BLE NOTES

## Resources

Basically all the code used is from here <https://learn.microsoft.com/en-us/windows/uwp/devices-sensors/bluetooth-low-energy-overview> and <https://learn.microsoft.com/en-us/windows/uwp/devices-sensors/gatt-client>

This tutorial is very good <https://www.youtube.com/watch?v=CozmqN_iwNs>

## Understanding the Bluetooth

The server is the heart rate monitor, and the client is our application

In terms of Bluetooth the client is called the “central” and the server “peripheral”

## GATT

GATT is what the centrals uses to interface with the peripheral to get more interesting and useful data.

It stores **services** that categorize the different types of data that a central might be interested in.

In those services are **characteristics** that store values for specific service categories

Each characteristic has read write and notify setting

**Notify** tells the peripheral to send a signal to the central that is connected and subscribed to a characteristic, whenever the value is updated.

When trying to use the application, do not already pair the HR monitor with the computer because it can only have on connection at a time.

### UUID

128 bit Universally unique identifier used to distinguish between centrals, peripheral, advertisements ect

## Setting Up References

We need some references to libraries with device watcher. Need to add System.Runtime.WindowsRuntime.dll and Windows.winmd.

# Services

Text

Description automatically generated

These are the specific services. We want the 180d as this service is specifically for heart rate services

<https://btprodspecificationrefs.blob.core.windows.net/assigned-numbers/Assigned%20Number%20Types/Assigned%20Numbers.pdf>



# Characteristic Properties

These are the properties of 180d

Text

Description automatically generated

We want the property that has the notify flag

# Extracting the Heart Rate

Value is 16 bits for HR

First 8 bits are flags

Next 8 bits are measurement value

Text

Description automatically generated with medium confidence