Real World Object (1 Pt): A Weather Stattion.
A **weather station** is a facility, either on land or sea, with instruments and equipment for measuring atmospheric conditions to provide information for weather forecasts and to study the weather and climate. (Wikipedia)

Image Source: Windy App

Why (1 Pt): I decided to model this object because its an object that is relevant to all our day today activities, we all want to know what the weather is like and when the rain or snow will fall so we could prepare our day accordingly. Also it helps the aviation world to predict what the weather would look like.

Abstraction (1 Pt): class WeatherStattion

Encapsulation (3 Pt) – Blue Print/Class:

Data:

- float Location (The geographical coordinates (latitude and longitude) where the weather station is positioned.)
- Int Temperature (The current temperature measured by the weather station.)
- Int Humidity (The humidity level in the air as measured by the weather station.)
- Int Pressure (Atmospheric pressure at the location of the weather station.)

- Float Wind Speed (The speed of the wind as measured by an anemometer.)
- String Wind Direction (The direction from which the wind is blowing.)
- Float Precipitation (The amount of rainfall or snowfall in a given time period.)
- Continuous Time (The timestamp of when the weather data was last updated.)

Functions/Methods:

- Update Weather Data () // A method to retrieve and update the latest weather data from physical sensors.
- Get Temperature () // A method to retrieve the current temperature.
- Get Humidity () // A method to retrieve the current humidity level.
- Get Pressure () // A method to retrieve the current atmospheric pressure.
- Get Wind Speed () // A method to retrieve the current wind speed.
- Get Wind Direction () // A method to retrieve the current wind direction.
- Get Precipitation () // A method to retrieve the amount of precipitation.
- Get Time () // A method to retrieve the timestamp of the last data update.

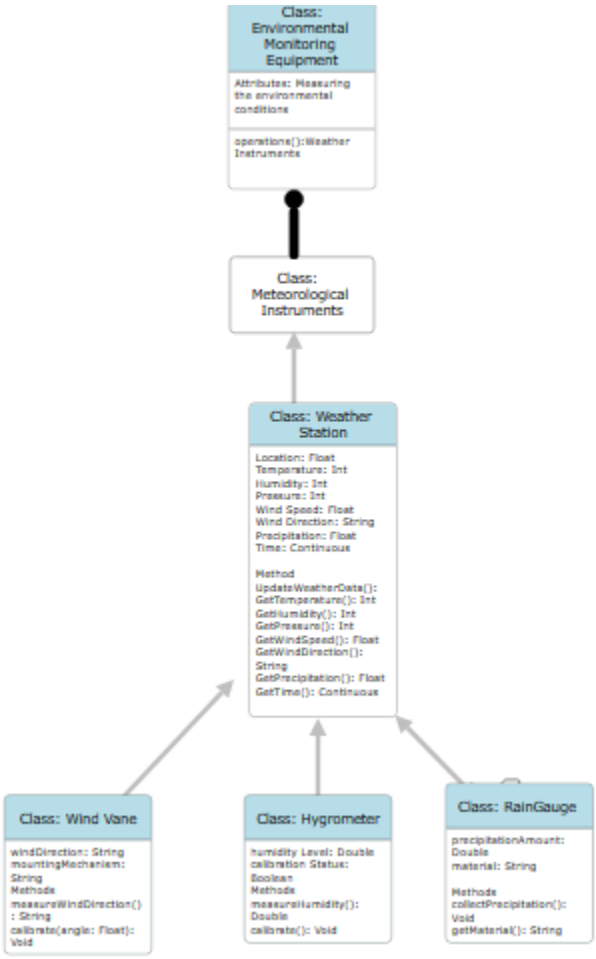
Argumentation: I moddeled the weather station this way because it is used to get the atmospheric condition, and the relevant data that is read and provided by a typical weather station is stated above.

Inheritance (1 Pt)

Parents = Meteorological Instruments. Weather station inherits some abilities, functions and beahviours from the metrological instruments which reads atmospheric, and weather conditions data.

Child = Wind vane, which is specifically used to measure the direction and the speed of the wind. This is a child instrument which can be a sub class to the weather station that measures more other parameters.

UML (3 Pt):


Class: Environmental Monitoring Equipment
Attributes: Measuring the environmental conditions
operations():Weather Instruments
Class: Meteorological Instruments
Class: Weather Station
Location: Float
Temperature: Int
Humidity: Int
Pressure: Int
Wind Speed: Float
Wind Direction: String
Precipitation: Float
Time: Continuous
Method
UpdateWeatherData():
GetTemperature(): Int
GetHumidity(): Int
GetPressure(): Int
GetWindSpeed(): Float
GetWindDirection():
String
GetPrecipitation(): Float
GetTime(): Continuous
Class: Wind Vane
windDirection: String
mountingMechanism:
String
Methods
measureWindDirection()
: String
calibrate(angle: Float):
Void
Class: Hygrometer
humidity Level: Double
calibration Status:
Boolean
Methods
measureHumidity():
Double
calibrate(): Void
Class: RainGauge
precipitationAmount:
Double
material: String
Methods
collectPrecipitation():
Void
getMaterial(): String