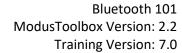# Exercises

You will be experimenting with various aspects of WICED Bluetooth by completing the exercises below. Labs are marked as "Basic" and "Advanced". You should make sure you complete the basic exercises first and then work on the advanced exercises as time allows.

#	✔	Chapter	Exercise	Category	Description
1			1.1	Basic	Create a Forum Account
2			1.2	Basic	Start ModusToolbox IDE, Explore the Docs
3		01 (Tour)	1.3	Basic	Program a simple Application
4			1.4	Basic	Use the Command Line
5			1.5	Advanced	Use Visual Studio Code
6			2.1	Basic	Blink an LED
7			2.2	Basic	Add Debug Printing to the LED Blink Project
8			2.3	Basic	Read the State of a Mechanical Button
9			2.4	Basic	Use an Interrupt to Toggle the State of an LED
10			2.5	Basic	Use a Timer to Toggle an LED
11			2.6	Basic	LED brightness with a PWM
12		02 (Peripherals)	2.7	Basic	LED toggling at specific frequency and duty cycle with a PWM
13			2.8	Basic	Read Motion Sensor Data Using I2C
14			2.9	Advanced	Write and Read Data in the NVRAM
15			2.10	Advanced	Calculate the Resistance of a Thermistor using the ADC
16			2.11	Advanced	Send a value using the standard UART functions
17			2.12	Advanced	Get a value using the standard UART functions
18			2.13	Advanced	Use the RTC to keep track of the Date/Time
19			3.1	Basic	Semaphore
20		03 (RTOS)	3.2	Advanced	MUTEX
21			3.3	Advanced	Queues
22			4A.1	Basic	Create a BLE Project with a BT101 Service and LED Characteristic
23		04A (Essential BLE Peripherals)	4A.2	Basic	Add a Connection Status LED
24			4A.3	Basic	Create a BLE Advertiser
25			4A.4	Basic	Connect using BLE
26			4B.1	Basic	Simple BLE Project with Notifications
27			4B.2	Basic	BLE Pairing and Security
28		04B (More Advanced BLE Peripherals)	4B.3	Advanced	Save BLE Pairing Information (i.e. Bonding)
29			4B.4	Advanced	Add a Pairing Passkey
30			4B.5	Advanced	Add Numeric Comparison
31			4B.6	Advanced	Add Multiple Device Bonding Capability
32			4C.1	Basic	BLE Low Power
33			4C.2	Advanced	Implement Eddystone URL Beacon
34			4C.3	Advanced	Use Multi-Advertising on a Beacon
35		04C (BLE Low Power, Beacons, OTA)	4C.4	Advanced	Simultaneous Eddystone and iBeacon
36			4C.5	Advanced	Advertise Manufacturing Data and Provide Scan Response
37			4C.6	Advanced	OTA Firmware Upgrade (Non-Secure)
38			4C.7	Advanced	OTA Firmware Upgrade (Secure)
39			4D.1	Basic	Make an Observer
40			4D.2	Basic	Read Device Name to Show Only Your Peripheral
41		04D (BLE Centrals)	4D.3	Basic	Connect to Your Peripheral and Turn ON/OFF the LED
42			4D.4	Advanced	Add Commands to Turn Notify ON/OFF
43			4D.5	Advanced	Do Service Discovery
44			4D.6	Advanced	Run the Advertising Scanner

#	✔	Chapter	Exercise	Category	Description
45			5.1	Basic	Run BTSpy
46		05 (Debugging)	5.2	Advanced	Use ClientControl with HCI Commands
47			5.3	Advanced	Run the Debugger
48		06A (Classic Bluetooth)	6A.1	Basic	Create a Serial Port Profile application
49		07A (Mesh Intro)	7A.1	Basic	Create a Network with a LightDimmable device
50		07B (Mesh Protocol)	7B.1	Basic	Add more LightDImmable devices to the network with Groups
51			7C.1	Basic	Add an OnOff Switch to your Network
52		07C (Mesh Firmware)	7C.2	Basic	Add a Dimmer Switch to your Network
53			7C.3	Advanced	Add 2nd Element to LightDimmable
54			7C.4	Advanced	Convert LightDimmable to HSL control
55			8.1	Basic	Basic BLE Peripheral
56		08 (PSoC 6 + 43xxx Bluetooth)	8.2	Basic	Notifications
57			8.3	Basic	Pairing
58			8.4	Basic	Bonding