

Learning Report – Embedded C



GLOBAL
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Genesis



L&T Technology Services



Document History

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TABLE OF CONTENTS

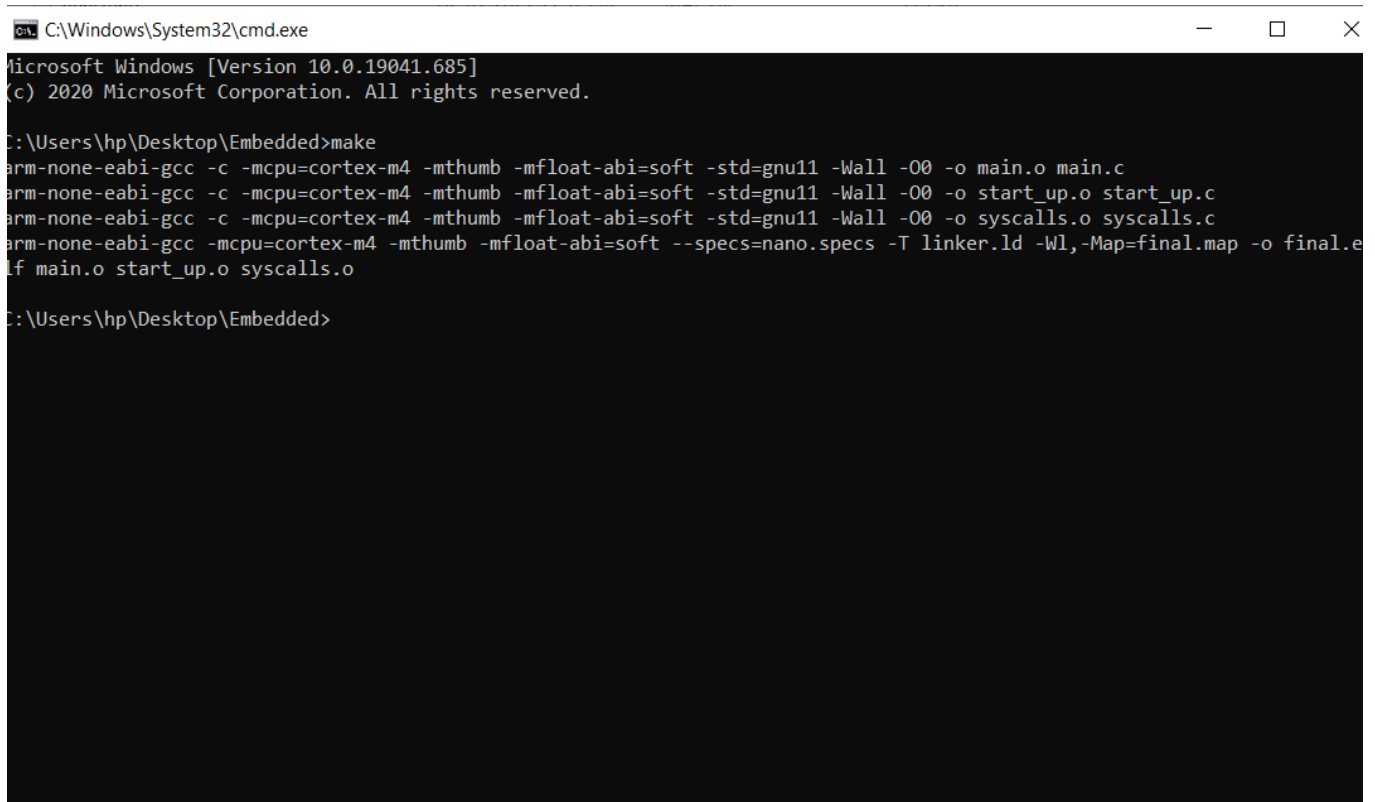
ACTIVITY 1: START UP.....	ERROR! BOOKMARK NOT DEFINED.
ACTIVITY 2: LINKER SCRIPT	4
ACTIVITY 3: MAKE FILE	4
ACTIVITY 4: MCU SPECIFIC HEADER FILE	5
ACTIVITY 5: MINI PROJECT.....	5
MAIN FUNCTION	5
ARDIUNO	6

TABLE OF FIGURES

Figure 1: Make file	4
Figure 2: Main Function.....	5
Figure 3: Ardiuno Code.....	7
Figure 4: Output	8
Figure 5: Connections STM32F407T6 + Arduino UNO + DHT11	9

Make file

Link - <https://github.com/johnjw12/Embedded-C-Mini-Project/tree/main/Embedded>



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19041.685]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\hp\Desktop\Embedded>make
arm-none-eabi-gcc -c -mcpu=cortex-m4 -mthumb -mfloat-abi=soft -std=gnu11 -Wall -O0 -o main.o main.c
arm-none-eabi-gcc -c -mcpu=cortex-m4 -mthumb -mfloat-abi=soft -std=gnu11 -Wall -O0 -o start_up.o start_up.c
arm-none-eabi-gcc -c -mcpu=cortex-m4 -mthumb -mfloat-abi=soft -std=gnu11 -Wall -O0 -o syscalls.o syscalls.c
arm-none-eabi-gcc -mcpu=cortex-m4 -mthumb -mfloat-abi=soft --specs=nano.specs -T linker.ld -Wl,-Map=final.map -o final.e
lf main.o start_up.o syscalls.o

C:\Users\hp\Desktop\Embedded>
```

Figure 1: Make file

MCU SPECIFIC HEADER FILE

Link - <https://github.com/johnjw12/Embedded-C-Mini-Project/upload/main/MCU-%20HEADER-%20FILE>

MINI PROJECT

Link - <https://github.com/johnjw12/Embedded-C-Mini-Project/tree/main/Mini%20Project>

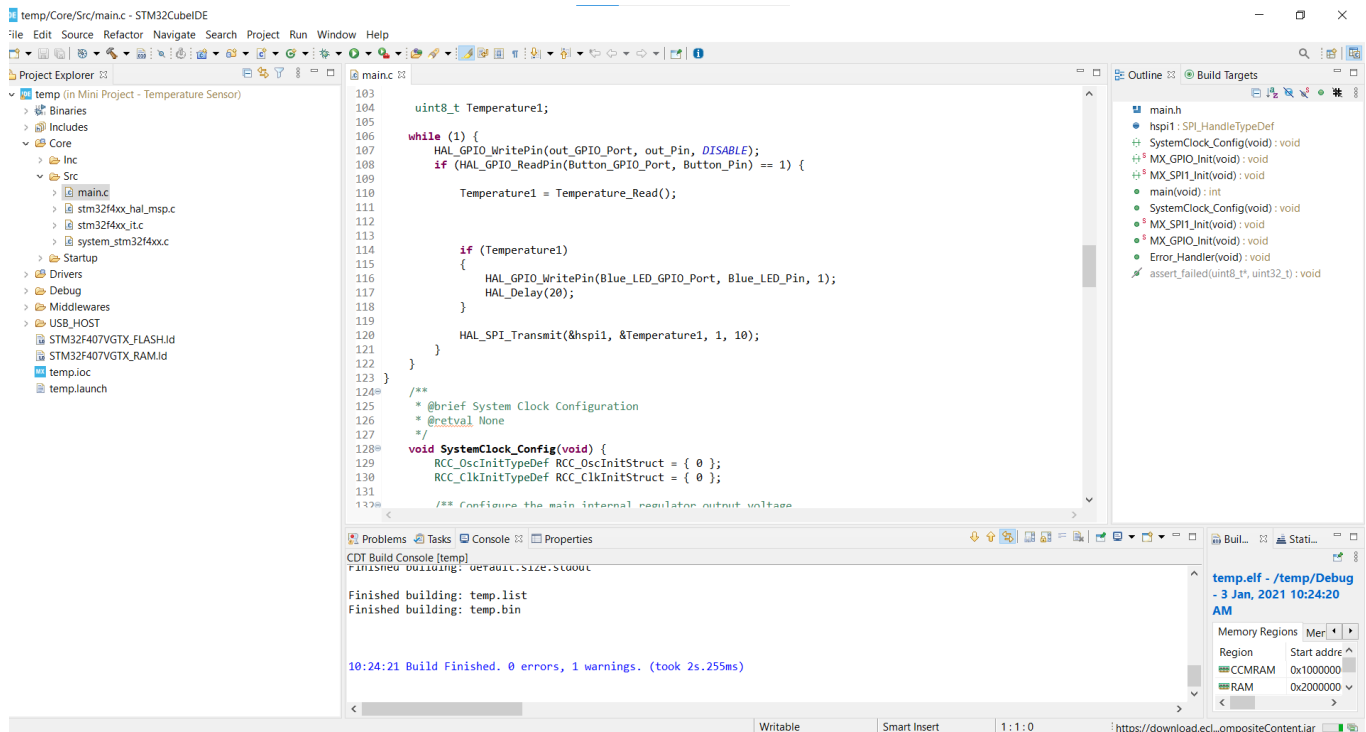
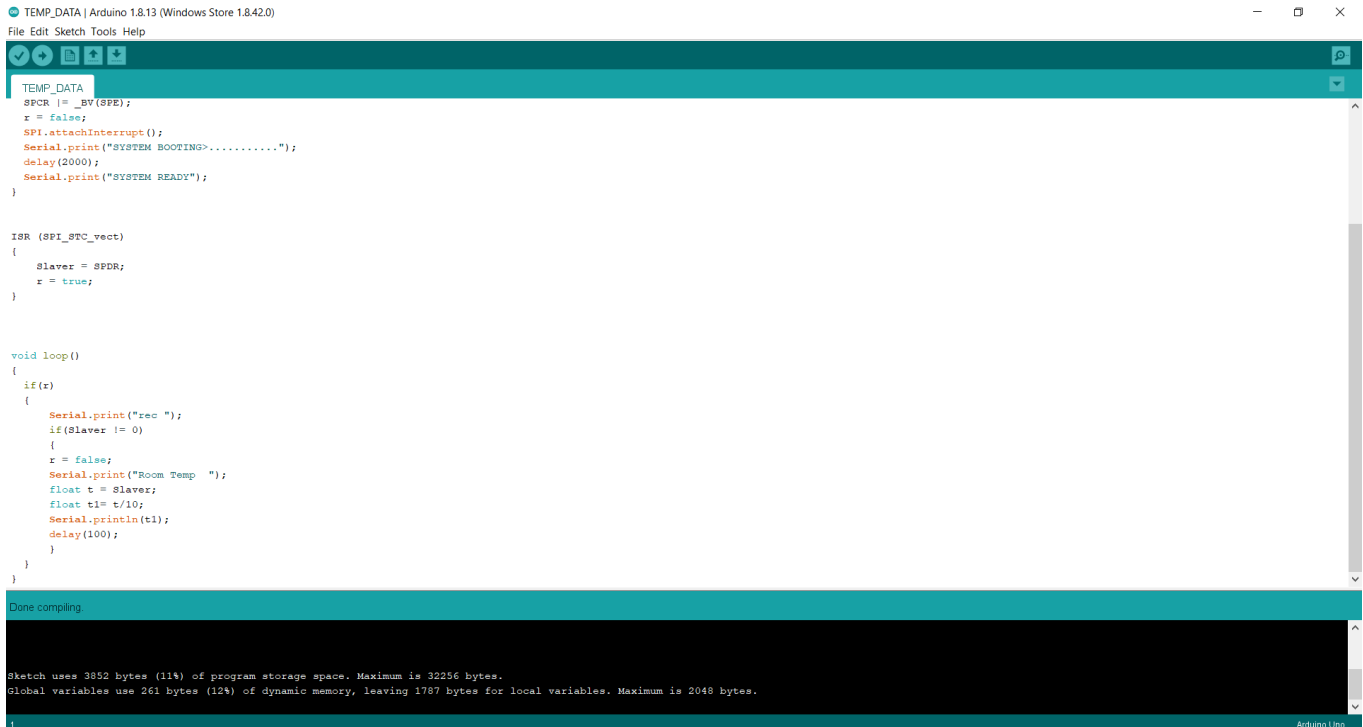


Figure 2: Main Function

Ardiuno UNO

Link - <https://github.com/johnjw12/Embedded-C-Mini-Project/tree/main/Arduino>



```
TEMP_DATA | Arduino 1.8.13 (Windows Store 1.8.42.0)
File Edit Sketch Tools Help

TEMP_DATA
SPCR |= _BV(SPE);
r = false;
SPI.attachInterrupt();
Serial.print("SYSTEM BOOTING>.....");
delay(2000);
Serial.print("SYSTEM READY");
}

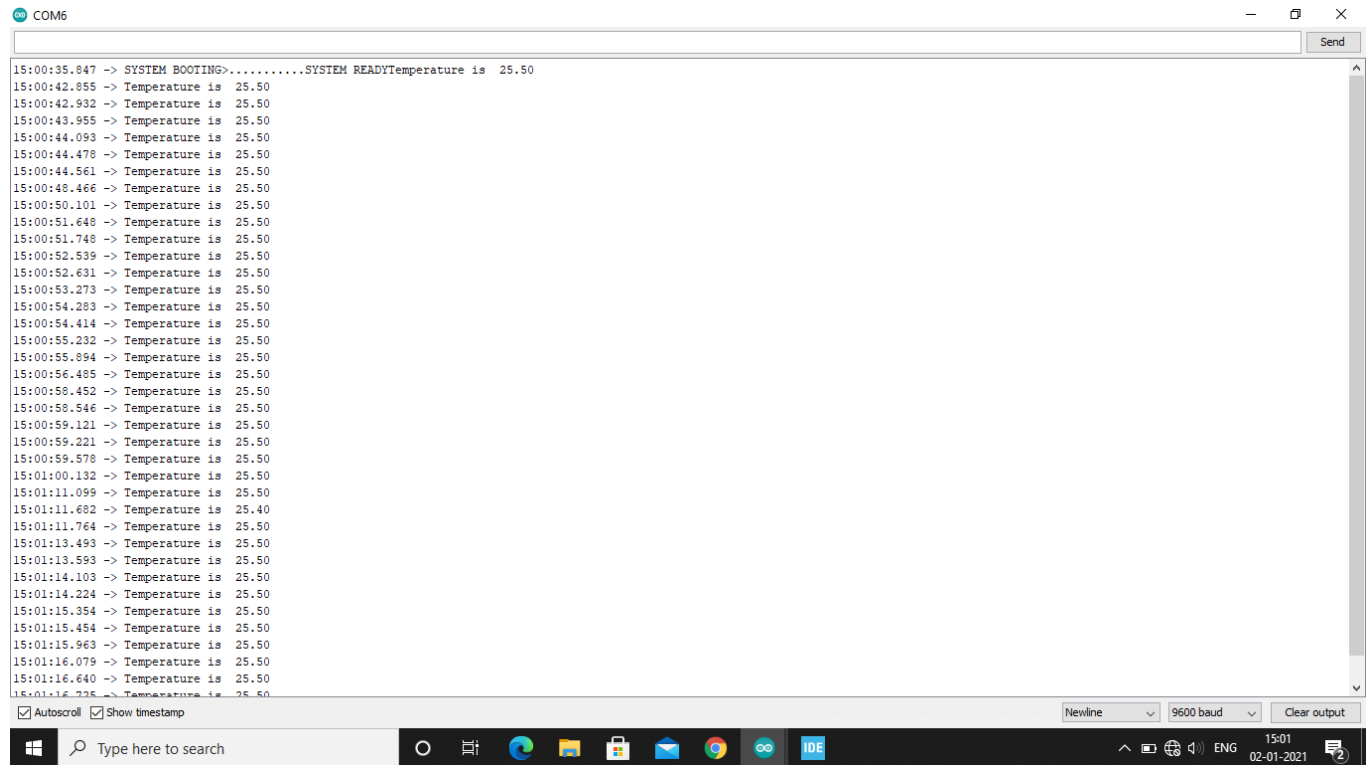
ISR (SPI_STC_vect)
{
  Slaver = SPDR;
  r = true;
}

void loop()
{
  if(r)
  {
    Serial.print("rec ");
    if(Slaver != 0)
    {
      r = false;
      Serial.print("Room Temp ");
      float t = Slaver;
      float t1= t/10;
      Serial.println(t1);
      delay(100);
    }
  }
}

Done compiling.

Sketch uses 3852 bytes (11% of program storage space. Maximum is 32256 bytes.
Global variables use 261 bytes (12% of dynamic memory, leaving 1787 bytes for local variables. Maximum is 2048 bytes.
```

Figure 3: Arduino Code



```
15:00:35.847 -> SYSTEM BOOTING>.....SYSTEM READYTemperature is 25.50
15:00:42.855 -> Temperature is 25.50
15:00:42.932 -> Temperature is 25.50
15:00:43.955 -> Temperature is 25.50
15:00:44.093 -> Temperature is 25.50
15:00:44.478 -> Temperature is 25.50
15:00:44.561 -> Temperature is 25.50
15:00:48.466 -> Temperature is 25.50
15:00:50.101 -> Temperature is 25.50
15:00:51.648 -> Temperature is 25.50
15:00:51.748 -> Temperature is 25.50
15:00:52.539 -> Temperature is 25.50
15:00:52.631 -> Temperature is 25.50
15:00:53.273 -> Temperature is 25.50
15:00:54.283 -> Temperature is 25.50
15:00:54.414 -> Temperature is 25.50
15:00:55.232 -> Temperature is 25.50
15:00:55.894 -> Temperature is 25.50
15:00:56.485 -> Temperature is 25.50
15:00:58.452 -> Temperature is 25.50
15:00:58.546 -> Temperature is 25.50
15:00:59.121 -> Temperature is 25.50
15:00:59.221 -> Temperature is 25.50
15:00:59.578 -> Temperature is 25.50
15:01:00.132 -> Temperature is 25.50
15:01:11.099 -> Temperature is 25.50
15:01:11.682 -> Temperature is 25.40
15:01:11.764 -> Temperature is 25.50
15:01:13.493 -> Temperature is 25.50
15:01:13.593 -> Temperature is 25.50
15:01:14.103 -> Temperature is 25.50
15:01:14.224 -> Temperature is 25.50
15:01:15.354 -> Temperature is 25.50
15:01:15.454 -> Temperature is 25.50
15:01:15.963 -> Temperature is 25.50
15:01:16.079 -> Temperature is 25.50
15:01:16.640 -> Temperature is 25.50
15:01:16.735 -> Temperature is 25.50
```

Figure 4: Output

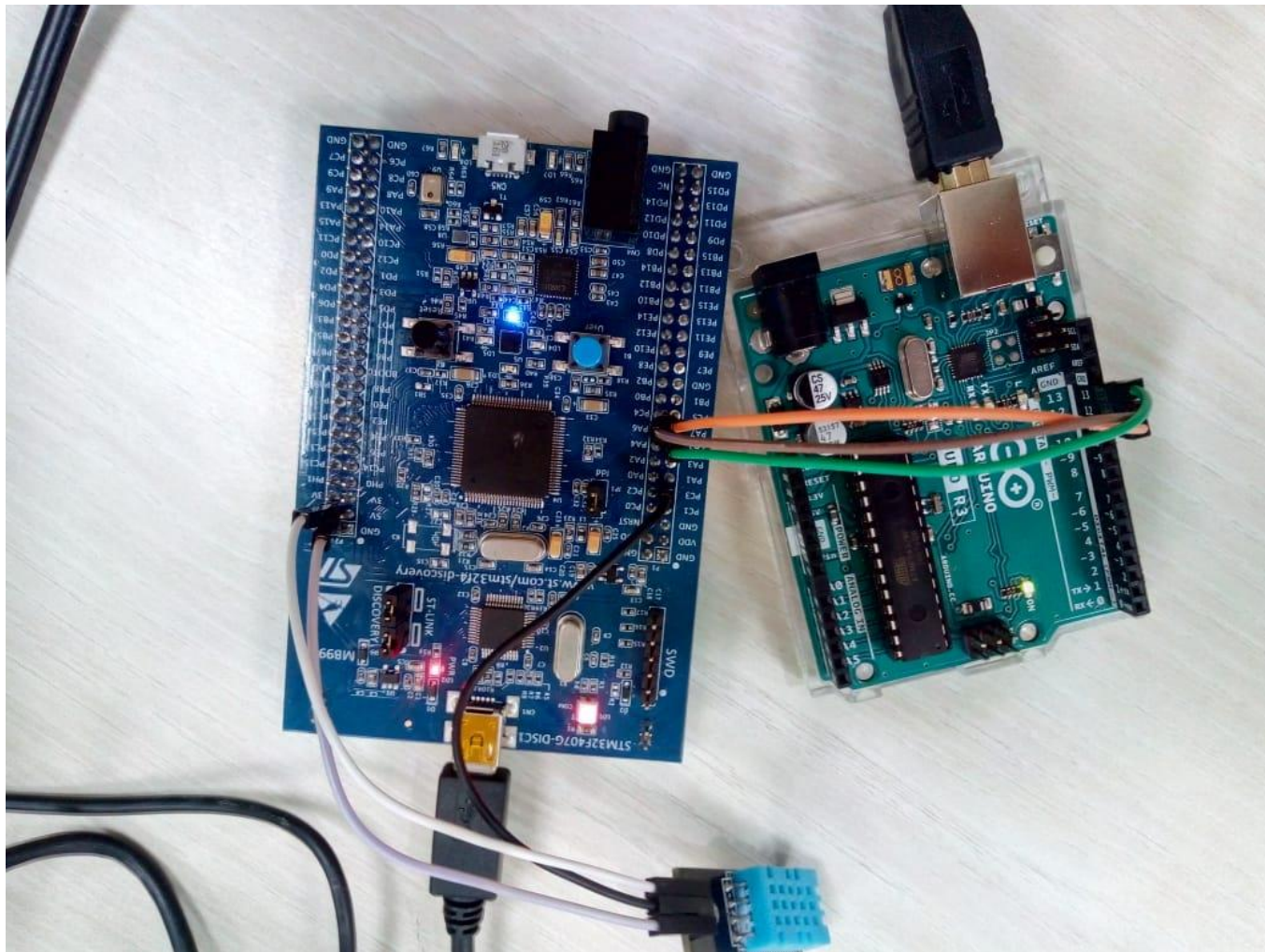


Figure 5: Connections STM32F407T6 + Arduino UNO + DHT11