How to Run MINIX on your Machine

We use a PC simulator, called VirtualBox by Oracle, to run MINIX.

- Download
  1. Go to http://www.virtualbox.org/ to download the latest version of Virtual Box, and Install it on your computer
  2. Go to Resources/MinixSetup on KSO and download DiskImages.zip. Unzip the file to extract a directory which contains the following files.
     a. a hard disk image, called minix.vdi, which contains the complete MINIX 3.0 image.
     b. a dos floppy disk image, named dos.img. This is an important file to save your work in the Windows file system (for example, to print your code)
     c. a floppy image file, named floppy.img . Copies of this image are used to testboot a version of MINIX modified by you and to submit your work
     d. a floppy image file, named your_name.img. Change the name of the file to your "LastName_FirstName.img" (e.g., Mizuno_Masaaki.img in my case). This disk image contains files necessary for Project 0.
     e. bximage.exe This is an application program that comes with "Bochs" (another PC emulator program http://bochs.sourceforge.net/). This is used to create disk image files (either floppy image or hard disk image), just in case you want to create floppy.img by yourself
  3. Go to http://hp.vector.co.jp/authors/VA013937/editdisk/index_e.html to download FileExplore. This program is used to exchange Windows files in dos image files to/from your Windows file system. (If you know an equivalent program running on Mac, please let me know).
- Install MINIX3 on VirtualBox
  1. First, create a directory to house COPIES of minix.vdi, dos.img, and floppy.img
     - Create two copies of floppy.img and name them "boot.img" and "your_name.img"
  2. Run VirtualBox
     - Click "New"
       - Type VM Name and OS Type as follows:
         - Name: MINIX3
         - OS Operating System: Other
         - Version: Other/Unknown
       - Select Memory: 64MB (default)
       - Set up Virtual Hard Disk
         - check "Boot Hard Disk" (deafult)
         - Select "Use existing hard disk", then in the "Choose a virtual hard disk file" dialog box, select minix.vdi in your directory
     - Click "Settings"
       - Select "Storage" tab

        - Click "Add Controller"
        - Select "Add Floppy Controller"
        - Right click "Floppy Controller" and select "Add Floppy Device"
        - Then, select "Choose disk"
            - First, select "boot.img". This will be Floppy Device 0 (/dev/fd0 in MINIX)
            - Second, select either "dos.img" or “your_name.img”. This will be Floppy Device 1 (/dev/fd1 in MINIX)
                - The second disk is used (1) to make a submission disk (your_name.img) and (2) to move a MINIX file to Windows (dos.img)
    - Select “System” tab
        - Uncheck “Floppy” and “CD/DVD-ROM” in the “Boot Order” group box

- Run MINIX
    1. Click "Start" to run MINIX
    2. You login as "root" (there is no password).
    3. First thing you may want to do is change your default shell by "chsh /usr/bin/ash" (issue "man ash").
    4. When your mouse is “captured” by VirtualBox, you can uncapture it by pressing “Right CTR”.
    5. To log off, type "shutdown" which brings you to the monitor (d0p0s0>), and then close the MINIX console by clicking the "Power" button in the tool bar.
        - This step is extremely important. If you do not follow this step, you may destroy your hard disk image

- Create a floppy disk image, a.img, using bximage.exe.

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    Please type hd or fd. [hd] fd

    Choose the size of floppy disk image to create, in megabytes.
    Please type 0.16, 0.18, ..., 0.72, 1.2, 1.44, 1.68, 1.72, or 2.88. [1.44]
    I will create a floppy image with
      cyl=80
      heads=2
      sectors per track=18
      total sectors=2880
      total bytes=1474560

    What should I name the image ?
    [a.img]

    Writing: [] Done.

I wrote 1474560 bytes to a.img.

The following line should appear in your bochsrc:
floppya: 1_44="a.img", status=inserted
(The line is stored in your windows clipboard, use CTRL-V to paste)

Press any key to continue
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- Create a mountable MINIX floppy by issuing "mkfs /dev/fd1"

  To copy all of your work to the floppy image (your_name.img), do the following (assume that you have all your programs in "proj1" directory)
  $. mount /dev/fd0 /mnt to mount the floppy
  $. cp -r proj1 /mnt in my home directory
  $. umount /dev/fd0 to unmount the floppy

- If you want to transfer MINIX files to/from the Windows environment, map the DOS image file (dos.img) to MINIX

  In the following example, I assume that the dos image file is mapped to Floppy1 (second floppy).

- You can copy files to/from a DOS disk in drive 0.
  doswrite -a B dos_file_name < MINIX_file_name
  Note: if you type "doswrite -a B dos_file_name > MINIX_file_name",
  you will erase your MINIX file
  dosread -a B dos_flie_name > MINIX_file_name
  dosdir B
  where "-a" denote "ascii" (not binary)
  Read the on-line manual entries for dosread, doswrite, and dosdir.

  - Now, you have copied your MINIX files in a DOS image file.
    In order to transfer flies between the DOS image file and the Windows environment, we use a public domain program, called "DiskExplore."
  - When you run DiskExplore, it asks for an image file. You specify your DOS image file (dos.img). Then, you can copy and paste files between the dos image file and the Windows environment.
  - Since the Minix hard disk image is very easy to be broken, I strongly suggest that you keep a copy of your work in the Windows file system.

    - In order to create a new DOS image file, go to menu "Extended," then to the "Create disk image from disk..." option. I created "dos.img" this way. (But recently, few people have floppy disk drives).
- How to submit your project:
    - We need a mountable MINIX floppy image (your_name.img that contains all the files you have modified.)
    - Submit your_name.img in the dropbox in K-State Online.
    - CLEARLY STATE WHETHER YOUR PROGRAM WORKS OR NOT.