

Task_1: Do the following steps in order to compile your code. (1 pts)

- Open dos-box from menu [dos-box emulate 8086 machine]
- Mount your "C driver" to be the C driver for the dos-box with this command: **mount c c:** [This command will make the C driver dos-box is same as the C driver of your machine]
- Now change your directory to "C:\\" with this command: **c:**
- Copy "as3" folder to your C:\TurboC++\Disk
- Change your directory to be in as3 folder: **cd C:\TurboC++\Disk\as3**
- To compile your ex1 code and generate ex1.obj: **masm example1;** [assemble example1 and generate your object file]
- To link your ex1.obj and generate ex1.exe: **link example1 ;** [link example1 with other files and generate final .exe file, in our case we don't need other files to link with example1]
- Now to run your executable enter: **example1**

Task_2: Do the following steps in order to load ex1 into the bootsector of a floppy image. (1 pts)

- Install winima90.exe given to you in as3 folder [This program will create a virtual disk for our virtual 8086 machine emulated by virtual box, later we will insert our bootstrap and our secondary file into it and make the bios of the 8086 machine boot from this disk]
- Create the binary file of ex1.exe: **exe2bin example1.exe example1.bin;** (what is the size of ex1.bin?)

This binary format is a simple executable format, our bootstrap loads binary files so we need to convert the output executable into binary]

- Write "winimage" in your menu and open the app
- Create new disk with size (1.44MB): **File->New->Ok**

[This is the size of disks comatible with 8086 machines]

- Load your binary into bootsector of the disk you created: **image -> Bootsector Proberties -> Open -> example1.bin -> OK**

- Save your image in as3 folder: **File -> Save as -> File name: example1 -> Save as type: Image File (.ima)** (what is the size of example1.ima?)
- Boot your image: **boot example1.ima** (you shall find the output of the **bootsector**) [This command will make the virtual bios of the emulated 8086 machine boot from the disk image you made, it will go to the bootsector of the disk and check if it has a bootstrap in it, and if it does, it will load this bootstrap into the virtual memory and give control to it]

Task_3: Create a disk bootstrap that outputs "Booting from drive...", identifies the booting drive, awaits a user key-press and then performs warm rebooting. (3 pts)

- Just change "msg" in example1.asm and repeat the previous steps of Task_1 and Task_2

Task_4: Create a disk bootstrap with ex2 and make it load the secondary file sec.asm. (5 pts)

- Change the "ImageName" in example2.asm and make it as the name of the loader file (the string ImageName should have 11 chars, complete them with spaces after the name)
- Create a binary file of loader.asm and put it in the bootsector of your image or use "loader.bin" given
- Create a binary file for sec.asm and inject it into your image: **open winimage -> Image -> inject**
- Save your image in as3 folder: **File -> Save as -> File name: example2 -> Save as type: Image File (.ima)**
- Boot your image: **boot example2.ima** (you shall find the output of the **secondary file sec.asm**) [This command will make the virtual bios checks for bootstrap code in the bootsector, and it will find the bootstrap code of example2, then it will load it to memory and transfer control to it, the bootstrap code will search for "your file name" file in the image disk and will load it to memory and move control to it]