# CS 5153/5053 Network Security, Spring 2023

## Project 5: Meltdown Attack

## Report

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Contents

[Link to Source Code 4](#_Toc132363903)

[Host Environment Used 4](#_Toc132363904)

[Docker Information 4](#_Toc132363905)

[Assumptions 4](#_Toc132363906)

[Task 1 5](#_Toc132363907)

[How do you compile the code for this task 5](#_Toc132363908)

[Screenshots 5](#_Toc132363909)

[Task 2 6](#_Toc132363910)

[How do you compile the code for this task 6](#_Toc132363911)

[Screenshots 6](#_Toc132363912)

[Task 3 7](#_Toc132363913)

[How do you compile the code for this task 7](#_Toc132363914)

[Screenshots 7](#_Toc132363915)

[Task 4 8](#_Toc132363916)

[How do you compile the code for this task 8](#_Toc132363917)

[Screenshots 8](#_Toc132363918)

[Task 5 9](#_Toc132363919)

[How do you compile the code for this task 9](#_Toc132363920)

[Screenshots 9](#_Toc132363921)

[Task 6 10](#_Toc132363922)

[How do you compile the code for this task 10](#_Toc132363923)

[Screenshots 10](#_Toc132363924)

[Task 7.1 11](#_Toc132363925)

[How do you compile the code for this task 11](#_Toc132363926)

[Screenshots 11](#_Toc132363927)

[Task 7.3 12](#_Toc132363928)

[How do you compile the code for this task 12](#_Toc132363929)

[Screenshots 12](#_Toc132363930)

Link to Source Code <https://github.com/austinc3030/meltdown_m11809075>

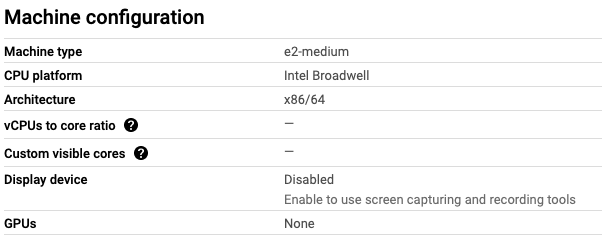
## Host Environment Used

Operating System: Ubuntu 20.04 LTS



Hardware: Google Cloud E2 Instance

Google Cloud Machine Configuration:



Links Used for Environment Setup:

* [seed-labs/seedvm-cloud.md at master · seed-labs/seed-labs (github.com)](https://github.com/seed-labs/seed-labs/blob/master/manuals/cloud/seedvm-cloud.md)
* [seed-labs/create\_vm\_gcp.md at master · seed-labs/seed-labs (github.com)](https://github.com/seed-labs/seed-labs/blob/master/manuals/cloud/create_vm_gcp.md)

## Additional Information

I noticed in the 20.04 version of the labs, the SEEDLabs pdf contains the following excerpt regarding the use of a 20.04 SEEDLabs VM:

**“This lab has been tested on our pre-built Ubuntu 16.04 VM, which can be downloaded from the SEED website. On the SEED Ubuntu 20.04 VM, Tasks 1 to 6 still work as expected, but Tasks 7 and 8 will not work due to the countermeasures implemented inside the OS.”**

I am using a SEEDLabs 20.04 VM and believe this may have had an influence on the results I was able to obtain. As noted in the assignment pdf Note 1, I have included all screenshots and necessary documentation of my attempts to complete tasks 7.1 and 7.3.

## Task 1

### How do you compile the code for this task

`gcc -march=native CacheTime.c -o CacheTime`

### Screenshots

Compilation

## 

Execution

Graphical user interface

Description automatically generated

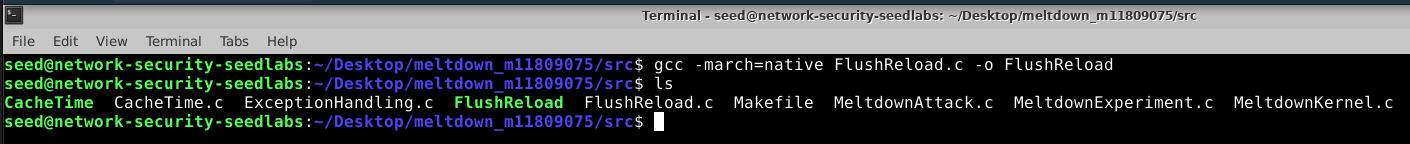
## Task 2

### How do you compile the code for this task

`gcc -march=native FlushReload.c -o FlushReload`

### Screenshots

Compilation



Execution

**Note:** To see some variation, I did have to alter CACHE\_HIT\_THRESHOLD to 203 to see instances where an incorrect secret value or multiple secret values were found. However, setting this much lower yielded very reliable results in getting the correct secret value. On the left is with CACHE\_HIT\_THRESHOLD set to 203, on the right is with CACHE\_HIT\_THRESHOLD set to 80. The value 80 also closely corresponds with the values seen in Task 1 and makes sense.

Text

Description automatically generated Graphical user interface, text

Description automatically generated

## Task 3

### How do you compile the code for this task

1. Place Holder

### Screenshots

## Task 4

### How do you compile the code for this task

1. Place Holder

### Screenshots

## Task 5

### How do you compile the code for this task

1. Place Holder

### Screenshots

## Task 6

### How do you compile the code for this task

1. Place Holder

### Screenshots

## Task 7.1

### How do you compile the code for this task

1. Place Holder

### Screenshots

## Task 7.3

### How do you compile the code for this task

1. Place Holder

### Screenshots