**Y-Bus:**

*When a fault has been input into the system, the first thing my code does is to update the Y-Bus by adding the generator admittances. I do this by adding the admittance for the generator to the diagonal Y-Bus component for the bus that generator is located. The only elements in the Y-Bus that were updated with our system was Y11 and Y77*

**Z-Bus:**

*After updating the Y-Bus, I calculated the Z-Bus by using NumPy’s ‘linalg.inv’ of the Y-Bus values. The result is below.*

*A screenshot of a computer

Description automatically generated*

**Fault Current and pre-fault Voltages:**

*After calculating the Z-Bus, I determined the fault current by taking the pre-fault voltage of the faulted bus divided by the impedance from the Z-Bus diagonal element for that bus. To show the pre-fault voltages for all the buses, I made a pandas data frame by bringing in all the voltage magnitudes for each bus.*

*I tested a scenario with a fault at “Bus 3” to show the results.*

*A screenshot of a computer

Description automatically generated*

*For reference, the only additions to my milestone 3b code is shown below within my circuit code file.*

*A computer screen with text

Description automatically generated*