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**Middle East Technical University**

**Electrical - Electronics Engineering Department**

***EE493 - Engineering Design I***

***Weekly Report***

**Group Name:** λambda

**Date:** 19.12.2021 *(Week 9&10)*

**Design Coordinator:**

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1. **Done During Week 9**
2. For the test setup we will construct for the module demo, our primary focus was set on the detection subsystem and different ways of constructing it.

* The use of received signal magnitude to determine the distance to the tags seems to be the easiest to implement. However, methods based solely on RSSI may not be as precise as we would like.
* A time-of-flight-based approach seems more complicated to design but offers more accuracy.
* We plan to use a combination of both methods for the module demo if time permits.

1. The group started work on the demo setup using RF transceivers and microcontrollers to test some of the ideas for the detection subsystem. To ease the communication between members, a repository was created. The skeleton of the embedded firmware was created using an open-source operating system given by TI, which was tested on TI TIVA C Series LaunchPad.
2. **Planned for Week 10**
3. The design lab will be used to conduct more tests about the detection subsystem. This is somewhat necessary since we do not have an oscilloscope, and utilizing one would make the testing process much more concrete and straightforward.
4. One 2.4 GHz active RFID tag purchased for trial purposes, more orders will be given if it is found suitable as a result of the tests.
5. Development of the firmware will continue. Some work on the driver for NRF24L01+ was done, but it is not finished yet. Once the driver is done, it will be imported into the project. The launchpad and the IC will be connected, and the data received through the IC will be acquired through UART. We may then analyze the data received and start coming up with an algorithm.