

Submitted to Dr. Karim Sobh

Submitted by:

Menna Elzahar 900182968

Omar Elsayed 900183884

Youssef Hussien 900183162

Nourhan Moussa 900172701

CSCE230303 - Comp Org.& Assembly Lang Prog

(2020 Spring)

**Boot LoaderProject**

Phase 3 Final Report

14/05/2020

**Tasks Done**

In this phase, we have

1. Simple Scrollable Video Driver
2. Setting up the IDT
3. Scanning PCI Devices
4. Identifying ATA disks and load their parameters
5. Setup the PIT Timer
6. Basic Intel e1000 NIC driver with a trial to make ICMP ping reply enabled

**Assumptions and Findings**

The third phase did not have a lot of assumption as most of it was already in the slides, so all we had to do is understand , then modify or add to them , however it did had obstacles when where trying to configure and modify each of the functionalities of this bootloader.

* In the Simple Scrollable Video Driver, we needed a to do the scroll part which was not that easy to implement, the clear screen was need in the scroll part we implemented the cursor reset part as we had an assumption that both the 0x0F and 0x0E needed to be zero
* Another Assumption in the ATA part as they are 4 if them and each one takes (4\*256) to store. So we need to configure these on 4 times. So there was a confusion if we should repeat the ata\_pci\_headaer times for each device or just change multiply the (4\*256) by 4.
* The implementation of e1000 NIC driver :
  + Each struct had a different type and there are three types, so it was not sure which type was it calling

**ScreenShots**

**Contribution**

**Menna Elzahar**

Phase1:

* Contributed in the in-line documentation of first stage
* Contributed in the partition table

Phase2:

* Contributed in writing page table
* Wrote video\_cls\_16 function
* Contributed in in-line documentation and report
* Tester
* Memory regions loop

Phase3:

* wrote the scrollable screen functionalities, clearing the screen and resetting the cursor position function. This is with their in-line docuemntation (task 1)
* contributed in e1000 NIC driver and adjusted some of the in-line documentation (task 4)

**Omar Elsayed**:

Phase1:

* Contributed in the in-line documentation of second stage,
* created project on github
* contributed in writing the partition table

Phase2:

* Contributed in writing page table
* Copied and pasted and solved errors from the slides
* Contributed in in-line documentation
* Bitmap
* Tester
* Memory regions loop

Phase3:

* Pic.asm
* contributed in e1000 NIC driver and adjusted some of the in-line documentation

**Youssef Hussien**

Phase1:

* Contributed in the in-line documentation of second stage
* Contributed in writing the report

Phase2:

* long mode, and check long mode

Phase3:

* ATA, and Pit with their in-line documenation

**Nourhan Moussa**:

Phase1:

* Contributed in the in-line documentation of first stage
* Wrote the report

Phase2:

* long mode, and check long mode

Phase3:

* IDT and PCI with their in-line documentation
* Writing the report

Screenshots:

**Debugging**

We tried to use bochs to debug the program but we could not deal with properly. [screenshot running vm from bochs]

A screenshot of a computer

Description automatically generated

**A screenshot of a computer

Description automatically generated**d

**A close up of text on a black background

Description automatically generated**

Ds

**A screenshot of a cell phone

Description automatically generated**d

This is screenshot while the scrolling is working

