Installation guide:

Open a command prompt in a file of choice.

Clone the project using the following command:
git clone https://github.com/popaDaria/SEP4_IOT

```
mainh@ChickenDen MINGW64 /d/IoT_How_To
$ git clone https://github.com/popaDaria/SEP4_IOT
Cloning into 'SEP4_IOT'...
remote: Enumerating objects: 894, done.
remote: Counting objects: 100% (894/894), done.
remote: Compressing objects: 100% (503/503), done.
remote: Total 894 (delta 349), reused 767 (delta 243), pack-reused 0
Receiving objects: 100% (894/894), 58.33 MiB | 3.13 MiB/s, done.
Resolving deltas: 100% (349/349), done.
```

Change the location of the command prompt inside the project using:
cd SEP4_IOT

The hardware project is in the hardware2 branch, so we need to switch to it using:
git checkout hardware2

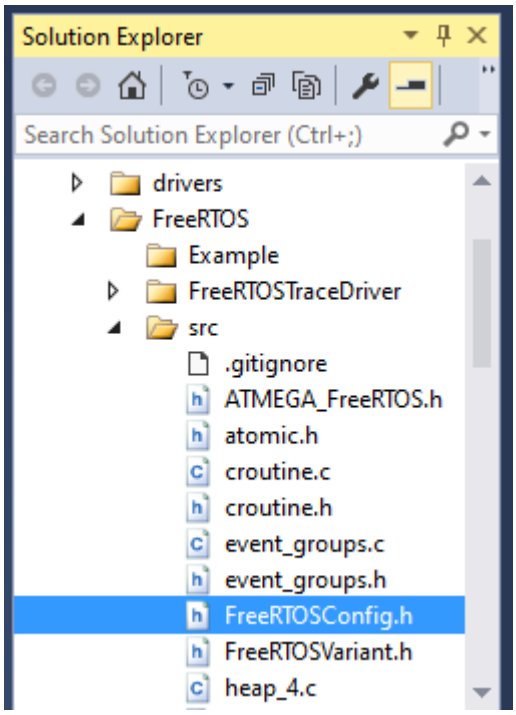
```
mainh@ChickenDen MINGW64 /d/IoT_How_To/SEP4_IOT (main)
$ git checkout hardware2
Updating files: 100% (198/198), done.
Switched to a new branch 'hardware2'
Branch 'hardware2' set up to track remote branch 'hardware2' from 'origin'.
```

To add the drivers and FreeRTOS to the project use the following commands:
git clone https://github.com/ihavn/IoT_Semester_project.git drivers
git clone https://github.com/ihavn/VIA_FreeRTOS_AVRMEGA FreeRTOS

```
mainh@ChickenDen MINGW64 /d/IoT_How_To/SEP4_IOT (hardware2)
$ git clone https://github.com/ihavn/IoT_Semester_project.git drivers
Cloning into 'drivers'...
remote: Enumerating objects: 6295, done.
remote: Counting objects: 100% (4486/4486), done.
remote: Compressing objects: 100% (1553/1553), done.
remote: Total 6295 (delta 3397), reused 3759 (delta 2676), pack-reused 1809
Receiving objects: 100% (6295/6295), 23.52 MiB | 3.40 MiB/s, done.
Resolving deltas: 100% (4484/4484), done.

mainh@ChickenDen MINGW64 /d/IoT_How_To/SEP4_IOT (hardware2)
$ git clone https://github.com/ihavn/VIA_FreeRTOS_AVRMEGA FreeRTOS
Cloning into 'FreeRTOS'...
remote: Enumerating objects: 201, done.
remote: Counting objects: 100% (124/124), done.
remote: Compressing objects: 100% (102/102), done.
Recremote: Total 201 (delta 67), reused 78 (delta 21), pack-reused 77
Receiving objects: 100% (201/201), 528.01 KiB | 2.36 MiB/s, done.
Resolving deltas: 100% (99/99), done.
```

For the hardware to work properly the heap size needs to be changed from 2500 to 3000. It can be found in “FreeRTOS/src/FreeRTOSConfig.h”




```
#define configTOTAL_HEAP_SIZE                    3000    // Heap size
```

Add your unique parameters necessary for LoRaWAN to join the network in “LoRaWANHandle.c”:

```
// Parameters for OTAA join
#define LORA_appEUI "080AE22D17745AEA"
#define LORA_appKEY "12A67C3072B659179BC2216FE32B7DC9"
```

For the Gateway application use “git checkout GatewayApp” to switch to the branch when working on it. The project should run directly from the cloned GatewayApp folder.

Finally, run the hardware (using a debugger like Atmel ICE is recommended) and Gateway App, start your first user thread and listen for the information!