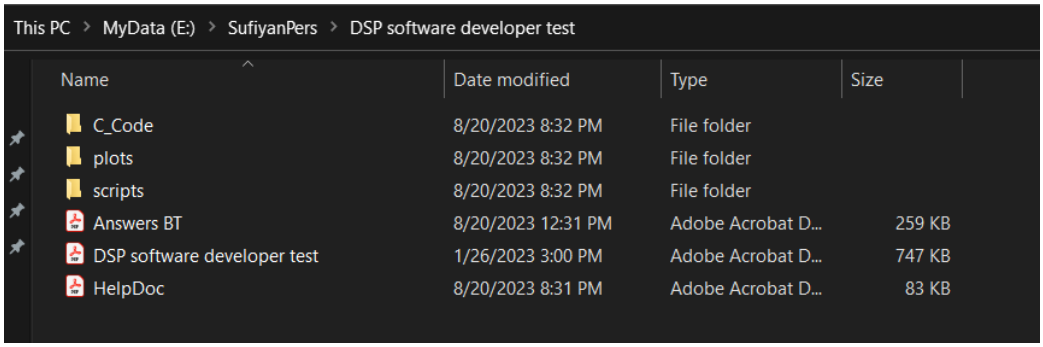
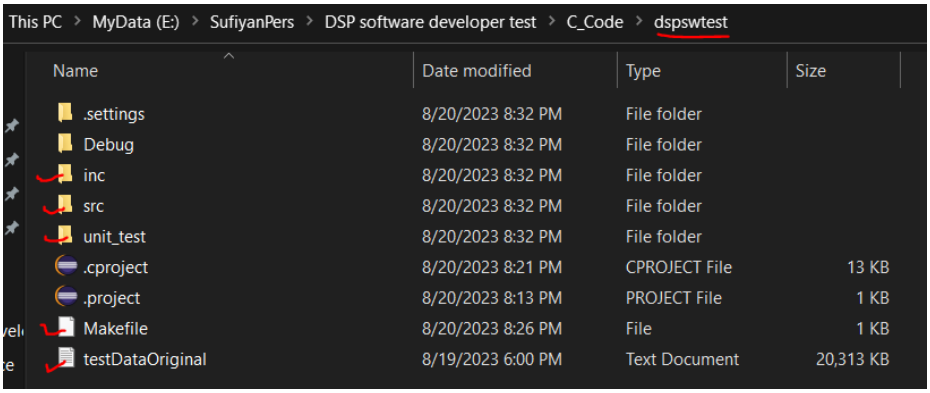
Folder Structure for DSP Software Developer Test:



- **C_code**: This directory houses the C program solutions for the questions in the DSP software developer tes.pdf.
    - **Inc**: Contains header files shared among different tasks.
    - **Src**: Includes main.c, task1.c, task2.c, and task3.c. The task numbering corresponds to the question numbers.
    - **Unit_test**: This folder contains test.c, which is utilized for testing DC offset estimation under varying conditions, including SNR, DC offset, Fs, and f.



- **scripts**: Within this directory, you'll find MATLAB simulation programs designed to illustrate concepts discussed in Task 2 and Task 4. These scripts serve as valuable tools for generating the plots presented in the accompanying answer sheet "Answers_BT.pdf." They provide visual support to enhance the understanding of the solutions provided.
- **Answers_BT.pdf**: This comprehensive pdf file comprises detailed responses to the questions asked in the test.
- **HelpDoc.pdf**: This document serves as a helpful guide, describing the folder hierarchy and providing instructions on executing code pertaining to specific questions presented in the test. It offers clarity and guidance for efficient navigation.

Guidance for Code Navigation:

This section offers clear instructions on navigating the code for specific questions and provides guidance on building and running it effectively.

- Main.c as the Task Driver:The Main.c file serves as the task driver, allowing the invocation of any specific task corresponding to a particular question. It's important to note that only one task can be executed at a time.
- Task-specific Code:
  - Task1.c: This file houses the code responsible for parsing a text file and updating the buffer with time domain samples as requested in Task 1.
  - Task2.c: Within this file, you'll find the code for DC offset estimation, aligning with the requirements of Task 2.
  - Task3.c: Task 3's code resides here and focuses on enhancing DC offset estimation through the application of a moving average filter for noise suppression.

Building the Code:

Within the C_code folder, you'll find two main modules: src and unit_test. To build the main code, which encompasses all the tasks, follow these steps:

1. Navigate to the 'dspswtest' folder.
2. Execute the following commands:
   - make clean
   - make all

This will generate an executable file in the same directory named 'dspswtest'. You can use this executable to run various tasks.Here's how you can check or run specific tasks:

- Task 1: Refer to the screenshot provided to see how to check or run Task 1.

```
Lenovo@DESKTOP-3K5BTGN MINGW64 ~/eclipse-workspace/dspswtest
$ ./dspswtest.exe task1
Succsesfully parsed 100000 samples
```

- Task 2: The screenshot illustrates how to check or run Task 2.

```
Lenovo@DESKTOP-3K5BTGN MINGW64 ~/eclipse-workspace/dspswtest/Debug
$ ./dspswtest.exe task2
********** Averaged DC Offset Estimation for all window **********
Antenna 0 DC Offset: 0.250542
Antenna 1 DC Offset: 0.600154
Antenna 2 DC Offset: 0.458353
Antenna 3 DC Offset: 0.567767
Antenna 4 DC Offset: 0.754139
Antenna 5 DC Offset: 0.343744
Antenna 6 DC Offset: 0.432010
Antenna 7 DC Offset: 0.475845
```

- Unit Test: The screenshot demonstrates how to run the unit test