SIT225 Data Capture Technologies

Pass Task: Hello Arduino!

Overview

Arduino can print in serial communication port which is shown in console monitor of Arduino-IDE but sometime it is required to establish a 2-way communication between Arduino and your computer through serial communication port.

Hardware Required

Arduino device, USB cable.

Software Required

Python 3

Pre-requisites: You must do the following before this task

Week 1 activities in the unit site.

Task Objective

In this week, you have learned to write blink LED sketch for Arduino to periodically turn it ON/OFF and establish communication between Arduino and your computer through serial communication port. In this task, you are required to develop a communication protocol between Arduino and Python script running on your computer where Python script sends command to Arduino to blink LED a number of times and wait for Arduino to do the job and in response, Arduino sends a number back for which the Python script should wait that number of seconds before sending the next blink command and this process repeats.

Steps:

1. Python script runs and sends a random number through serial communication port where Arduino sketch is listening and receives the number. Python script should log the sending event in console with timestamp.
2. Arduino blinks the LED that number of times with 1 second interval.
3. Arduino writes to serial communication port a random number where the python script is listening and receives the number.
4. Python script receives the number, logs in console with timestamp and sleeps that number of seconds. Logs in console when sleeping is done.
5. Python script sends a number through the serial communication port same as step 1 and the process repeats forever.

Submission details

Q1. Perform week 1 activities mentioned in the unit site and produce outputs.

Q2. Perform the task mentioned above in the Task Objective and keep running for few minutes. Capture the screen showing Python console output of communication log as evidence of interaction with Arduino sketch. Describe the log lines in the screenshot in a paragraph following the image.

Q3. Paste Python and Arduino sketch and explain program steps. Your explanation should match the description you prepared for Q2.

Q4. Create a video in Panopto/Cloud Deakin showing your program execution and any instruction to be followed in order to run your code, share the link in your report.

Q5. Create a directory 'SIT225_2024T2' in your drive and a subdirectory 'week-1' where you copy the Python script file and Arduino sketch file. Create a new **private** repository on GitHub sharing 'SIT225_2024T2' folder. You will be creating new subfolders every week. Include the link to your repository in your report with a GitHub page screenshot of weekly folder content. A tutor may try to access your GitHub link, if necessary. Give access to your tutor by adding tutor's email address as a collaborator of your **private** repository.

Instructions

Consolidate outputs following the submission details above into a single PDF file.

Submit your work

When you are ready, login to OnTrack and submit your pdf which consolidates all the items mentioned in the submission detail section above. Remember to save and backup your work.

Complete your work

After your submission, your OnTrack reviewer (tutor) will review your submission and give you feedback in about 5 business days. Your reviewer may further ask you some questions on the weekly topics and/or about your submissions. You are required to address your OnTrack reviewer's questions as a form of task discussions. Please frequently login to OnTrack for the task *Discuss/Demonstrate* or *Resubmit* equivalent to fix your work (if needed) based on the feedback to get your task signed as *Complete*.