Overview
The freshwater streams in a geographic area can tell a lot about the range of effects that various environmental and industrial processes have. Stream data (values like temperature, salinity etc.) currently is expensive to gather and not comprehensively represented over the time domain.

Objectives
Our broad goal of this project was to design a system that would be low cost, and user friendly that could take valuable stream data remotely for long periods of time. The application of our device would likely be engaging members of the community that are able to deploy and manage one or several of our devices in as many freshwater streams as possible.

Approach
• Define the time domain goals of our end product
• Identify the highest cost benefit metrics to gather from the stream
  o Look at energy cost of probe designs
  o Look at monetary cost of hardware modules
  o Look at space cost of hardware and battery
• Create a probe design for salinity testing with an accompanying formula to convert impedance signal to applicable salinity representation
• Construct a working budget that could capture both the complexity and part requirements of our device as well as assist with lowering cost as extremely as possible
• Work with our Advisor and his team to assure that all design choices were beneficial for data analysis
  o Identify time domain
  o Identify rate at which the device should take measurements
  o Stay within industry conventions and standards
• Design an abstracted layer to the device that allows for more user friendly data transfer

Outcomes
• Designed a probe system that accurately gathers salinity data
• Wired a digital system that measures stream values at set time intervals
• Kept unit costs in 60$ range, far beneath current device unit cost which ranges in the thousands
• Designed an Android application that simplifies data transfer via Bluetooth and data submission via email
• All components function except for Bluetooth Low Energy compatibility with smartphones