

Virtualization with VMware Workstation 4

Installing FreeDOS Guest OS



Contents

1. Version History 39

This document will help you install **FreeDOS** Guest Operating System under **Windows 7 32-bit** Host Operating System using VMware Workstation product.

The following excerpt of Q & A from <http://www.freedos.org> will help you to understand what **FreeDOS** is all about. Please note that you have access to these Q & A from **FreeDOS** official website, <http://www.freedos.org> but they are provided here for convenience.

- What is FreeDOS?

FreeDOS is a free DOS-compatible operating system that can be used to play games, run legacy software, or support embedded systems. FreeDOS is basically like the old MS-DOS, but better! For example, FreeDOS lets you access FAT32 file systems and use large disk support (LBA) — a feature not available in MS-DOS, and only included in Windows 95 and newer.

- Is FreeDOS really free?

Yes, FreeDOS is really free. It doesn't cost anything to download and run FreeDOS. Even better, FreeDOS is open source software; you can view and edit our source code. All FreeDOS programs are distributed under the GNU General Public License ("GNU GPL") or a similar open source license. Because we are open source software, anyone can contribute to it. Even if you don't write code, you can help out the FreeDOS Project by [reporting bugs](#).

- What programs can I run in FreeDOS?

FreeDOS is a complete, free, DOS-compatible operating system. While we provide our own [programs and utilities](#), you should be able to run any program that was intended for MS-DOS. You can even do [networking](#)! However, you may experience problems running Windows on FreeDOS. For example, Windows standard-mode works on FreeDOS, but 386-mode Windows for Workgroups 3.11 does not.

The instructions given below are only for convenience in order to help you use the existing legacy applications which need serial communication access with Brainboxes products by installing FreeDOS guest operating system under Windows 7 32-bit host operating system. FreeDOS official website also provides excellent manual on how to virtualize FreeDOS using Oracle VM VirtualBox product even though there is a lack of information regarding how to map Brainboxes serial port to the guest operating system. Please visit FreeDOS official website if you would like to follow their instructions.

1. Please download the “.iso” image file of **FreeDOS** from the following link:

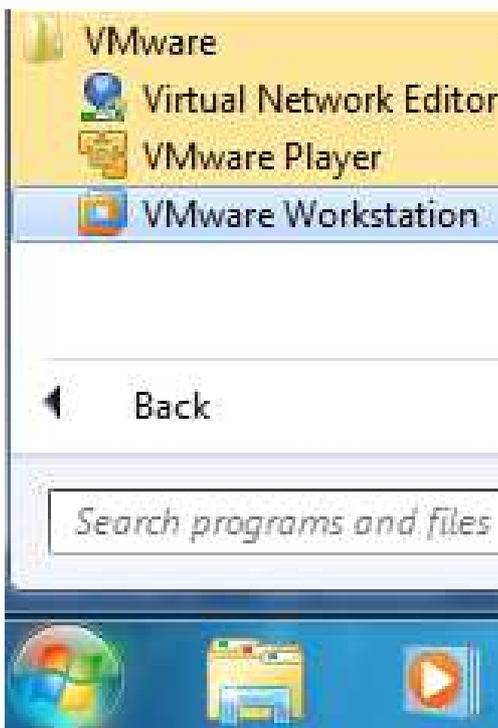
<http://www.freedos.org/download/>

2. Find and click on the link as shown below to download the file to a location on your machine :



We will be downloading this to our “**Desktop**” location in this demonstration.

3. Run “**VMware Workstation**” application by clicking **Start -> All Programs -> VMware -> VMware Workstation** as shown below:



Alternatively, you could also run “**VMware Workstation**” application by double-clicking on the desktop icon:



4. If you are running the application for the first time, you will be presented with the following:



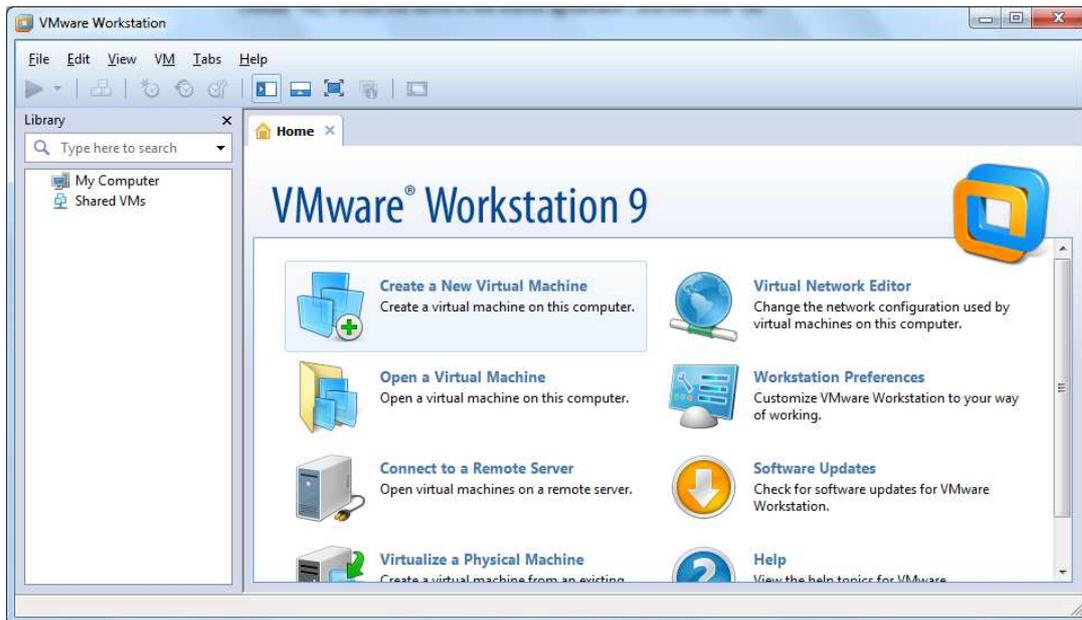
Choose "Yes, I accept the terms in the licence agreement", and then click "OK"

5. Click "Close" when you are presented with the following:



If you have a full licence product and would like to register for update, you could do so. We will not be covering that option in our demonstration.

- You will then be presented with the following and ready to begin the installation of the “FreeDOS” Guest Operating System:



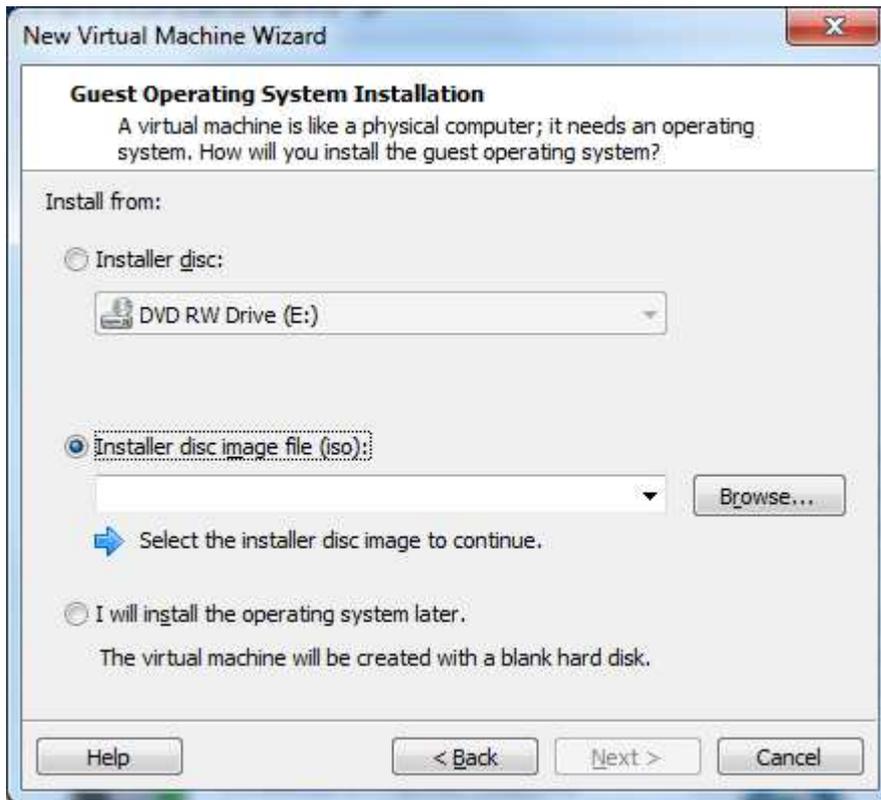
- Click “Create a New Virtual Machine”



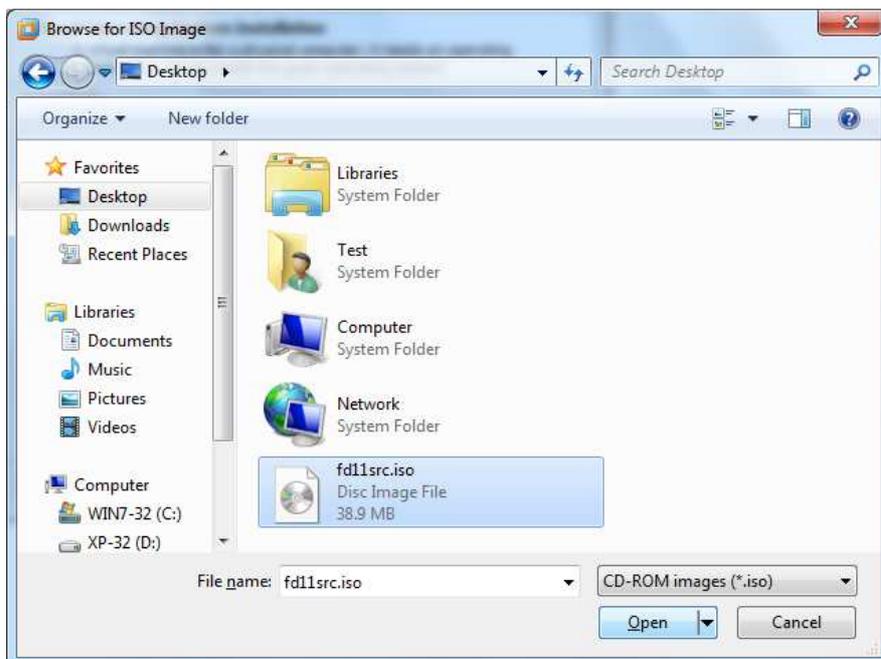
- Choose “Typical (recommended)” option, and click “Next” when you are presented with the following:



9. Select “**Installer disc image file (iso):**” option from the “**Install from:**” option when you are presented with the following:

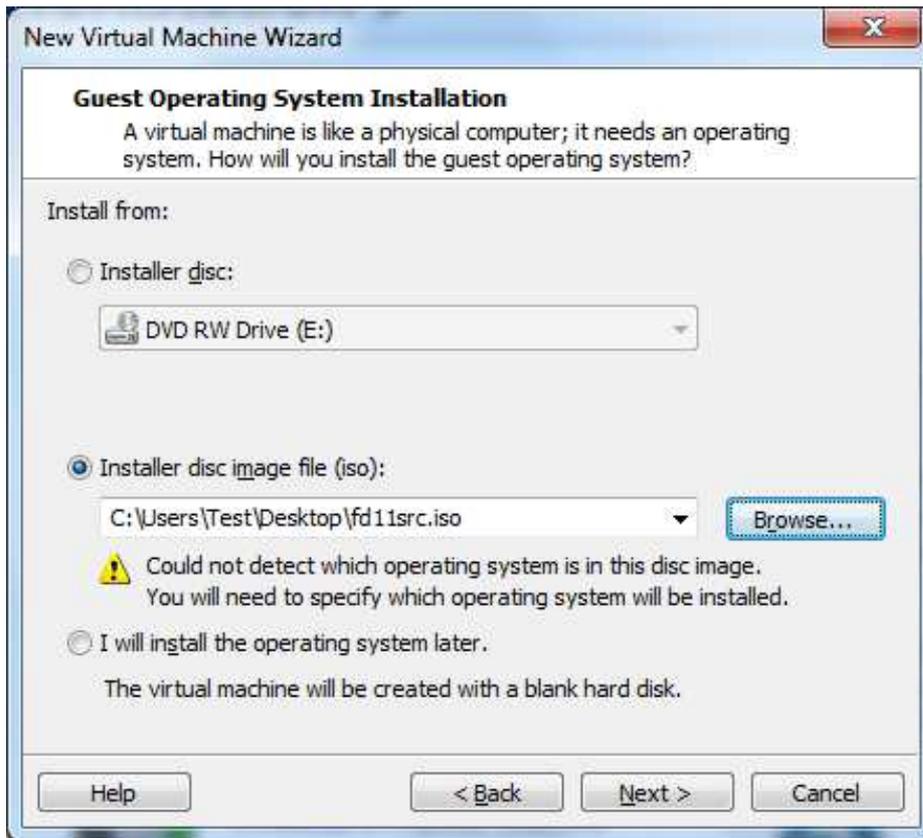


10. Click “**Browse...**” and browse to the location of the “**fd11src.iso**” file which you have downloaded in **Step 2**, select and highlight the file, and then click “**Open**” when you are presented with the following:

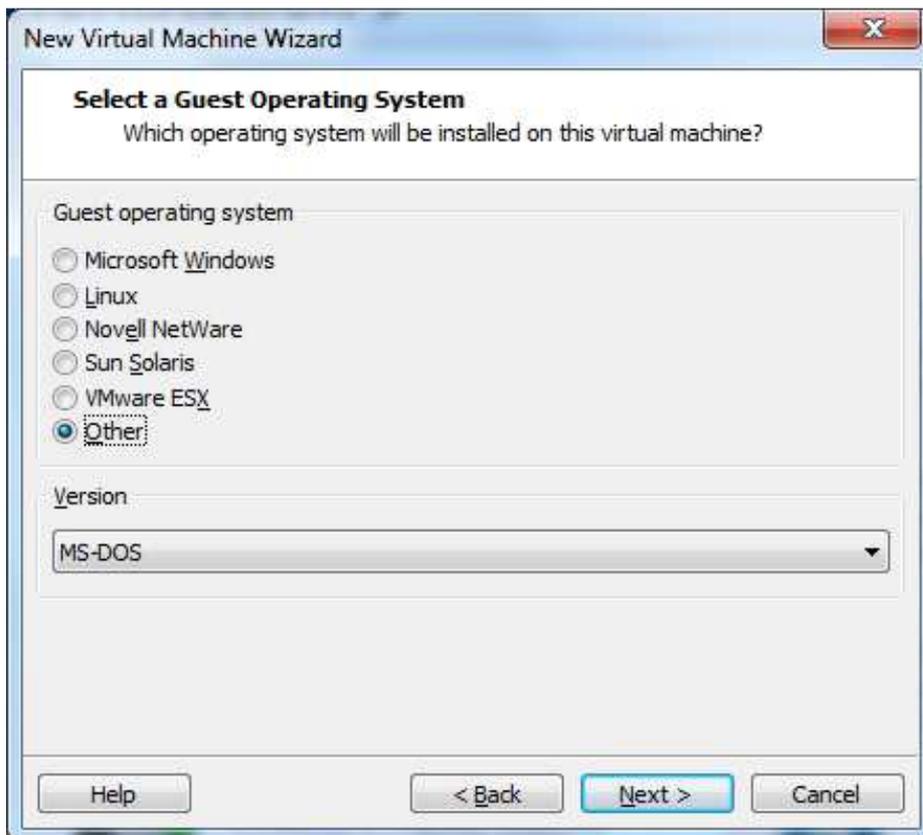


Please specify and open the file from the correct location. For this demonstration, we have downloaded the file to “**Desktop**” in **Step 2**. Please select the location of the file accordingly if you specified it to a different location in **Step 2**.

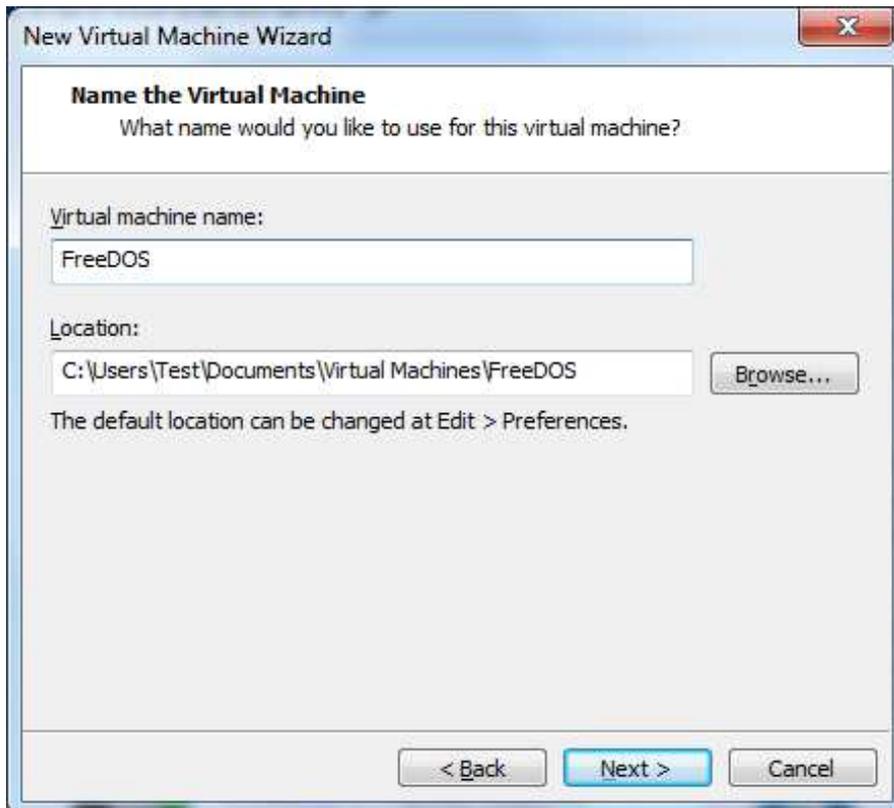
11. Click “**Next**” when you are presented with the following:



12. Select “**Other**” under “**Guest operating system**” section, select “**MS-DOS**” from the drop-down list under “**Version**” section, and then click “**Next >**”



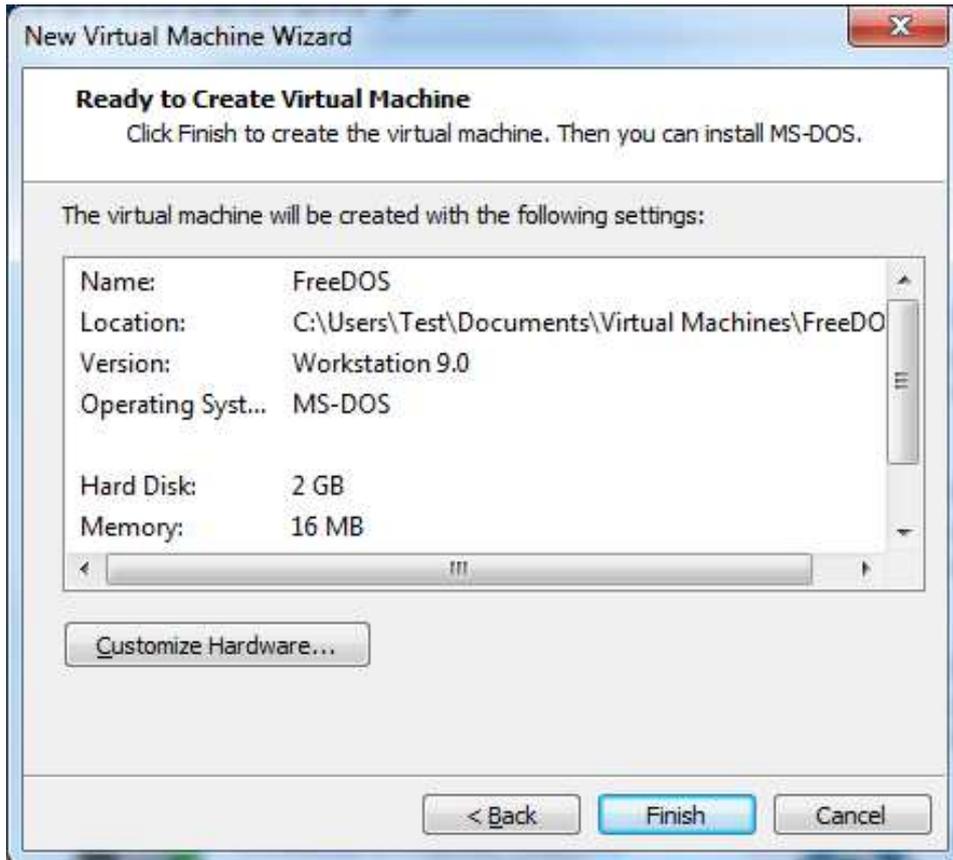
13. Give the name of the virtual machine to be created and the location where it is going to reside on your PC / laptop, then click “**Next >**” when you are presented with the following:



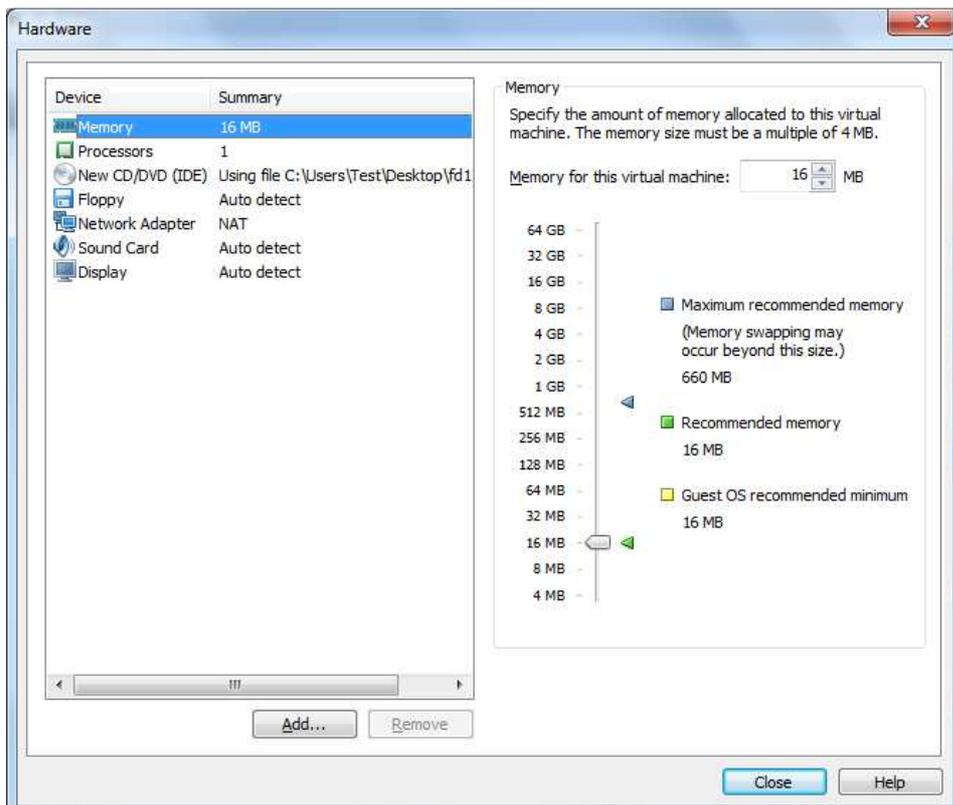
14. Choose the option “**Store virtual disk as a single file**”, and then click “**Next >**” when you are presented with the following:



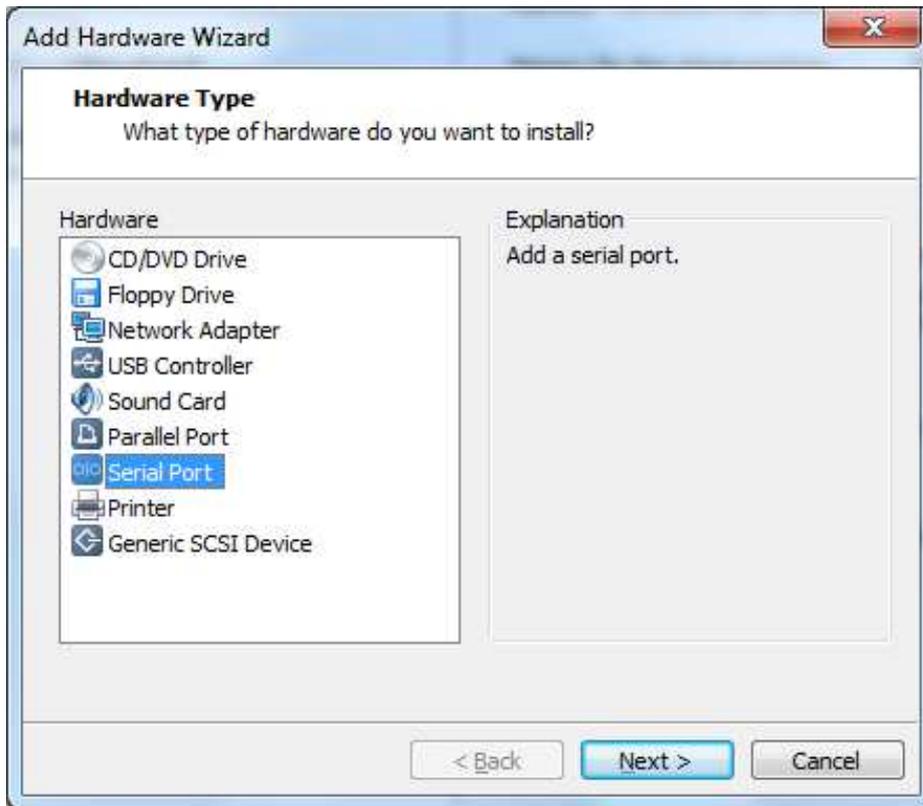
15. Click “**Customize Hardware...**” when you are presented with the following:



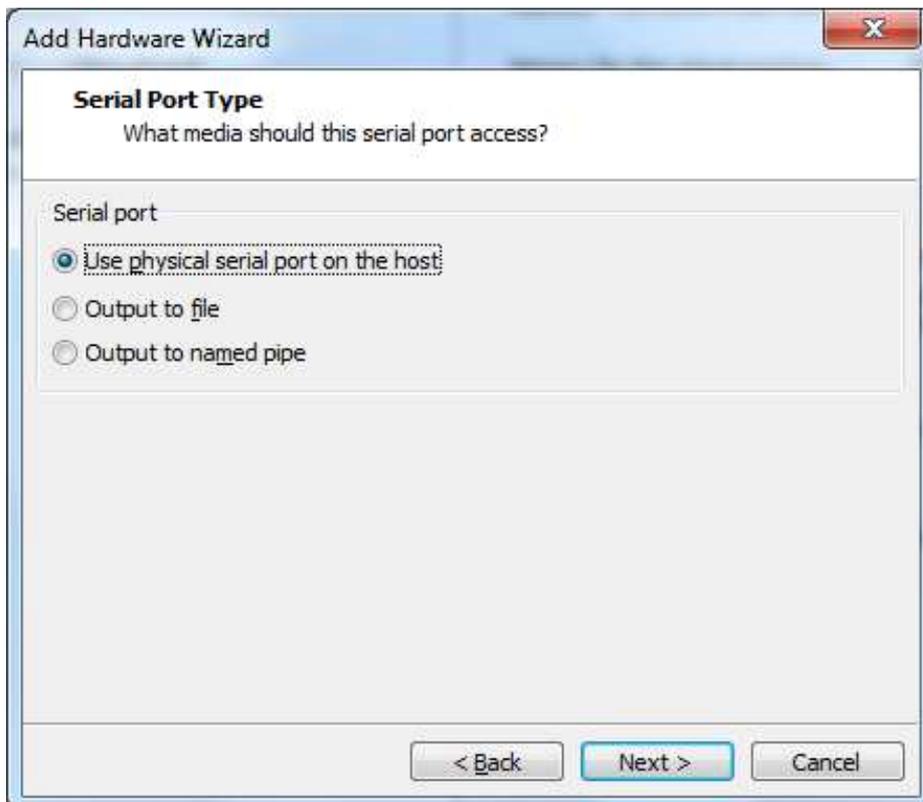
16. The purpose of this demonstration is to virtualize “**FreeDOS**” so that it would give us legacy resources. Therefore, click “**Add...**” when you are presented with the following:



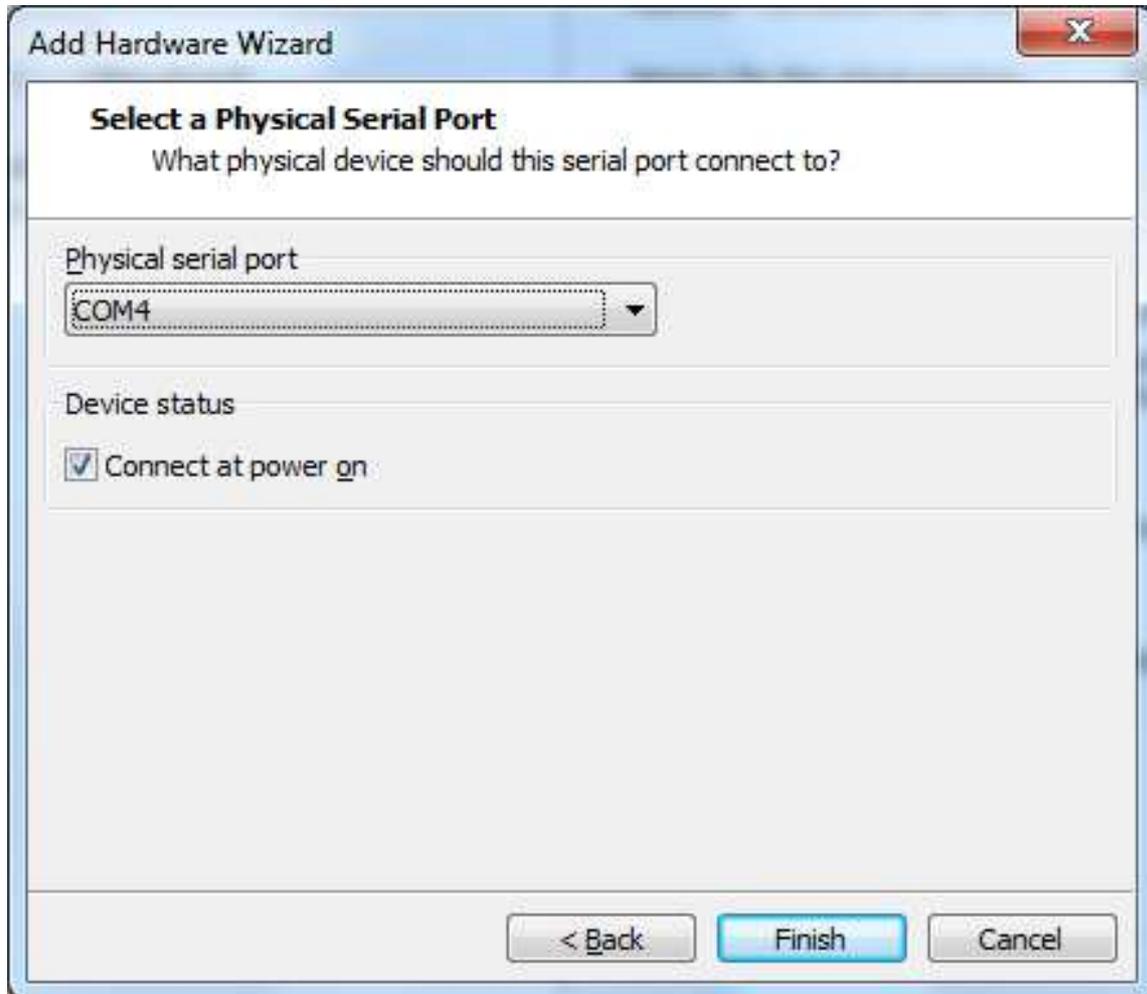
17. Under the section “Hardware”, highlight on “Serial Port” and then click “Next” when you are presented with the following:



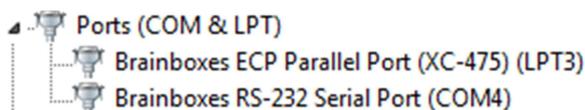
18. Choose the option “Use physical serial port on the host”, and click “Next >” when you are presented with the following:



19. Choose the serial port of the add-in / add-on card installed in your Host Operating System from the “**Physical serial port**” drop down list, select the option “**Connect at power on**”, then click “**Finish**” when you are presented with the following:

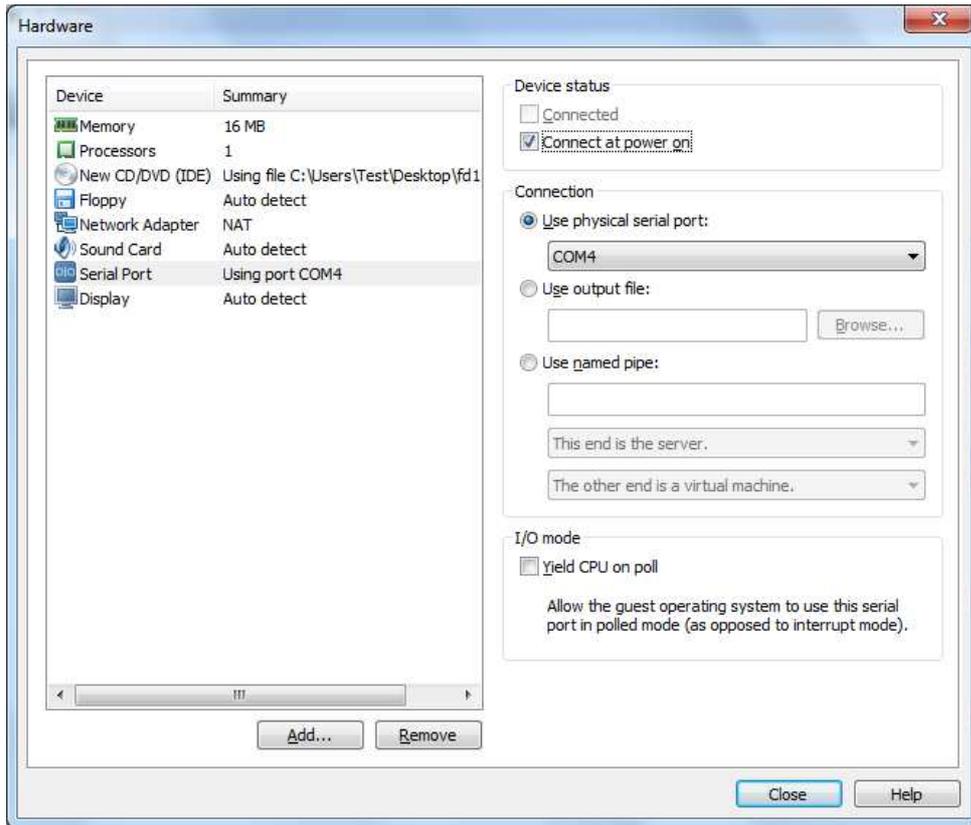


Please note that for this demonstration, the Host Operating System has an ExpressCard product **XC-475** installed with one Serial Port which is loaded as **COM4**, and one Parallel Port which is loaded as **LPT3**. They are installed as “**COM4**” and “**LPT3**” in my machine as shown below:

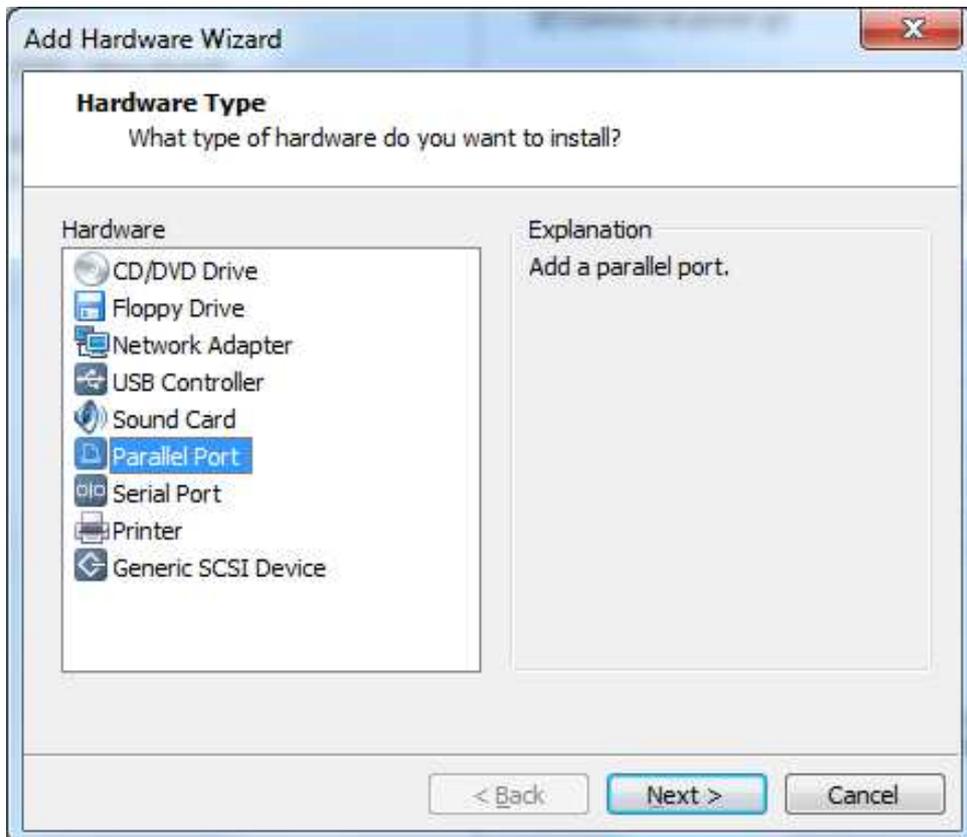


You might have a different COM Port label **COM3**, **COM4** and so on. Please select the correct COM Port label to map accordingly by checking the “**Ports (COM & LPT)**” section under **Device Manager**. For example, if you have installed the Serial Port of **XC-475** as **COM5** on your machine, you will have to select “**COM5**” from “**Physical serial port**” drop-down list.

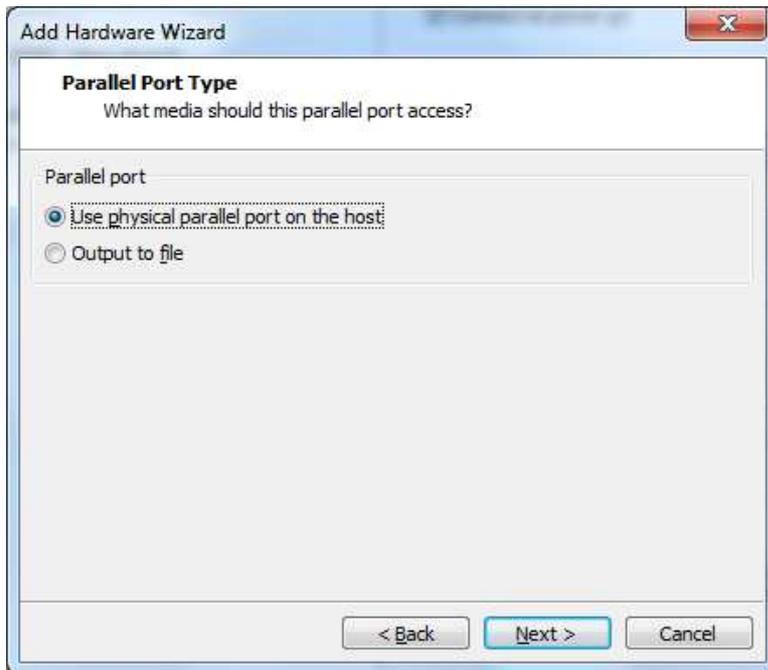
20. Click “**Add...**” when you’re presented with the following:



21. Under the section “**Hardware**”, highlight on “**Parallel Port**” and then click “**Next >**” when you are presented with the following:



22. Select the option “**Use physical parallel port on the host**”, and click “**Next >**” when you are presented with the following:

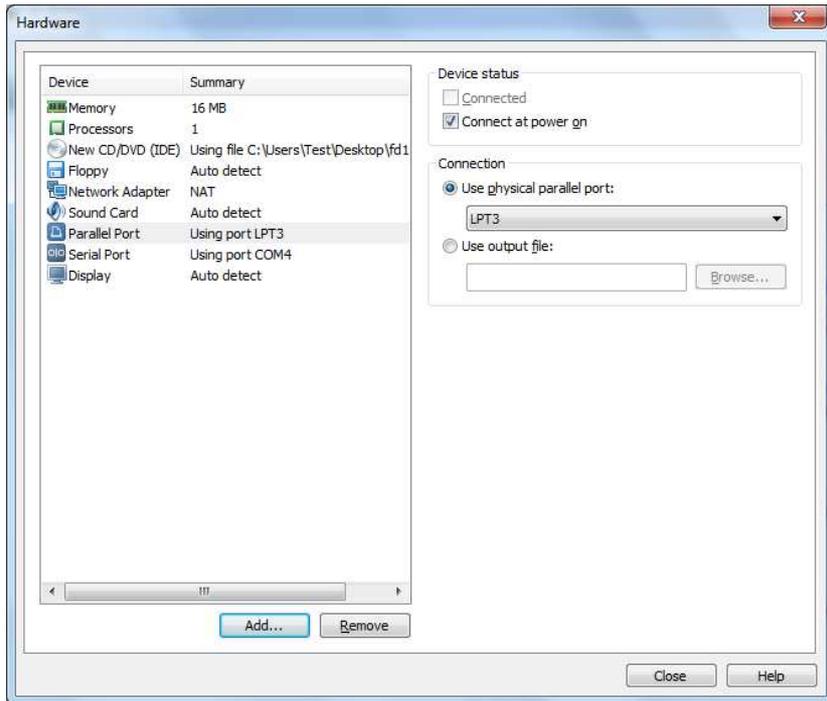


23. Choose the parallel port of the add-in / add-on card installed in your Host Operating System from the “**Physical parallel port**” drop down list, select the option “**Connect at power on**”, then click “**Finish**” when you are presented with the following:



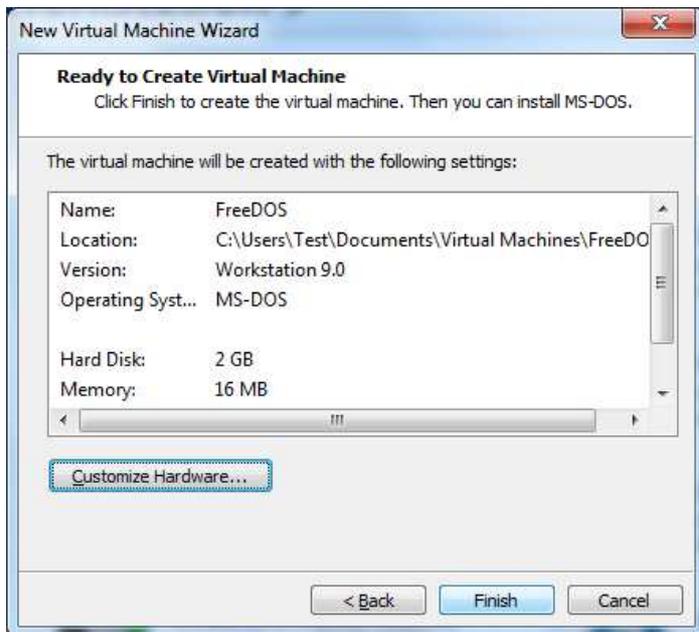
You might have a different LPT Port label **LPT4**, **LPT5** and so on. Please select the correct LPT Port label to map accordingly by checking the “**Ports (COM & LPT)**” section under **Device Manager** as described in **Step 16**. For example, if you have installed the Serial Port of **XC-475** as **LPT4** on your machine, you will have to select “**LPT4**” from “**Physical parallel port**” drop-down list.

24. Click “Close” when you are presented with the following:

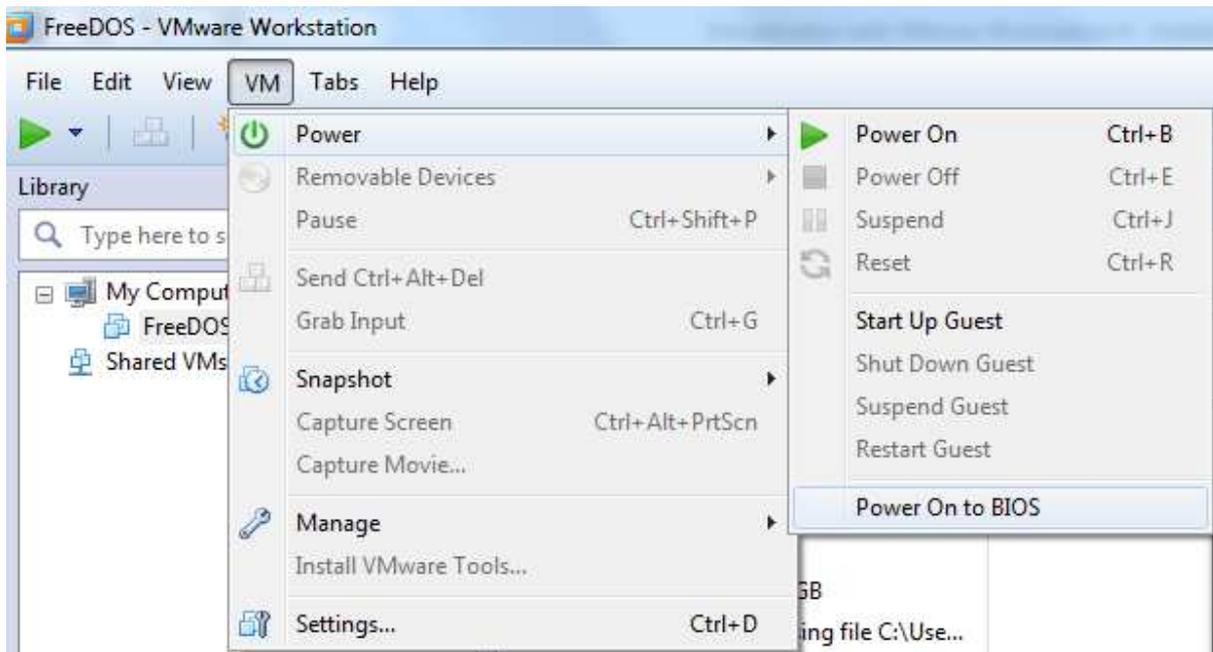


25. Please note that the label “Serial Port” under the “Device” column indicates that you would have to use “COM1” in the Guest Operating System in order to access the add-in / add-on serial port “COM4” of the Host Operating System. Remember to use “COM1” when you are running your own application inside the Guest Operating System. If what you see on Step 24 says “Serial Port 2”, then you would have to use “COM2”, for “Serial Port 3” use “COM3”, and for “Serial Port 4” use “COM4” inside the virtual machine and so on.

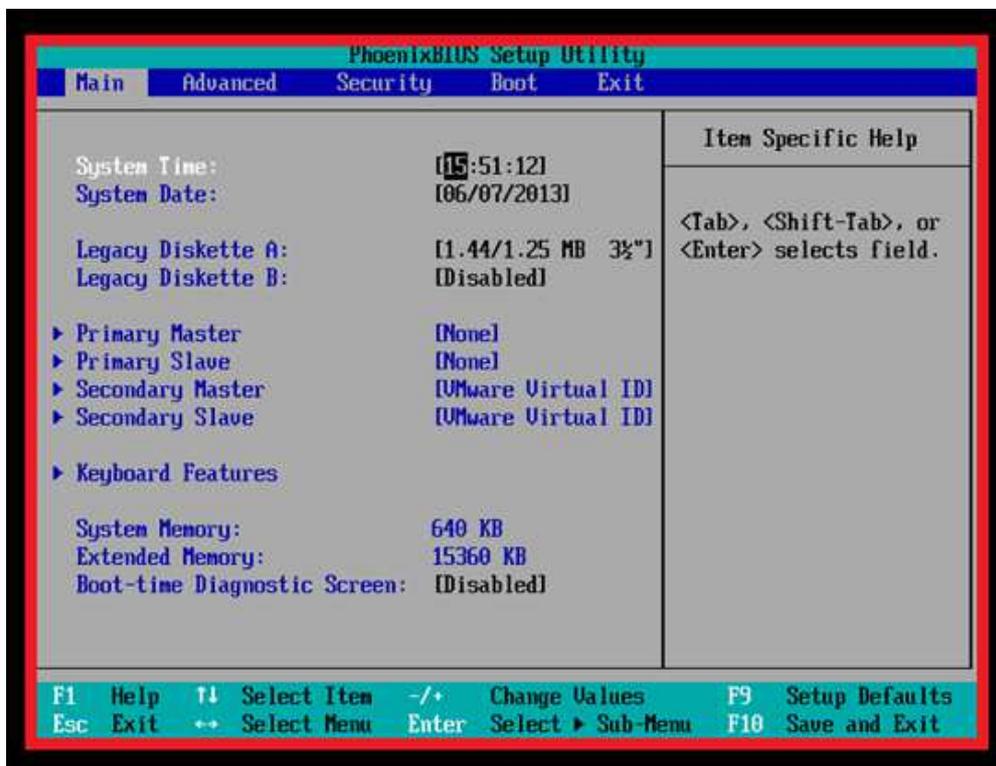
26. Click “Finish” when you are presented with the following:



27. Select and highlight the “FreeDOS” entry, and then click “VM -> Power -> Power On to BIOS” as shown below:

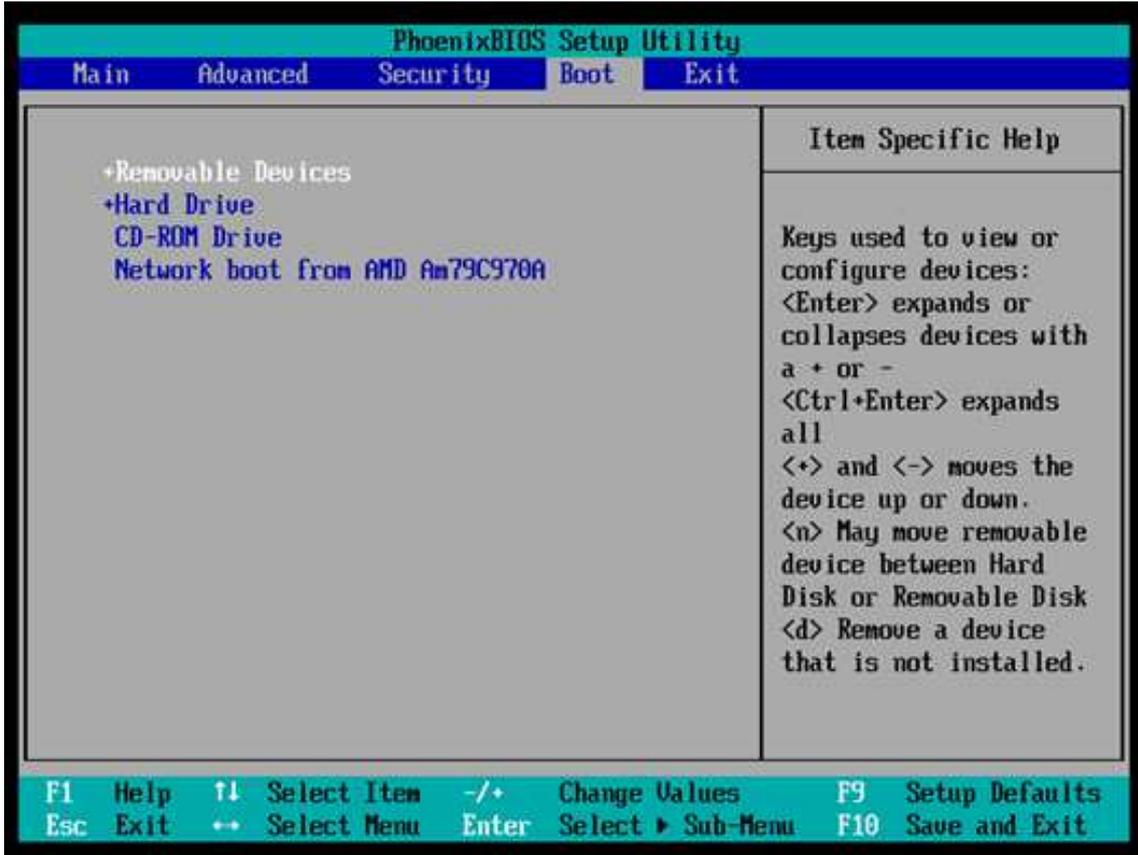


28. Place and press the mouse in the area of the guest operating system (for identification purpose it is marked as the area inside the **red rectangular** in the screen shown below) in order to start the installation process when you are presented with the following:

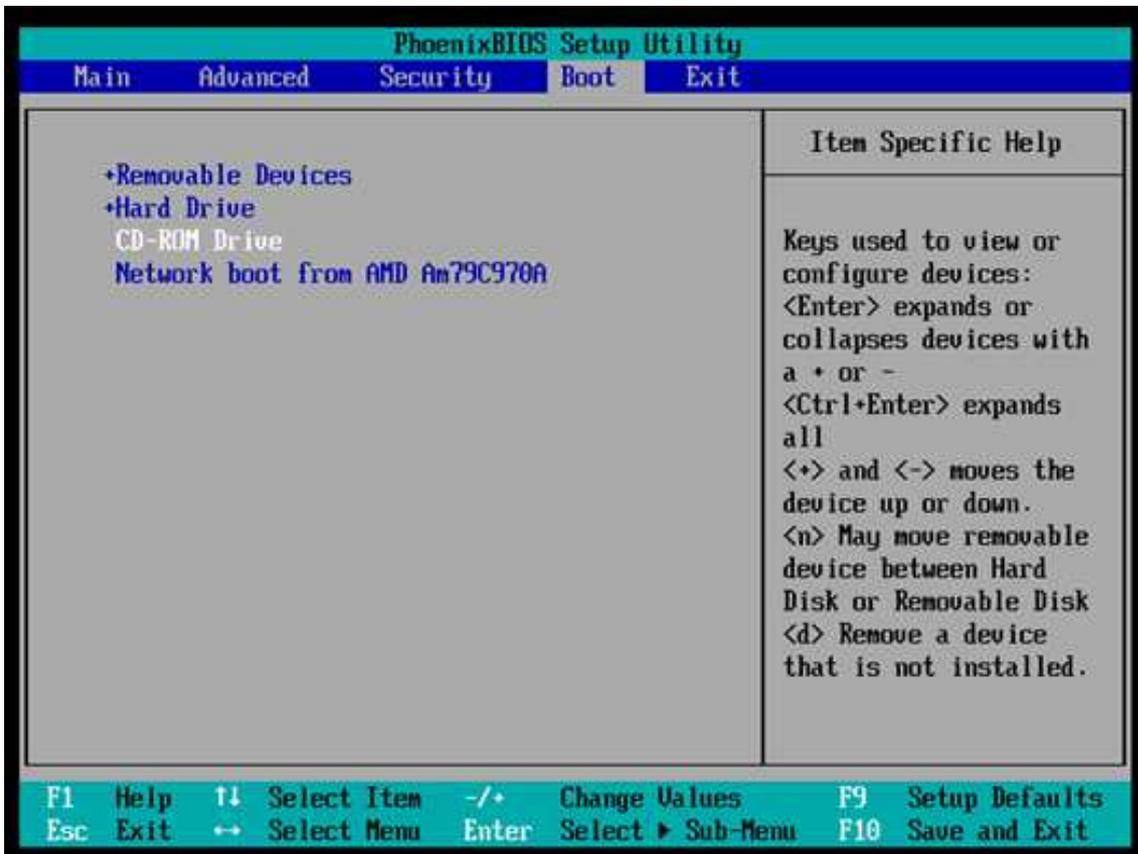


Remember to press the “Ctrl + Alt” key if you ever find yourself stuck inside the “FreeDOS” guest operating system windows. This will take you back to your host operating system and you could move your mouse again.

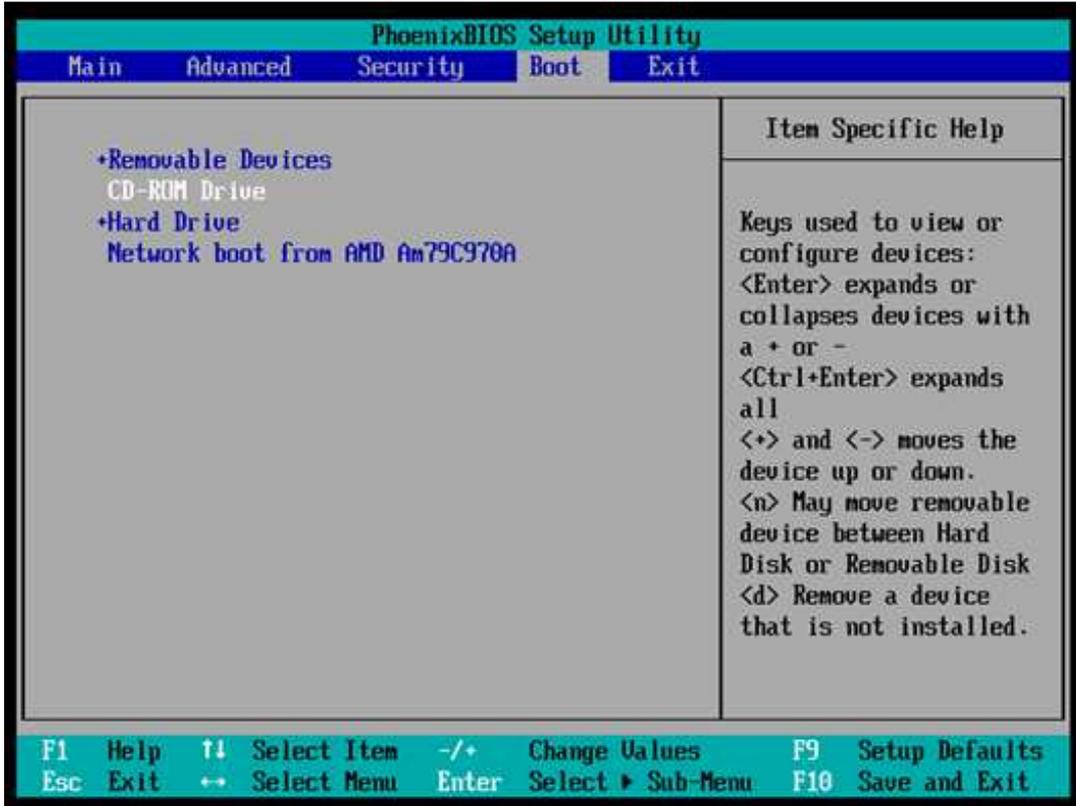
29. Use the arrow key to move to the “**Boot**” option as shown below:



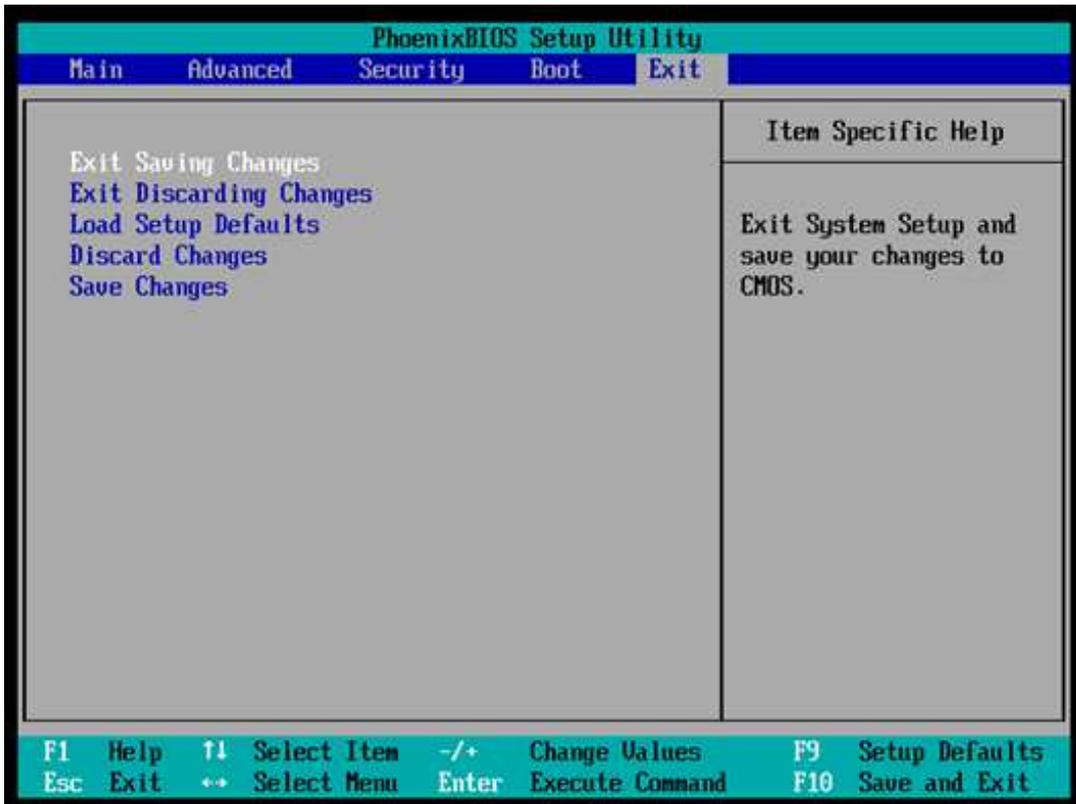
30. Use the arrow key to select “**CD-ROM Drive**” as shown below:



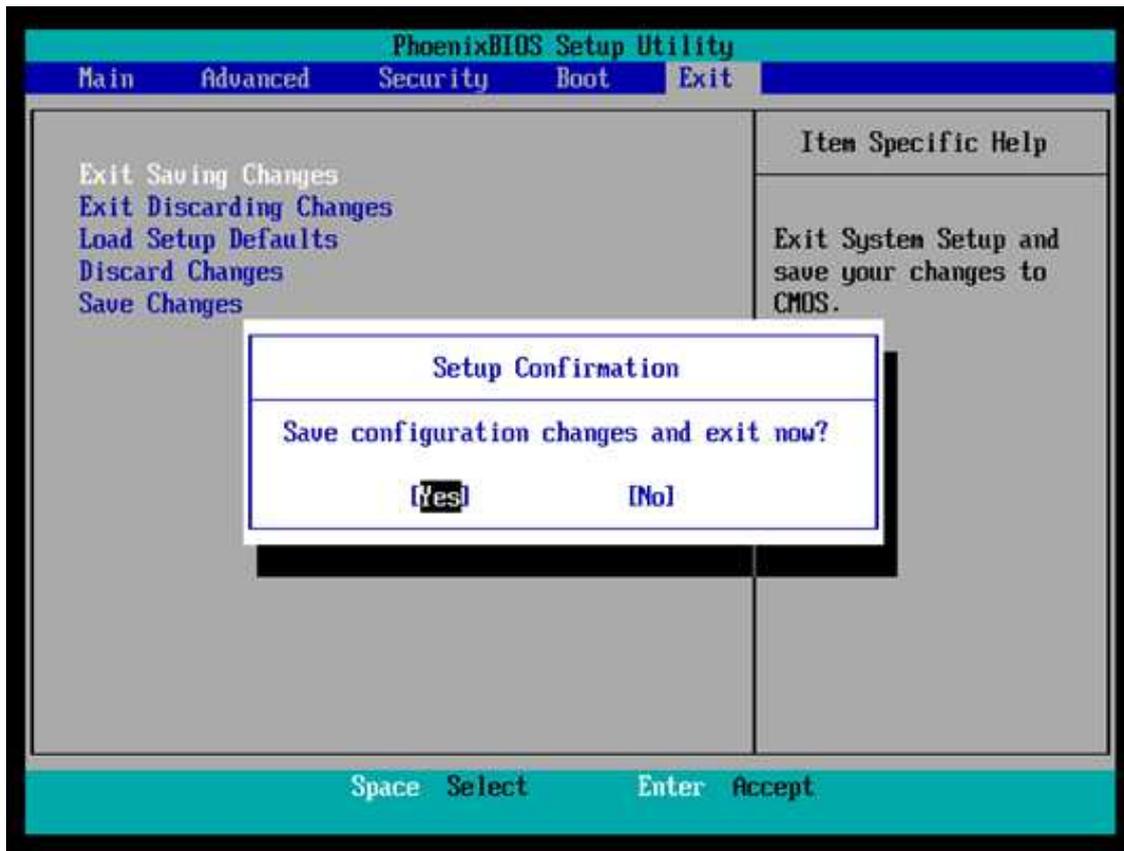
31. Press “+” key so that the “CD-ROM Drive” is located above “+Hard Drive” as shown below (NOTE: You have to press “Shift” key. Otherwise you will probably end up pressing “=” instead and this will not move the option selected from its current place.):



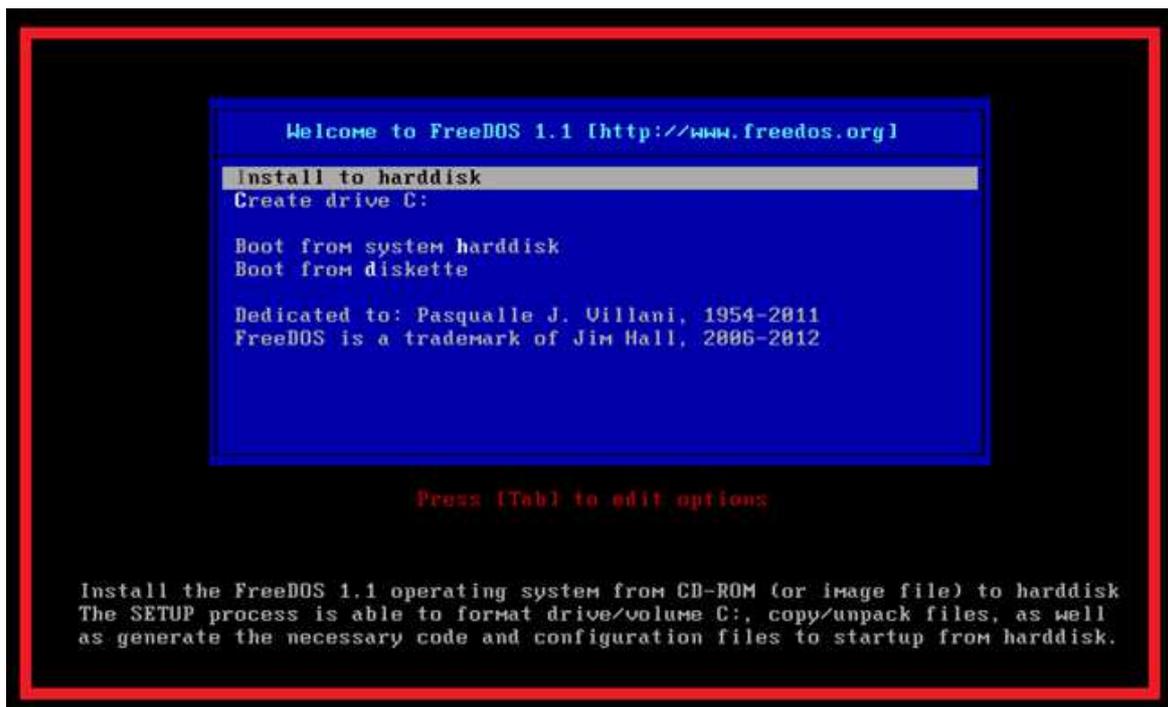
32. Use the arrow key to move to “Exit” option as shown below:



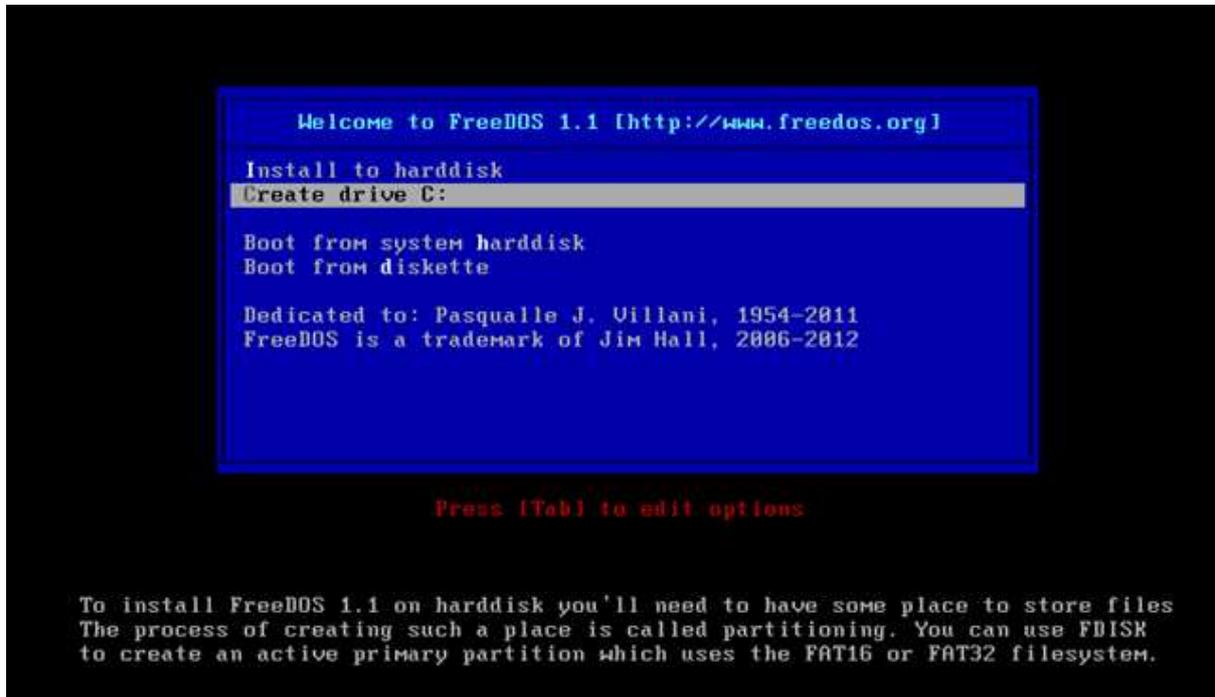
33. Press “Enter”, use the arrow key to select the “[Yes]” option, and then press “Enter” again when you are presented with the following:



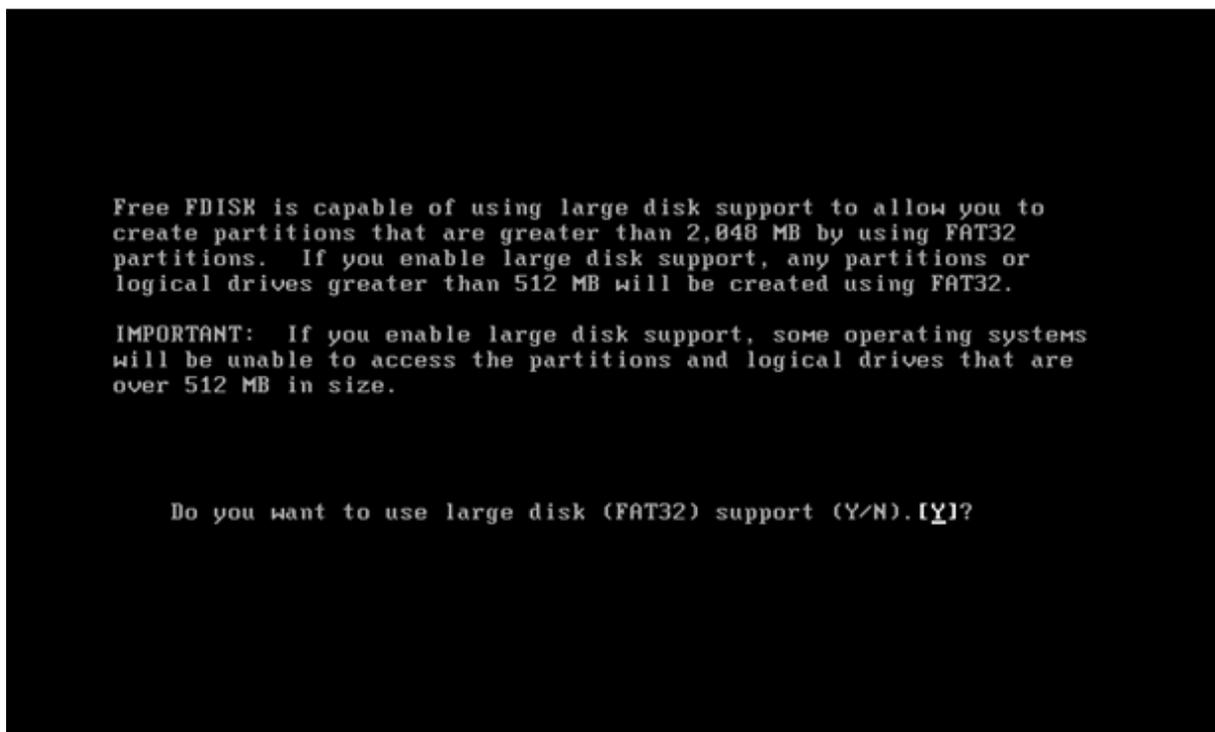
34. Place and press the mouse in the area of the guest operating system (for identification purpose it is marked as the area inside the **red rectangular** in the screen shown below) in order to start the installation process when you are presented with the following:



35. Remember to press the “**Ctrl + Alt**” key if you ever find yourself stuck inside the “**FreeDOS**” guest operating system windows. This will take you back to your host operating system and you could move your mouse again.
36. Use the arrow key to select “**Create drive C:**” and then press “**Enter**” when you are presented with the following:



37. Press “**Y**”, and then press “**Enter**” when you are presented with the following:



38. Press "1", and then press "Enter" when you are presented with the following:

```
Free FDISK      Version 1.2.1
Fixed Disk Setup Program
GNU GPL Copyright Brian E. Reifsnnyder 1998 - 2003

FDISK Options

Current fixed disk drive: 1

Choose one of the following:

1. Create DOS partition or Logical DOS Drive
2. Set Active partition
3. Delete partition or Logical DOS Drive
4. Display partition information

Enter choice: [1]

Press Esc to exit FDISK
```

39. Press "1", and then press "Enter" when you are presented with the following:

```
Create DOS Partition or Logical DOS Drive

Current fixed disk drive: 1

Choose one of the following:

1. Create Primary DOS Partition
2. Create Extended DOS Partition
3. Create Logical DOS Drive(s) in the Extended DOS Partition

Enter choice: [1]

Press Esc to return to FDISK options
```

40. Press "Y", and then press "Enter" when you are presented with the following:

```
                Create Primary DOS Partition

Current fixed disk drive: 1

Do you wish to use the maximum available size for a Primary DOS Partition
and make the partition active (Y/N).....? [Y]

Press Esc to return to FDISK options
```

41. Press "Esc" when you are presented with the following:

```
                Create Primary DOS Partition

Current fixed disk drive: 1

Partition  Status  Type   Volume Label  Mbytes  System  Usage
C: 1      A      PRI DOS                2047    FAT32ext  100%

Total disk space is  2051 Mbytes (1 Mbyte = 1048576 bytes)

Primary DOS Partition created

Press Esc to continue_
```

42. Press “Esc” again when you are presented with the following:

```
                                FDISK Options

Current fixed disk drive: 1

Choose one of the following:

1. Create DOS partition or Logical DOS Drive
2. Set Active partition
3. Delete partition or Logical DOS Drive
4. Display partition information

Enter choice: [1]

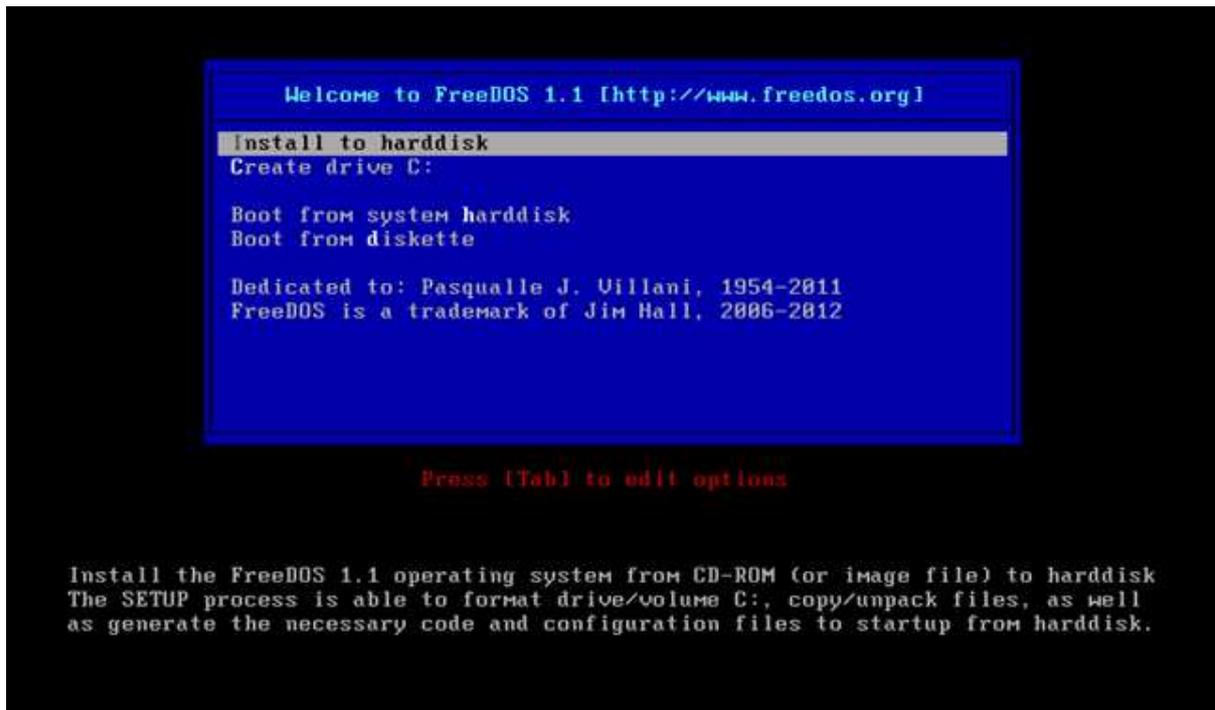
Press Esc to exit FDISK
```

43. Press any key to reboot the guest operating system when you are presented with the following:

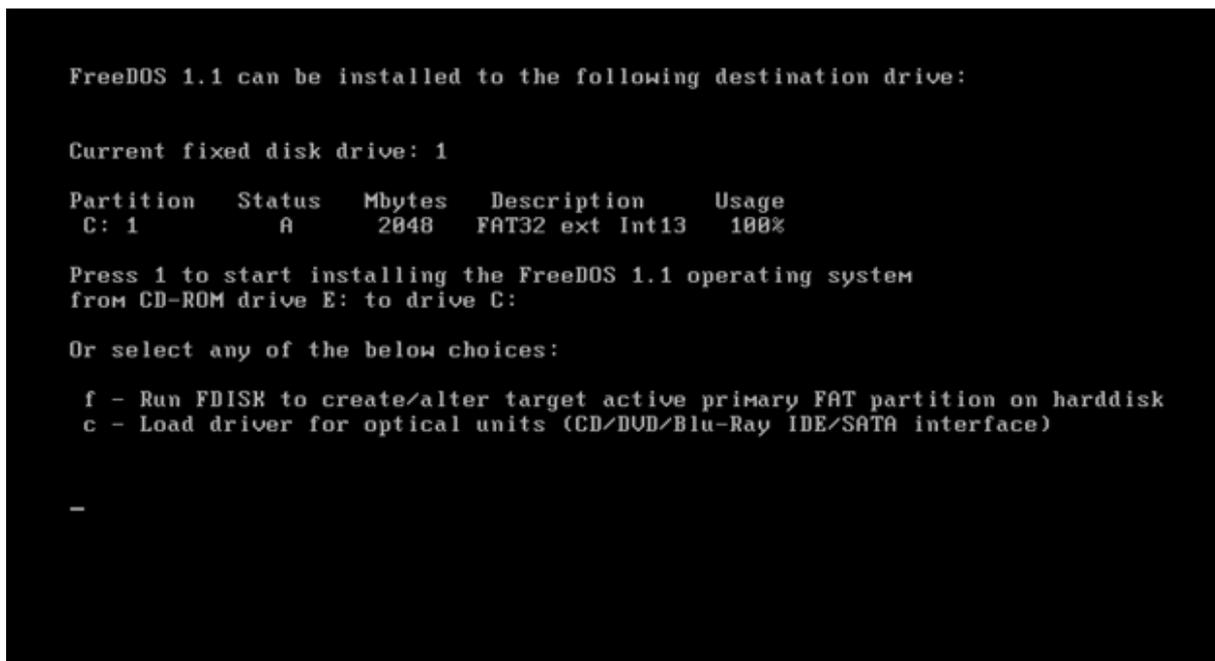
```
System will now restart

Press any key when ready . . . _
```

44. Use the arrow key to select “Install to harddisk”, and then press “Enter” when you are presented with the following:



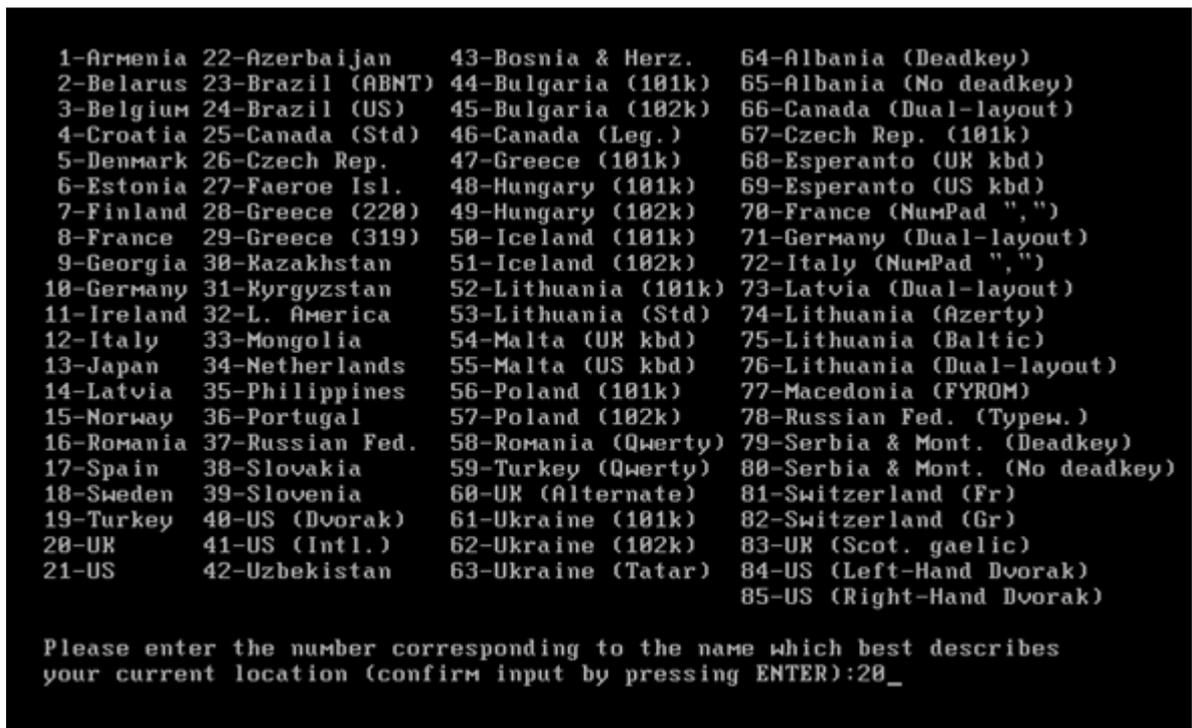
45. Press “1” to start the installation process when you are presented with the following:



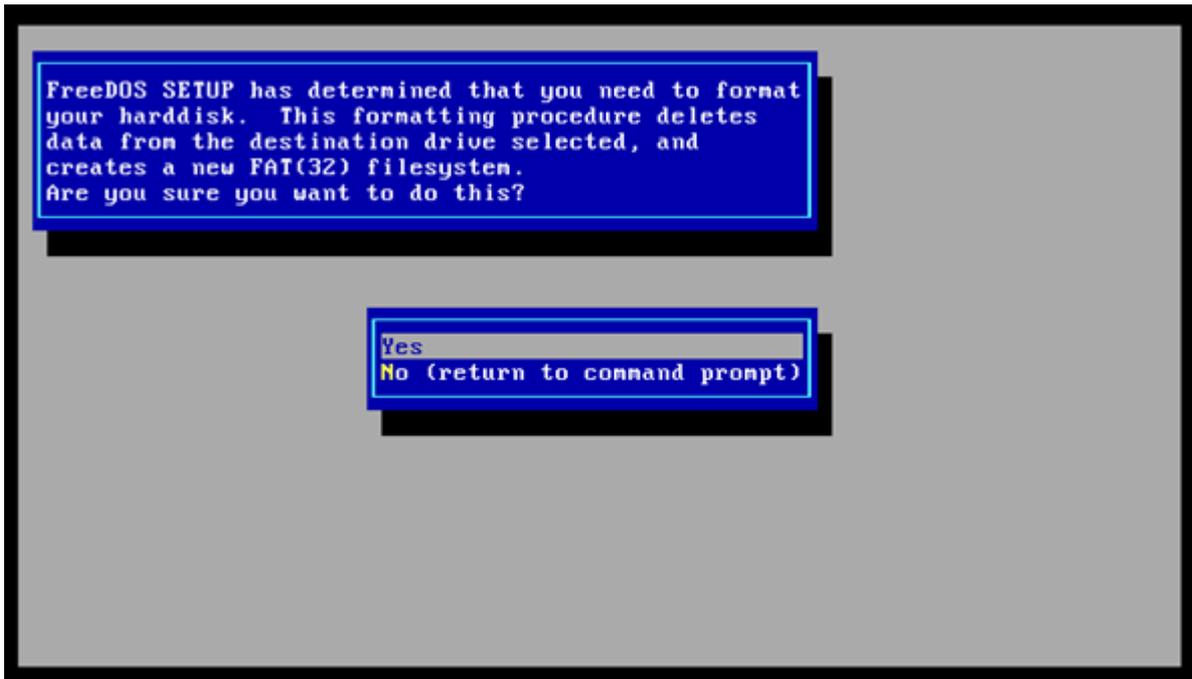
46. Use the arrow key to select “More choices”, and then press “Enter” when you are presented with the following:



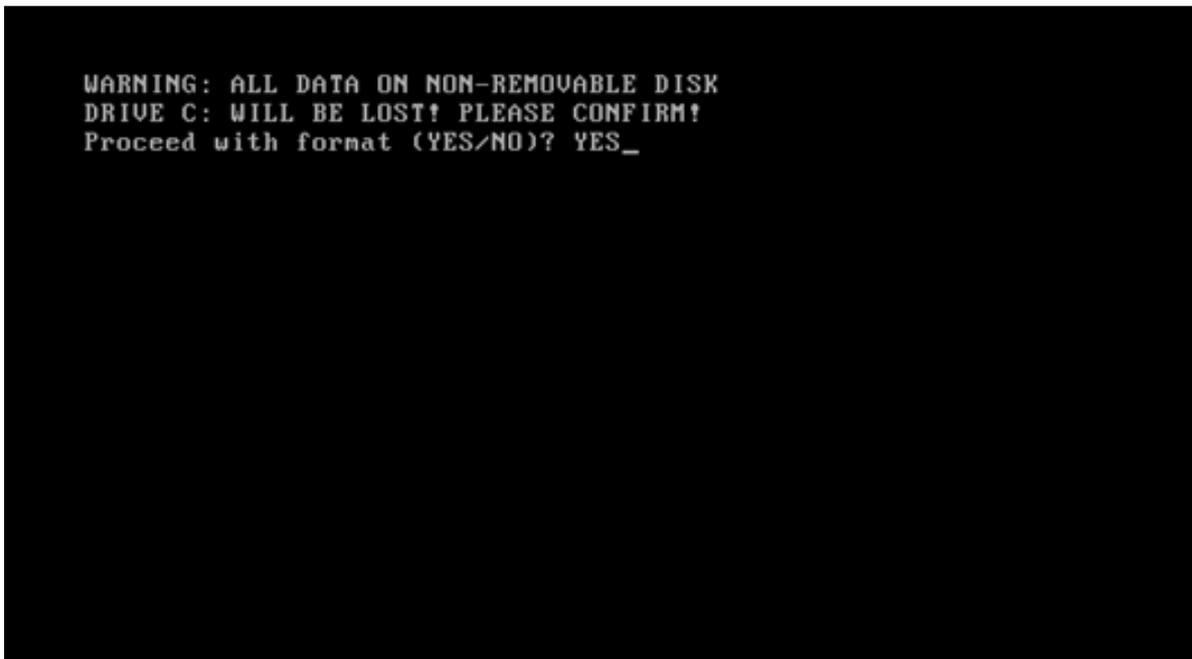
47. Type “20” to set the location as UK, and then press “Enter” when you are presented with the following:



48. Use the arrow key to select “Yes”, and then press “Enter” when you are presented with the following:



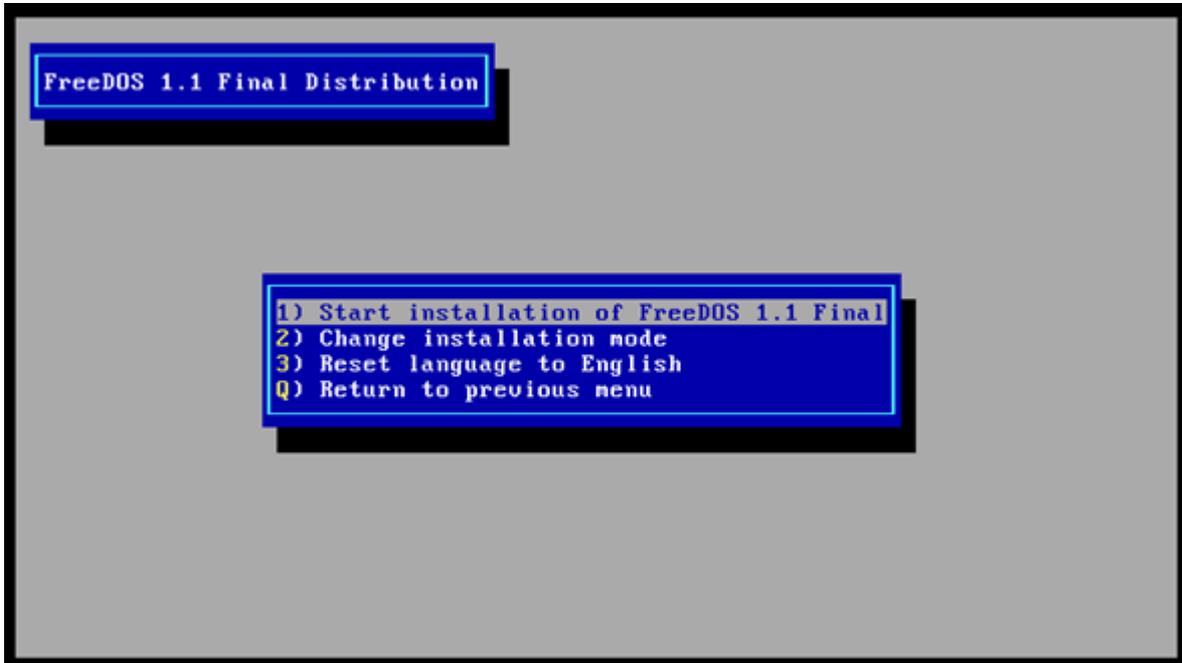
49. Type “YES”, and then press “Enter” when you are presented with the following:



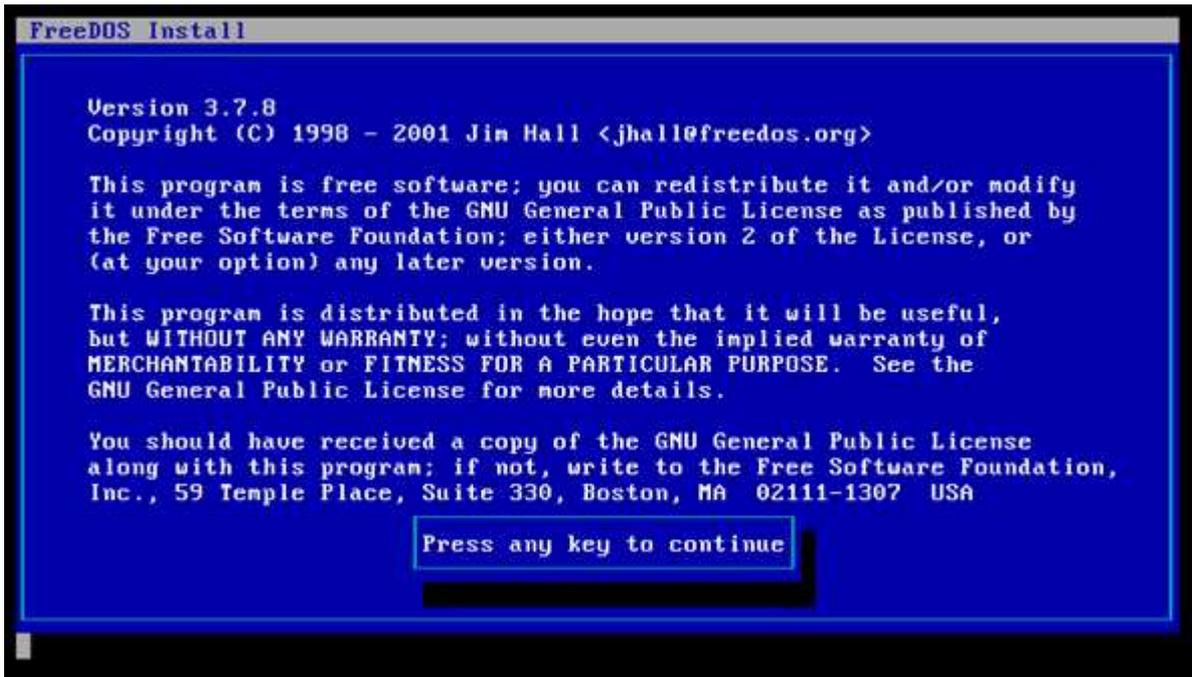
50. Use the arrow key to select “**1) Continue with the FreeDOS installation**”, and then press “**Enter**” when you are presented with the following:



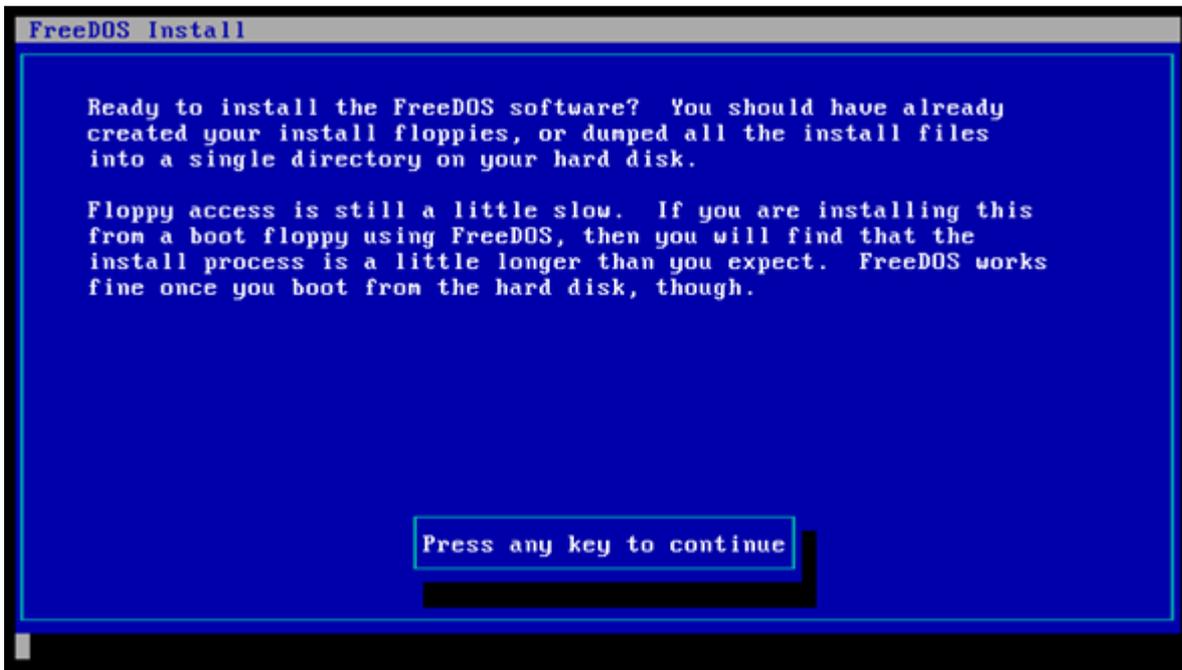
51. Use the arrow key to select “**1) Start installation of FreeDOS 1.1 Final**”, and then press “**Enter**” when you are presented with the following:



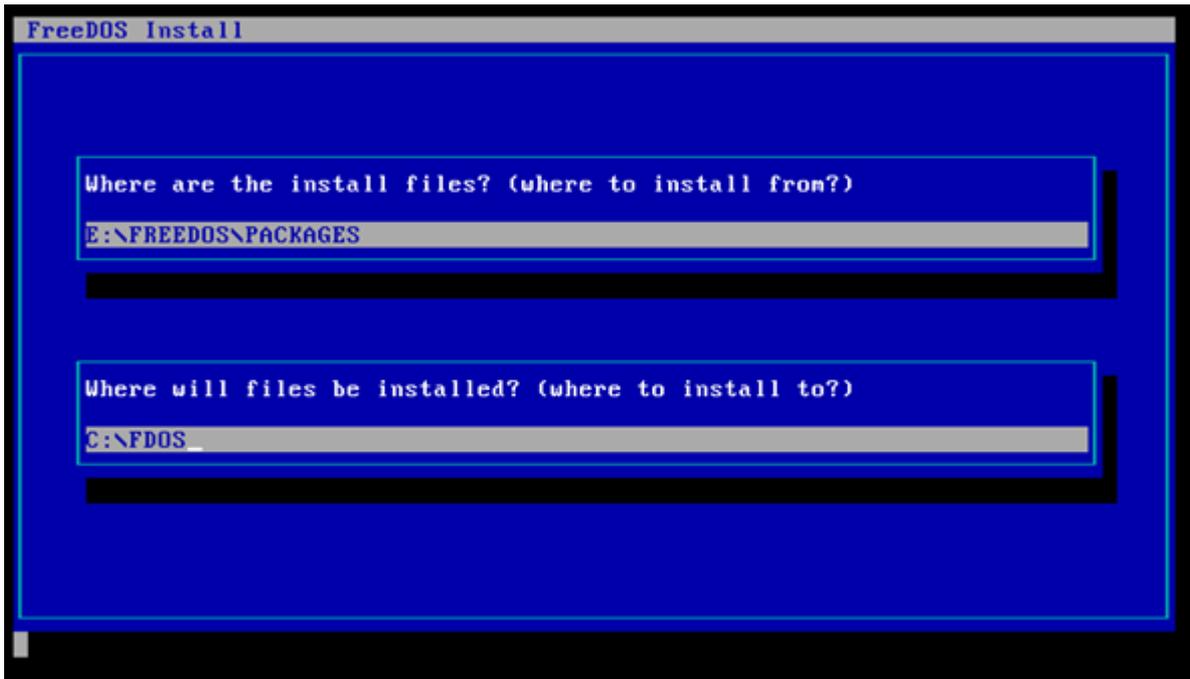
52. Press any key to continue the process when you are presented with the following:



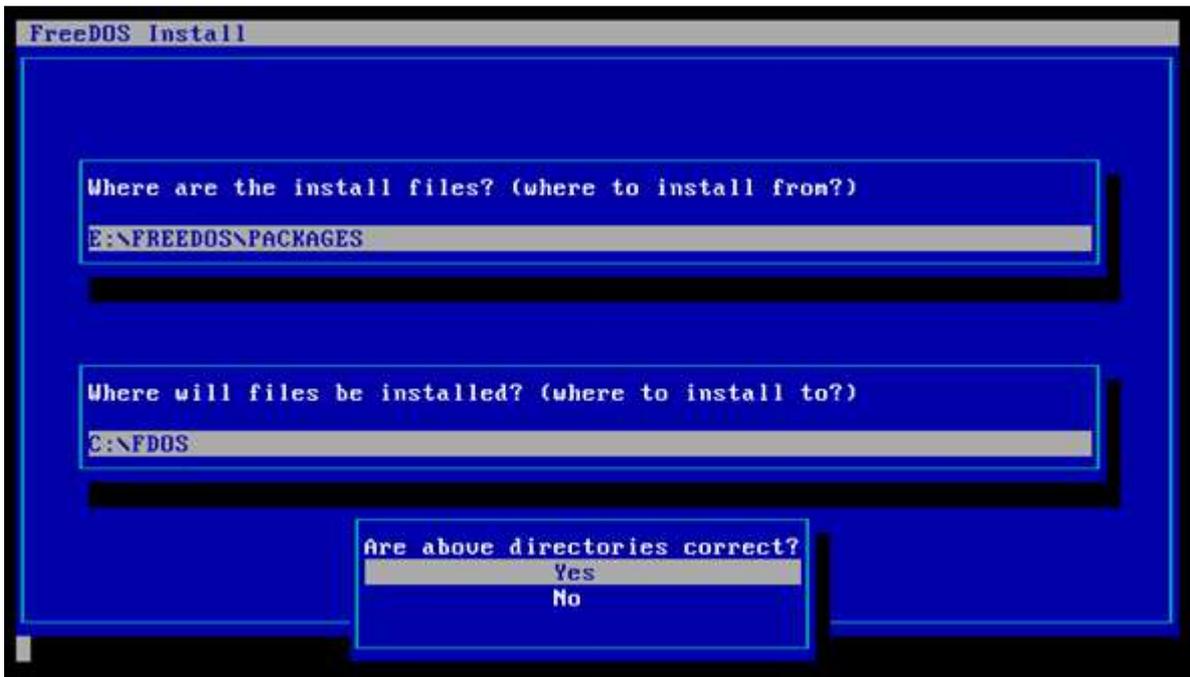
53. Press any key to continue the process when you are presented with the following:



54. Press “Enter” when you are presented with the following:



55. Use the arrow key to select “Yes”, and then press “Enter” when you are presented with the following:



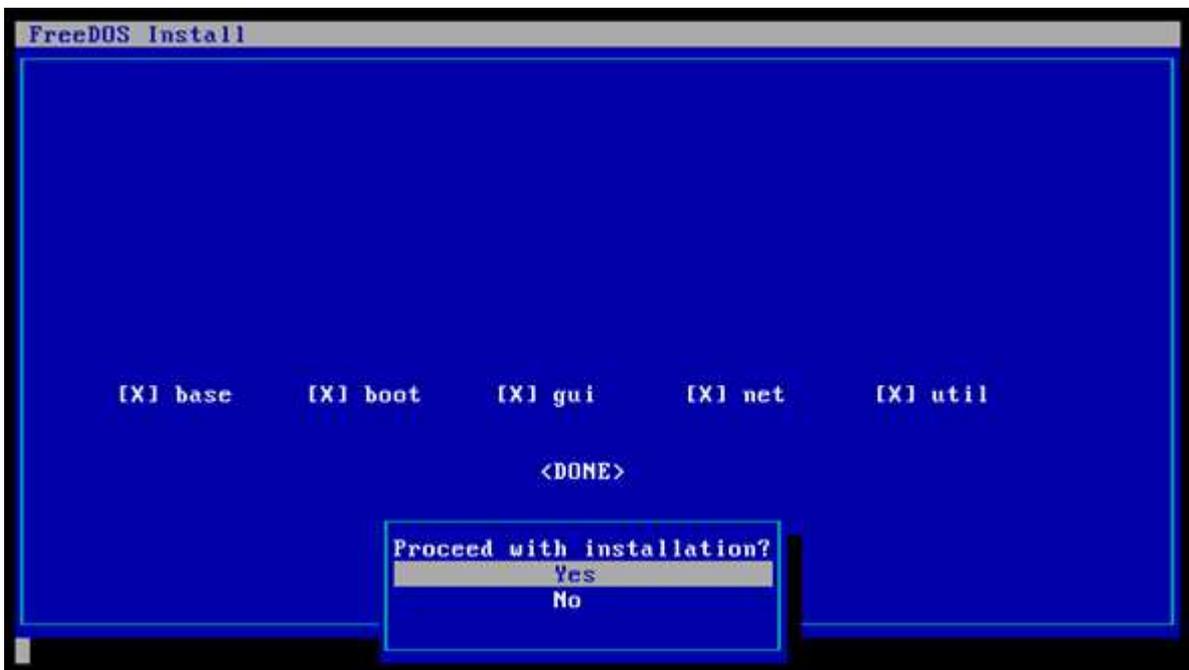
56. Use the arrow key to move to different section, and press “Space Bar” to select all the packages with “[X]” when you are presented with the following:



Make sure all are selected as “[X] base”, “[X] boot”, “[X] gui”, “[X] net” and “[X] util” as shown above.

57. Press “Enter”

58. Use the arrow key to select “Yes”, and then press “Enter” when you are presented with the following:



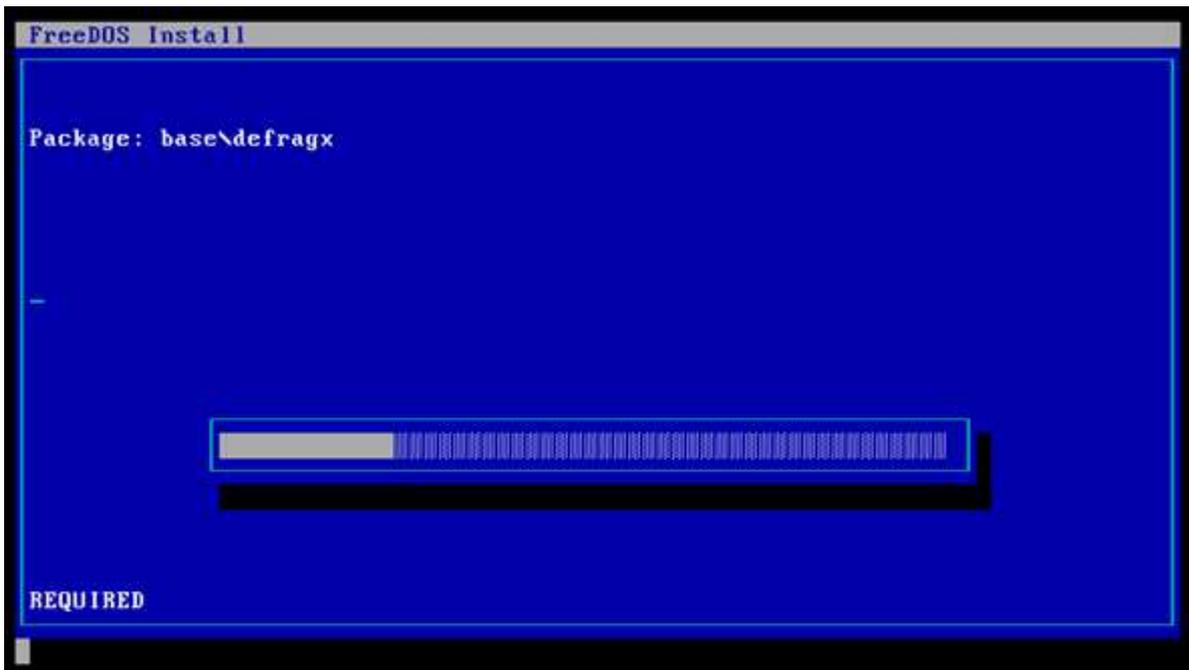
59. Press “Enter” when you are presented with the following:



60. Use the arrow key to select “Yes”, and then press “Enter” when you are presented with the following:



61. Please wait for the installation process to continue as this step will take a while to complete. During this time you will be presented with a series of screen similar to the one shown below:

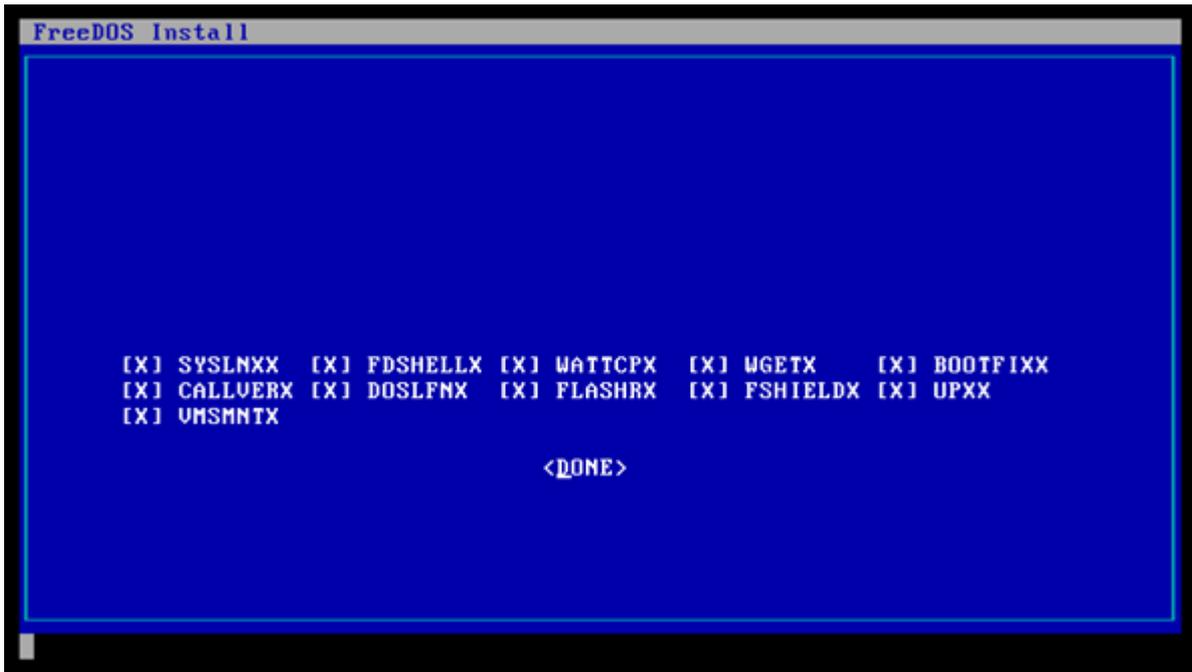


62. Press any key to continue the process when you are presented with the following:

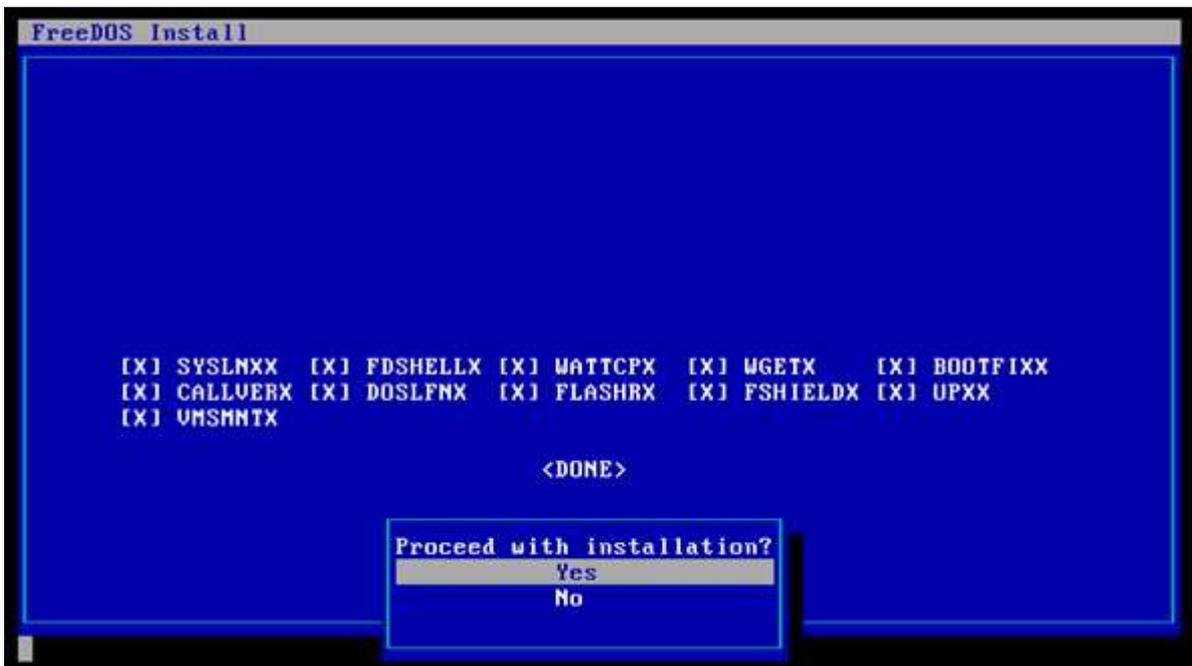


You will have to repeat pressing any key for about four times before you get to the next stage.

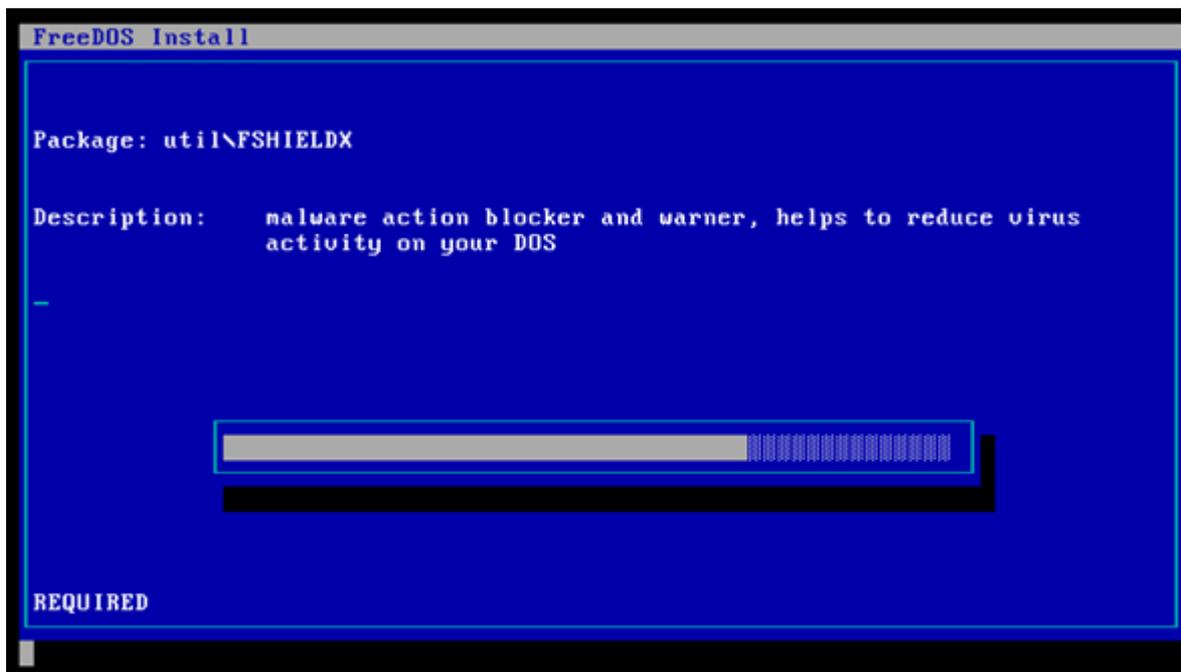
63. Press "Enter" when you are presented with the following:



64. Use the arrow key to select "Yes", and then press "Enter" when you are presented with the following:



65. Please wait for the installation process to continue as this step will take a while to complete. During this time you will be presented with a series of screen similar to the one shown below:



66. Press any key to continue the process when you are presented with the following:



67. Please wait for a few seconds for the installation to finalize, and then press “1” in order to select the option “1) Write FreeDOS specific code to this area so KERNEL.SYS will be loaded” when you are presented with the following:

```
[+] Stage 3 : Create startup automation file
[+] Stage 4 : Setting up translated programs.
[+] Stage 5 : Setup all packages.
[+] Stage 6 : Done, reboot system?
FreeDOS System Installer v3.7a, Aug 10 2011
FreeDOS System Installer v3.7a, Aug 10 2011

Processing boot sector...
FAT type: FAT32

System transferred.
C:\FDOS\bin\syslinux.cfg => C:\FDOS\syslinux.cfg

For your convenience the contents of drive C:'s bootsector area has been saved
(restore by "SYS C: /BOOTONLY /RESTORBS C:\FDOS\BOOTSECT.BSS").
Currently it seems to contain code belonging to FreeDOS

Please select what to do with the bootsector (also known as Volume Boot Record)

1) Write FreeDOS specific code to this area so KERNEL.SYS will be loaded
2) Install and configure the Syslinux bootloader with its startup code
3) Try to integrate FreeDOS into the system's current bootloader (experimental)
4) Skip updating and restart system from harddisk
5) Skip updating and finalise installation by dropping to commandline.
Please select now:_
```

68. The “FreeDOS” guest operating system will now reboot.

69. After the guest operating system resume from reboot, use the arrow key to select the option “Boot from system harddisk”, and press “Enter” when you are presented with the following:



```
Welcome to FreeDOS 1.1 [http://www.freedos.org]

Install to harddisk
Create drive C:

Boot from system harddisk
Boot from diskette

Dedicated to: Pasquale J. Villani, 1954-2011
FreeDOS is a trademark of Jim Hall, 2006-2012

Press [Tab] to edit options

Starts your installed regularly used operating system from harddisk
```

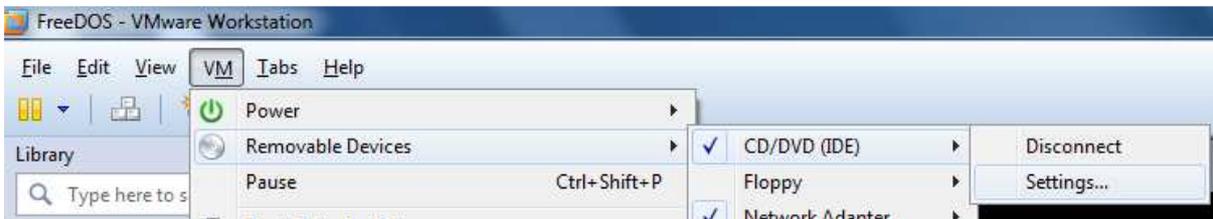
70. Use the arrow key to select the option “**1 – Load FreeDOS with JEMMEX, no EMS (most UMBs), max RAM free**”, and then press “**Enter**” when you are presented with the following:

```
1 - Load FreeDOS with JEMMEX, no EMS (most UMBs), max RAM free
2 - Load FreeDOS with EMM386 (Expanded Memory) and SHARE loaded
3 - Load FreeDOS including XMGR XMS-memory driver
4 - Load FreeDOS without drivers

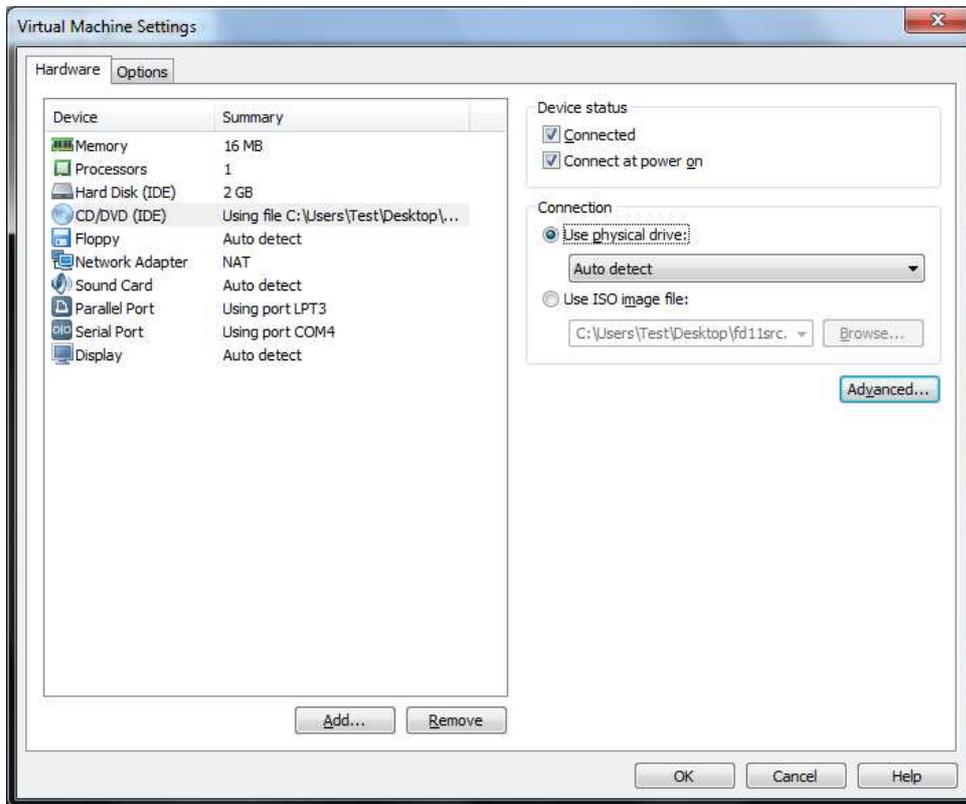
Select from Menu [1234], or press [ENTER] (Selection=1)
_ Singlestepping (F8) is: OFF
```

71. We will now un-mount the installation “.iso” disk image. Otherwise, you will be greeted with the screen shown in **Step 34** every time you start the “FreeDOS” guest operating system. Since we have now successfully installed the guest operating system, we no longer need this installation disk image.

72. Click “**VM -> Removable Devices -> CD/DVD (IDE) -> Settings...**” as shown below:



73. Select “**User physical drive:**” option, select “**Auto detect**” from the drop-down list, and then click “**OK**” as shown below:



This step is necessary as the disc image we have loaded from **Step 9 – 11** is a bootable image, and we also set the BIOS boot order **Step 28 – 33** to set CD-ROM Drive the first bootable device. If you load other non-bootable “.iso” disc image, this step will not be necessary, for example when you are trying to transfer the files you need to the “**FreeDOS**” guest operating system environment, etc.

74. Now type “**reboot**”, and then press “**Enter**” as shown below:

```
Welcome to the FreeDOS 1.1 operating system (http://www.freedos.org)
C:\>reboot
```

75. Now you will be taken a screen as shown in **Step 70** every time you start the “**FreeDOS**” guest operating system.

76. Please also note that the CD / DVD drive for “**FreeDOS**” guest operating system is “**D:**” drive as shown below:

```
Drive  Driver  Unit
D:    FDCD0001  0
```

The disk image file (or) actual DVD / DVD media you load from the Windows 7 32-bit host operating system will show up under “**D:**” drive inside the “**FreeDOS**” guest operating system.

77. To shut down / switch off the “FreeDOS” guest operating system, type “shutdown” and then press “Enter” at the “C:\>” DOS prompt as shown below:

```
Welcome to the FreeDOS 1.1 operating system (http://www.freedos.org)
C:\>shutdown
```

78. To start the “FreeDOS” guest operating system, select and highlight “MS-DO” on the left, and then press “Power on this virtual machine” as shown below:



Version History

Version	Date	Author	Checked By	Comments
1	12/06/2013	Seng Seng Du	R&D	