Challenge 1 - Pulse Width Modulation (PWM):

The PWM Out example illustrates the way pulse width modulation can be used to control the power sent to the LED thus controlling the brightness of a LED. In the PWM speaker demo PWM is used to change the pitch of the sound coming from the speaker as the way power is sent to the speaker. The given example called PWM_Test_LED-NPN works as the demo called PwmOut. The frequency setting is set to 10 KHz and a class is used instead of setting the variable in relation to the duty cycle.

Challenge 2 - Serial Peripheral Interface (SPI):

The LCD demo is an animation on the LCD screen. The given code is mainly shapes which have been stored as character arrays and then the code is printed in a specific order and in return a animation is produced. The temperature and humidity demo shows the use of I2C and SPI protocols to show data and printing them from analog to digital. The SPI_TEST_MOSIMISO shows how master and slave devices can share data between the configurations,

Challenge 3 -Inter Integrated Circuit (I2C):

The difference between temperature and humidity demo and the I2C_Test_HMC5883L shows how the I2C protocol is used with the compass module. Data is stored into a buffer variable and then when an input is detected a loop is ran to get the current reading from the compass and display it to the user.

Challenge 4 -Select Components/Modules needed for your end product based on the ideas discussed within the team:

1- HMc6352 Digital Compass

3- SHT21 temperature and humidity sensor

4- RN-42 Bluetooth Module

6- TMP102 temperature sensor

8- PC1602F LCD