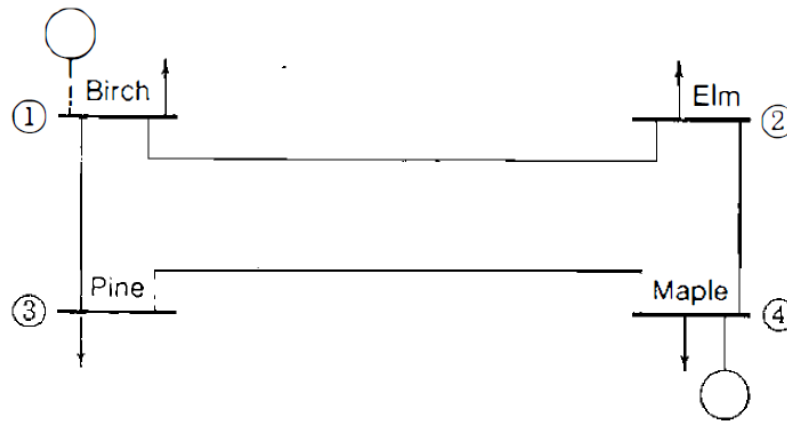


### Load Flow Project

For the power system network shown:

Develop a Matlab program to solve the power flow for the system using Newton Raphson technique to get the bus voltages, the slack bus power, power flows and power losses.

- It is required to submit a report for the program
- A discussion will be held to run the program
- Bonus marks for additional options
- Any similarity between projects a penalty grades will be deducted from both projects.
- Students per group 5



Line, bus to bus	Series $Z$		Series $Y = Z^{-1}$		Shunt $Y$	
	$R$ per unit	$X$ per unit	$G$ per unit	$B$ per unit	Total charging Mvar†	$Y / 2$ per unit
1-2	0.01008	0.05040	3.815629	-19.078144	10.25	0.05125
1-3	0.00744	0.03720	5.169561	-25.847809	7.75	0.03875
2-4	0.00744	0.03720	5.169561	-25.847809	7.75	0.03875
3-4	0.01272	0.06360	3.023705	-15.118528	12.75	0.06375

†Base 100MVA, 230 kV.

‡At 230 kV.

Bus	Generation		Load		$V$ , per unit	Remarks
	$P$ , MW	$Q$ , Mvar	$P$ , MW	$Q$ , Mvar†		
1	—	—	50	30.99	$1.00 \angle 0^\circ$	Slack bus
2	0	0	170	105.35	$1.00 \angle 0^\circ$	Load bus (inductive)
3	0	0	200	123.94	$1.00 \angle 0^\circ$	Load bus (inductive)
4	318	—	80	49.58	$1.02 \angle 0^\circ$	Voltage controlled