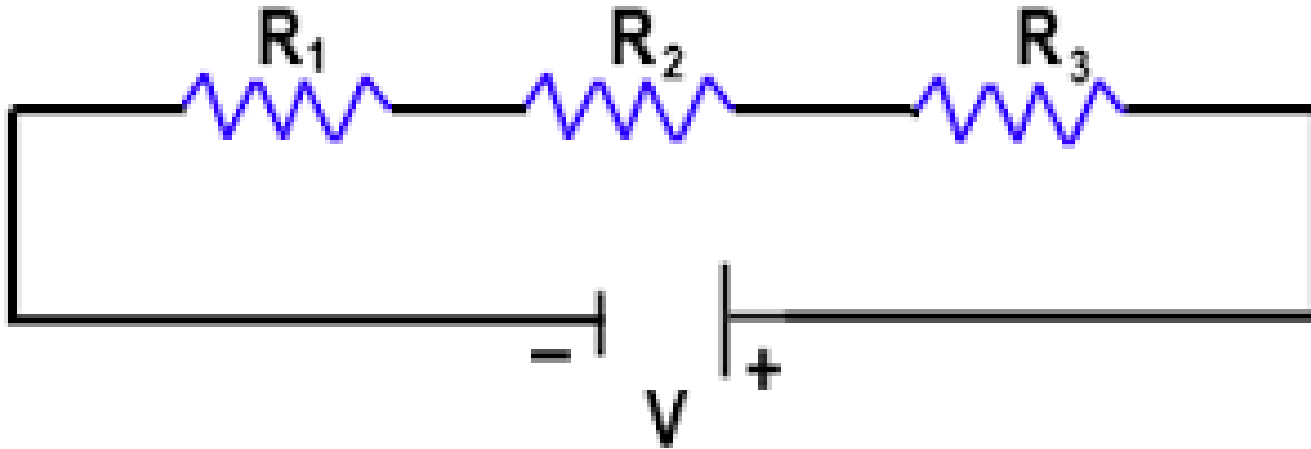
# PARALLEL CIRCUIT



- Parallel circuit
  - Many paths for electricity
  - 1 light goes out and the others stay on



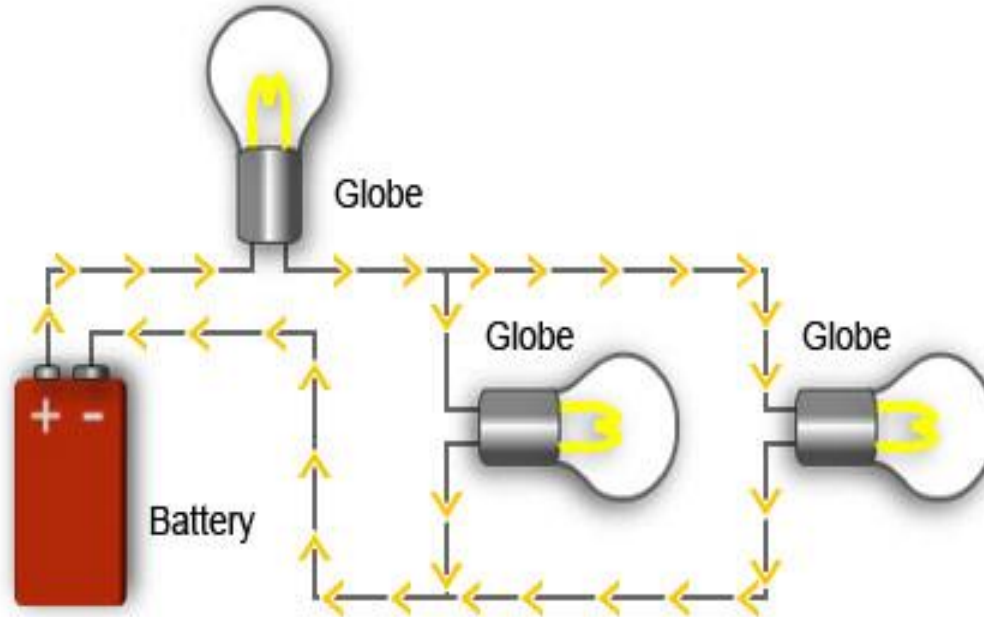
# SERIES RESISTANCE CIRCUIT



$$R_{\text{total}} = R_1 + R_2 + R_3 \dots$$



# PARALLEL RESISTANCE CIRCUIT



$$\frac{1}{R_{TOT}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \dots \text{etc.}$$

$$R_{TOT} = \frac{R_1 \times R_2}{(R_1 + R_2)}$$



# CIRCUIT DEFINITIONS

- **Node:**

Any point where 2 or more circuit elements are connected together

- **Branch:**

A circuit element between **two nodes**

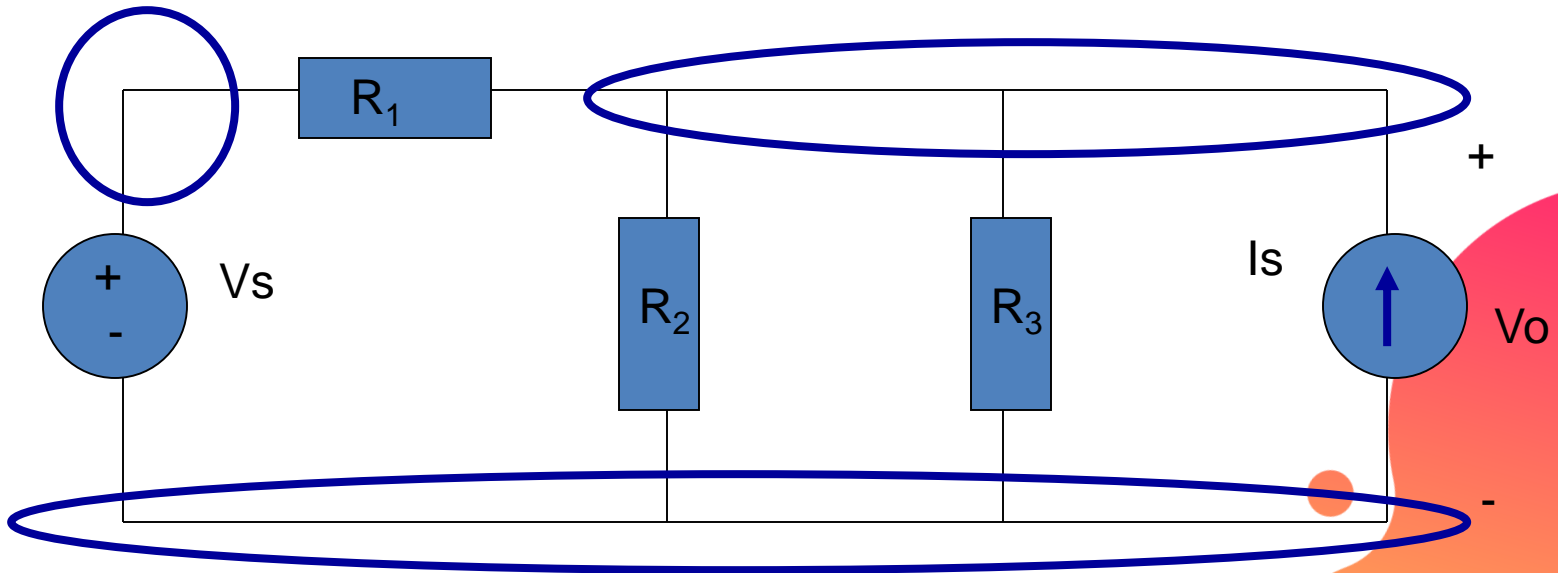
- **Loop:**

Collection of branches that form a **closed path** returning to the same node without intersecting



# NODES

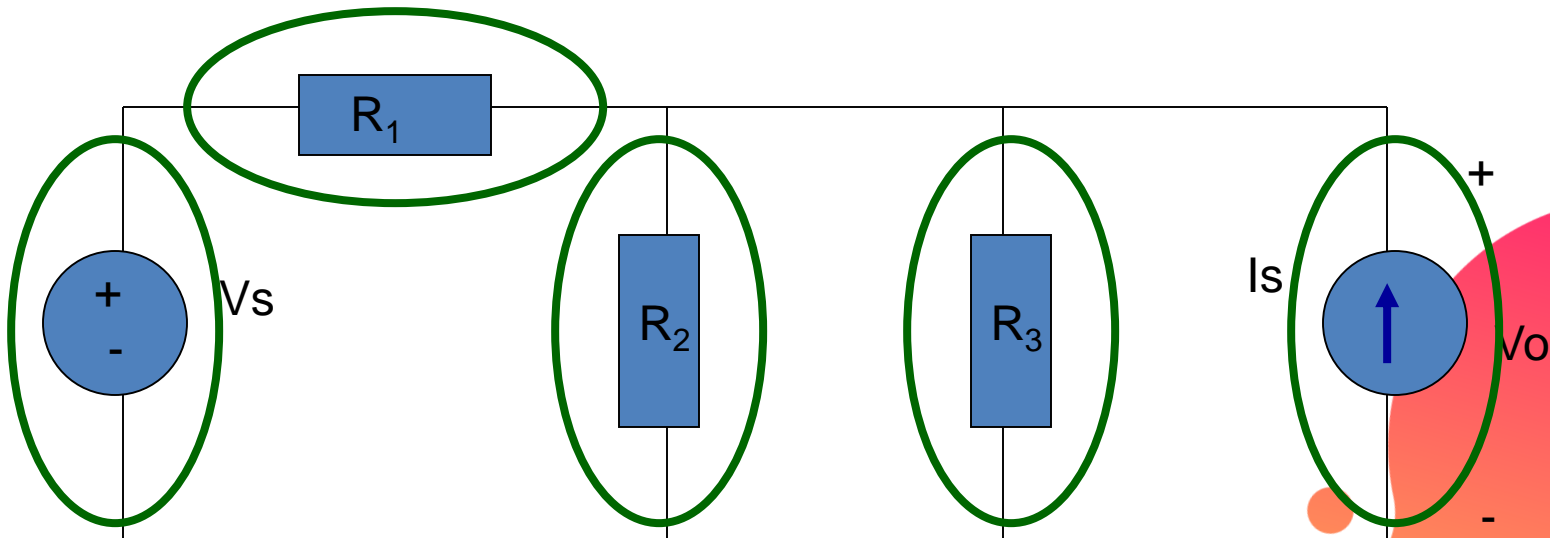
- Three nodes





# BRANCHES

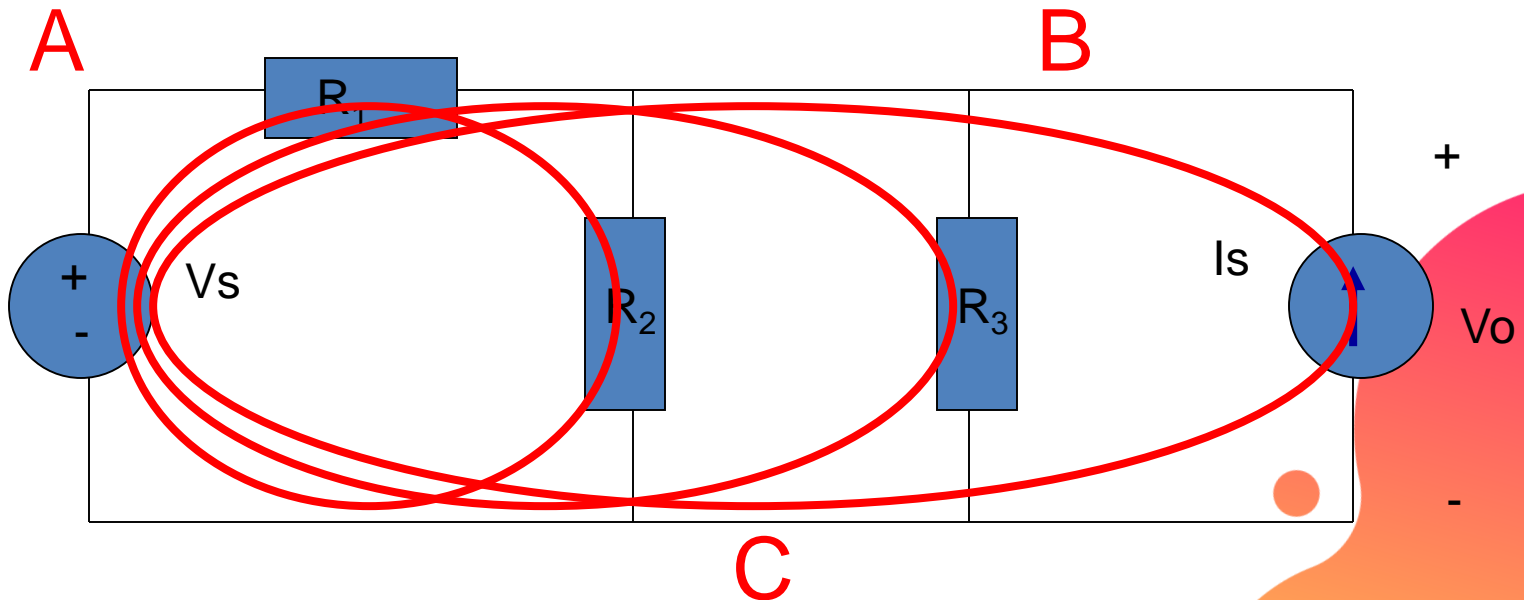
- 5 Branches





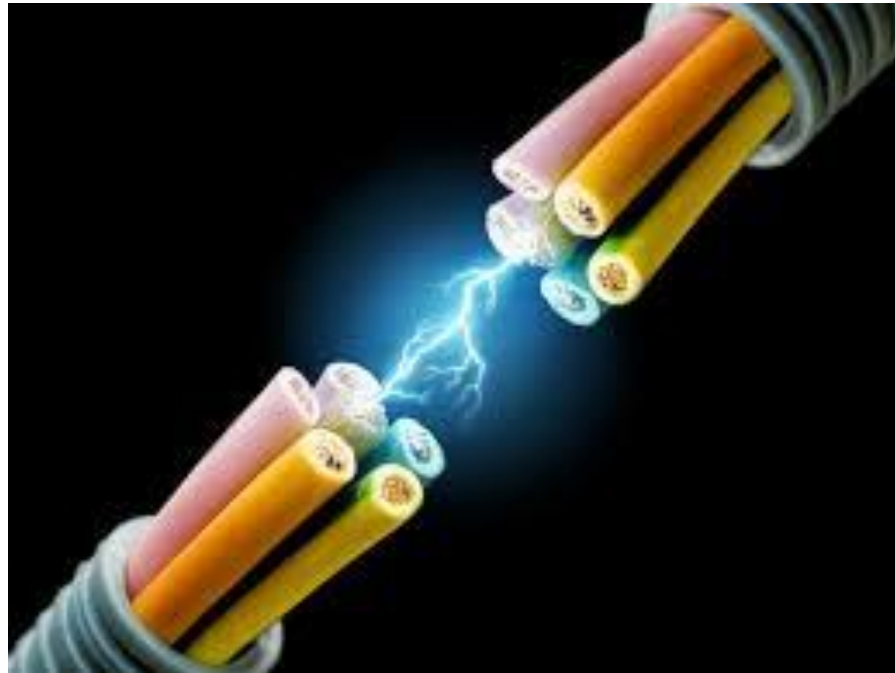
# LOOPS

- Three Loops, if starting at node A





# RECAP...



# ...THANK YOU