



Learning Report – Embedded C – Hardware + Programming + Testing



L&T Technology Services



Document History

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1.0	26-12-20	Mayur Ghule		Dr. Vivek K and Bhargav N	
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Contents

1.0 MAKE EXECUTION IN GIT	4
1.1 FILES AFTER EXECUTION OF MAKE.....	5
1.2 HEADER SECTION OF MAIN.O.....	6
2.0 MINI PROJECT	7
2.1 MAIN LOGIC FUNCTION	7
2.2 GIT LINK:	7

1.0 Make Execution in GIT

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19042.685]
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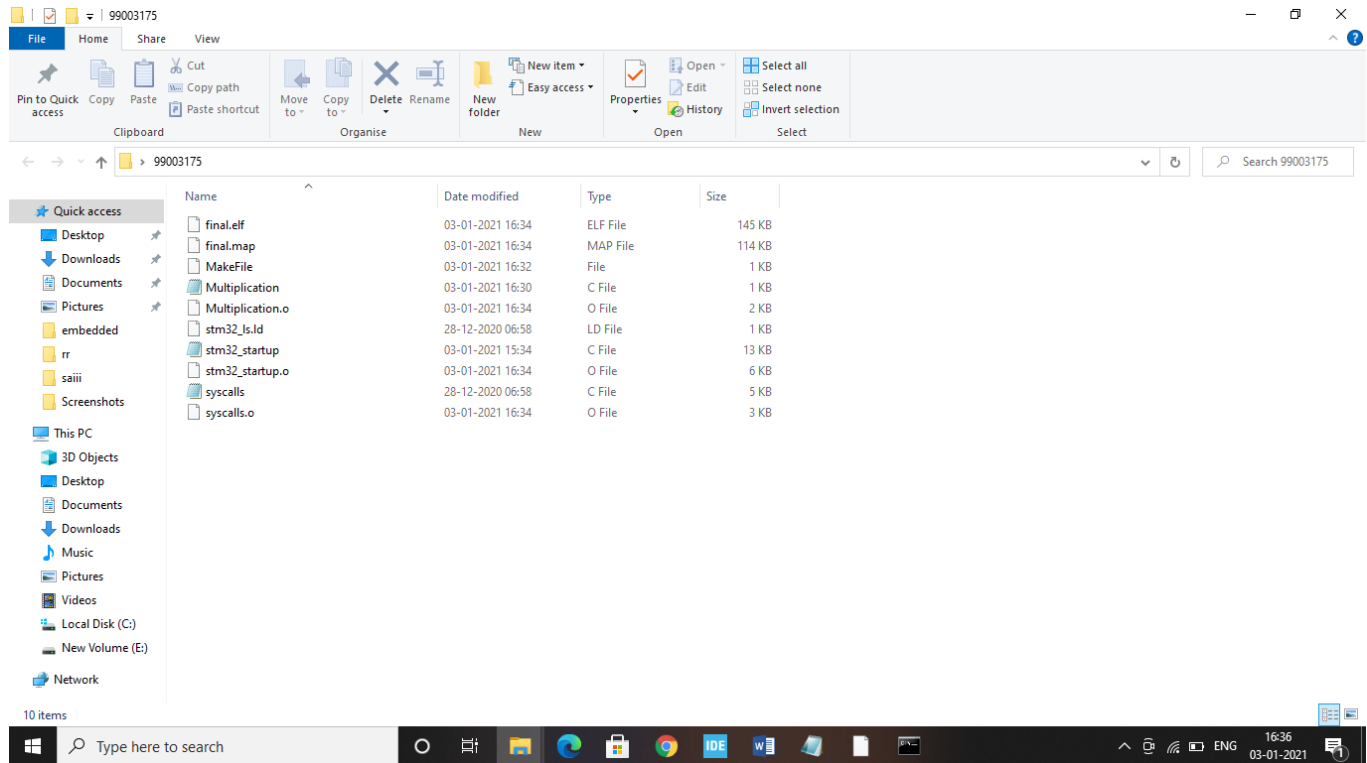
C:\Users\saipk\Desktop\99003175>make
make: Nothing to be done for 'all'.

C:\Users\saipk\Desktop\99003175>rm *.o

C:\Users\saipk\Desktop\99003175>make
arm-none-eabi-gcc -c -mcpu=cortex-m4 -mthumb -mfloat-abi=soft -std=gnu11 -Wall -O0 -o Multiplication.o Multiplication.c
arm-none-eabi-gcc -c -mcpu=cortex-m4 -mthumb -mfloat-abi=soft -std=gnu11 -Wall -O0 -o stm32_startup.o stm32_startup.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 stm32_ls.ld -Wl,-Map=final.map -o final.elf Multiplication.o stm32_startup.o syscalls.o

C:\Users\saipk\Desktop\99003175>
```

1.1 Files after execution of Make



1.2 Header section of main.o

```
saipk@DESKTOP-75K4IJR MINGW64 ~/Desktop/99003175 (master)
$ arm-none-eabi-objdump.exe -h stm32_startup.o

stm32_startup.o:      file format elf32-littlearm

Sections:
Idx Name              Size      VMA       LMA       File off  Algn
  0 .text              00000090  00000000  00000000  00000034  2**2
    CONTENTS, ALLOC, LOAD, RELOC, READONLY, CODE
  1 .data              00000000  00000000  00000000  000000c4  2**0
    CONTENTS, ALLOC, LOAD, DATA
  2 .bss               00000000  00000000  00000000  000000c4  2**0
    ALLOC
  3 .isr_vector        00000188  00000000  00000000  000000c4  2**2
    CONTENTS, ALLOC, LOAD, RELOC, DATA
  4 .comment           0000004e  00000000  00000000  0000024c  2**0
    CONTENTS, READONLY
  5 .ARM.attributes    0000002e  00000000  00000000  0000029a  2**0
    CONTENTS, READONLY
```

2.0 Mini project

2.1 Main logic function

```
/* USER CODE BEGIN WHILE */
for(;;)
{
    /* USER CODE END WHILE */
    data=HAL_GPIO_ReadPin(Sensor_Input_GPIO_Port, Sensor_Input_Pin);
    if(data==1)
    {
        HAL_GPIO_WritePin(Green_Led_GPIO_Port, Green_Led_Pin, 1);
    }
    else
    {
        HAL_GPIO_WritePin(Green_Led_GPIO_Port, Green_Led_Pin, 0);
    }
    HAL_SPI_Transmit(&hspi1, &data, 1, 100);
    /* USER CODE BEGIN 3 */
}
/* USER CODE END 3 */
}
```

2.2 GITlink:

https://github.com/99003175/Embedded_C