

ELEC-C7420 Basic Principles in Networking

Part-II Security

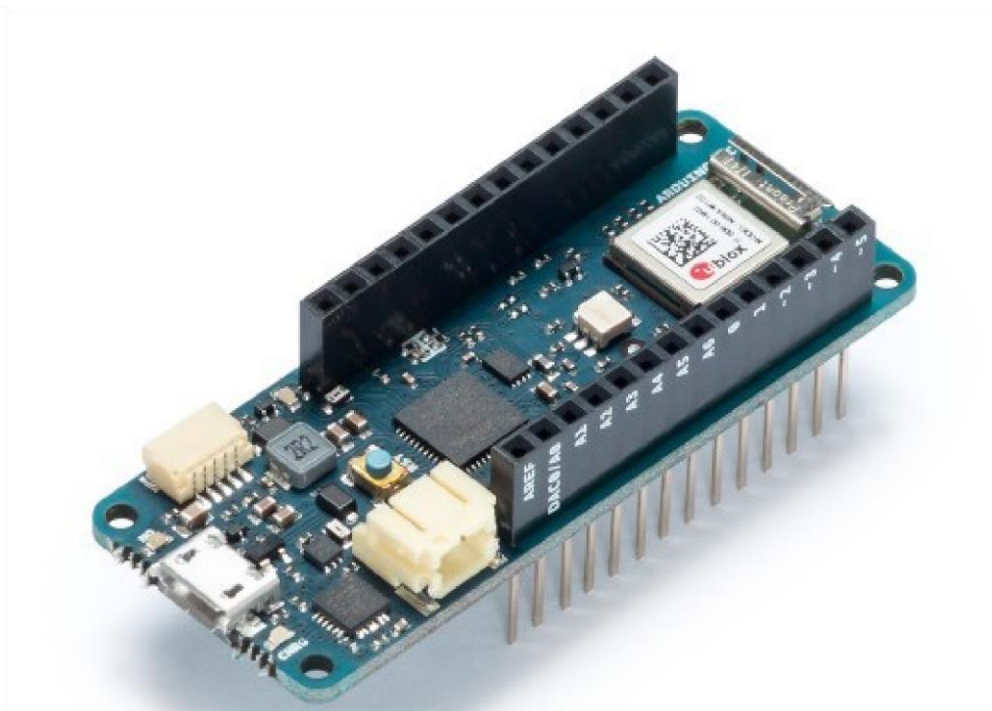
Assignment I: Introduction to basic cryptography using Arduino

Hardware Required

- Arduino MKR WiFi 1010.

Circuit

- No special circuitry is required for this assignment.



Arduino MKR WiFi 1010

Details

Your task is to create a simple text encryption sketch (program) for your Arduino. If you send a plain text message to the Arduino board (Preferably “Hello World”) you get back an encrypted message. If you send the encrypted message back to Arduino, you get the original plain text message back.

To demonstrate meeting the requirements, all you need to do is:

1. Create a sketch that does any kinds of encryption to plain texts
2. Compile and upload this sketch to the Arduino board
3. Go to the serial monitor, and type in “Hello World”. Then show the outputted encrypted text is there.
4. Type in the encrypted text, and show you get “Hello World” back.

The Arduino Serial Monitor should work perfectly for this test. The putty terminal program also works. You can download putty from [here](#).

You may use any encryption schema you like, for example base64 or rot13. The use of encryption libraries is also permitted.

Please submit a written report.

We suggest the report contains the following sections:

- Section 1: Goals of the experiment (What is the purpose and the motivation behind the experiment).
- Section 2 : Experimental Setup (Details of the Experiment step by step)
- Section 3 : Results & Conclusion (Please include snaps for each steps that contains proof of the successful experimentation)
- Section 4 : Annex (Please paste the sketch you created in this section)

Assessment Criteria (Total 10 Points + 2 Bonus):

- Creating successful compilation of sketch and upload without an error (2 Points)
- Successfully encrypt plain texts (4 Points)
- Successfully decrypt the encrypted text (4 Points)
- For bonus points, create a sketch capable of [RSA](#) encryption and decryption. It is ok to use hardcoded keys but explain their usage. (2 Bonus points)