Task 1.1P Arduino Nano 33 IoT Device: Creating an Account and Blinking LED

Nano 33 IoT is one of the full-stack IoT devices introduced by Arduino, an open-source platform, to support a wide range of IoT applications. The Arduino IoT Cloud platform allows you to connect and control various sensors and actuators, collect and transfer data, and control devices through a mobile application.

In this task, we will try out an introductory setup to learn the basic concepts of Arduino Nano 33 IoT devices and start with basic programming of the device. The setup steps are identical regardless of which Arduino IoT device you are using.

Hardware Required

- Arduino Nano 33 IoT Device
- Micro-USB to USB-A cable
- A mobile phone with Arduino Cloud app installed.
- WiFi enabled device like a laptop or a mobile phone

Software Required

Web browser IDE/ Arduino IDE 2

Pre-requisites

Read the following guides on
Arduino guide for Nano 33 IoT: https://docs.arduino.cc/hardware/nano-33-iot/
Arduino guide for IoT Cloud: https://docs.arduino.cc/arduino-cloud/guides/overview/

Task Objective

Part 1: Set up your Arduino device and claim it to your Arduino account. You are required to add the device to your account before the lab session starts so that you can use it in your later tasks.
Part 2: Start basic programming with blinking the in-built LED

Notes:
- If you are going to use your device on campus, your device will not be able to connect to eduroam by default. Instead, please use Wi-Fi at home, or use your mobile/laptop hotspot when connecting the Arduino device to the Internet.
- you might be asked to update the firmware on the software the very first time you connect it to the Internet, in case you are using your mobile phone as the hotspot.

Part 1

Steps:

- Create a free Arduino account **with your student email address** at <u>Arduino SSO</u> Arduino has provided the best instruction set on how to setup and start using your device (see pre-requisites section above). To avoid reinventing the wheel, please follow the instructions provided in the <u>Arduino Guide for Nano 33 IoT</u>

- **Installing the Arduino IDE 2**

   o Download and install Arduino IDE 2 from <u>Arduino IDE Download</u>

- **Using Arduino IDE**

   o Open Arduino IDE and install SAMD21 Core:
     Tools > Board> Board Manager > Arduino SAMD Boards (32-bits ARM Cortex-M0+) > Install

   o Once installed, open Blink.ino sketch
     File > Example> Basic> Blink

   o Select Port, select board, and click on the upload button to verify its installation.

- **Using Arduino IoT Cloud**

   o Go to Arduino IoT Cloud Arduino IoT Cloud <u>Arduino IoT Cloud</u>
   o Login with your email and password.
   o Click on create
     Devices > Select Device > Set up an Arduino Device > Configure.
   o You might need to download and install the Arduino Create Agent.
   o Connecting to a Network:
     configure > enter network credential (SSID and Password) > Save.
   o Follow the <u>Arduino Guide to IoT Cloud</u> to create variables and associate them with your IoT device.

Part 2

Requirement:

"We have an Arduino Nano 33 IoT board with an in-built LED light (similarly on other Arduino devices). We need the LED light to blink your first name in Morse code".

Steps

- Arduino group has provided a nice example on how to write a program to make a Nano 3 IoT device blink its LED on pin D13.
  - Read the tutorial available here: LED Blink
  - Note that the LED pin could be different in other Arduino devices.
- Modify your Blink an LED code to repeatedly blink your first name in Morse code.
  - Morse code lookup here: Morse Code
  - Use a long blink for a line and a short blink for a dot.

Task Submission Details

1. Insert the device list screen capture you created in Part 1. Make sure your device should be named as your name and capture the device information (Device name, Device ID, Model etc.) window and paste it here.
2. Describe how you would use modular programming to improve the usability of your Blink LED program written in Part 2.
3. Create a repository named **Task1.1BlinkName** on Github. Upload your code to the repository. Include the link to your repository here.
4. Take a short video of your Arduino board with the LED blinking your first name and upload it to YouTube or Deakin Panopto and Include the link here.
5. **For SIT730 Students Only**
   - Investigate a day-to-day embedded system that has ARM processor and explain how it is used in the given application. You can include details such as what additional components are connected to this processor in this embedded system and
   - Outlines some of the recent methods/frameworks used to design embedded systems.

Remember, anytime you submit a task to OnTrack, it is a good practice to check the status of any existing tasks, and the future tasks you are expected to complete. If you have got feedback on previous tasks, you may need to fix and resubmit some of your work. You want to check out why, so that you can learn from this and make it faster and easier to accomplish later work to the required standard.