UNIVERSITI PUTRA MALAYSIA

FAKULTI SAINS KOMPUTER DAN TEKNOLOGI MAKLUMAT

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The content shown in the screenshots may appear misaligned because my computer's default language is Chinese. I wasn't able to change CMD and Terminal to English in a short time. Therefore, after taking the screenshots, I used a translation tool to convert them into Chinese. I hope you can understand.

LAB 1 – Individual

OBJECTIVE:
The main objective of this lab is to introduce the students to the Windows operating system. Students will also be introduced to the Command Prompt.

DURATION:
1 week / 3 hours

DUE DATE OF SUBMISSION: WEEK 2
Submit your assignment to your demonstrator. Make sure you sign the submission form after submitting.

PROGRAMME OBJECTIVE (PO):
PO2: Use the available software package with appropriate computer components.

RUBRIC:

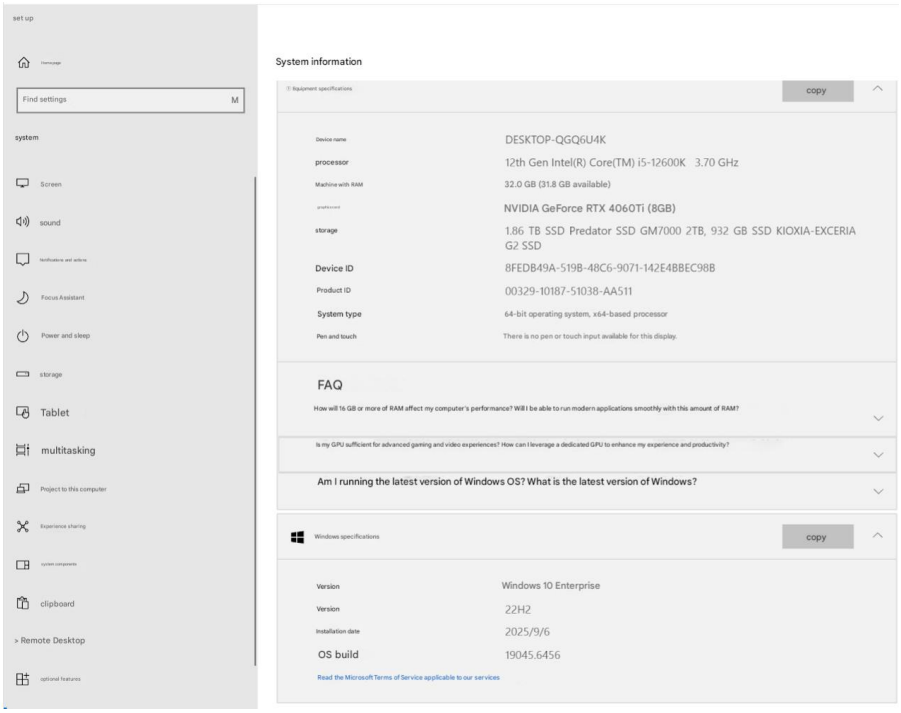
CRITERIA	LEVEL 1 Very Poor	LEVEL 2 Poor	LEVEL 3 Good	LEVEL 4 Very Good	LEVEL 5 Excellent
The ability to perform operating system (OS) tasks.	Unable to perform OS tasks or able to perform OS tasks with very limited success (< 40%).	Able to perform OS tasks with limited success (≥ 40%,< 60%).	Able to perform OS tasks with some success (≥ 60%, < 80%).	Able to perform OS tasks with considerable success (≥ 80%, < 100%).	Able to perform OS tasks with outstanding success (100%).

QUESTIONS:
Part A (Knowing about your computer)

1. Answer the following questions about the computer that you are using in this lab.

   a) What is the version of the Windows OS in use?

Windows 10 Enterprise 10.0.19045 22H2




```
PS C:\Windows\system32> (Get-ComputerInfo).WindowsProductName, (Get-ComputerInfo).OsVersion
>> (Get-ItemProperty "HKLM:\SOFTWARE\Microsoft\Windows NT\CurrentVersion").DisplayVersion
>>
Windows 10 Enterprise
10.0.19045
22H2
```

b) What company manufactured the computer?

Colorful Technology And Development Co.,LTD

```
PS C:\Windows\system32> Get-CimInstance Win32_ComputerSystem | Select-Object Manufacturer, Model
>> # 主板信息（可选）
>> Get-CimInstance Win32_BaseBoard | Select-Object Manufacturer, Product
>>

Manufacturer                              Model
------------                              -----
Colorful Technology And Development Co.,LTD CVN B760I FROZEN WIFI D5
Colorful Technology And Development Co.,LTD
```

c) What is the speed of the processor and how much RAM (physical memory) is in the computer?

12th Gen Intel(R) Core(TM) i5-12600K 3700Mhz

32G RAM 6400Mhz

```
PS C:\Windows\system32> Get-CimInstance Win32_Processor | Select-Object Name, MaxClockSpeed
>> # MaxClockSpeed 单位 MHz，3700 ≈ 3.7 GHz
>>
>> # 物理内存总量（GB）
>> "{0:N1} GB" -f ((Get-CimInstance Win32_PhysicalMemory | Measure-Object -Property Capacity -Sum).Sum / 1GB)
>> # 槽位统计（选做）
>> Get-CimInstance Win32_PhysicalMemory | Select-Object BankLabel, Manufacturer, Capacity

Name                                MaxClockSpeed
----                                -------------
12th Gen Intel(R) Core(TM) i5-12600K         3700
32.0 GB
```

d) How much data can you store on the C: drive and how much of the C: drive is

in use?

```
PS C:\Windows\system32> Get-CimInstance Win32_LogicalDisk -Filter "DeviceID='C:'" |
>>  Select-Object DeviceID, @{n='Size(GB)';e={[math]::Round($_.Size/1GB,2)}},
>>                           @{n='Free(GB)';e={[math]::Round($_.FreeSpace/1GB,2)}},
>>                           @{n='Used(GB)';e={[math]::Round(($_.Size-$_.FreeSpace)/1GB,2)}},
>>                           @{n='Used(%)';e={[math]::Round((($_.Size-$_.FreeSpace)/$_.Size)*100,1)}}
>>


DeviceID : C:
Size(GB) : 217.41
Free(GB) : 81.18
Used(GB) : 136.23
Used(%)  : 62.7
```

e) What is the name of the antivirus program used in the computer (if any)?

Windows Defender

```
PS C:\Windows\system32> Get-MpComputerStatus | Select-Object AMServiceEnabled, AntivirusEnabled, AntispywareEnabled, Rea
lTimeProtectionEnabled
>>

AMServiceEnabled AntivirusEnabled AntispywareEnabled RealTimeProtectionEnabled
---------------- ---------------- ------------------ --------------------------
            True             True               True                       True


PS C:\Windows\system32>
```

2. On the computer which you are working, perform and list down a hardware and software inventory of at least <u>three</u> hardware devices and <u>three</u> application programs on the computer. List the vendor and product.

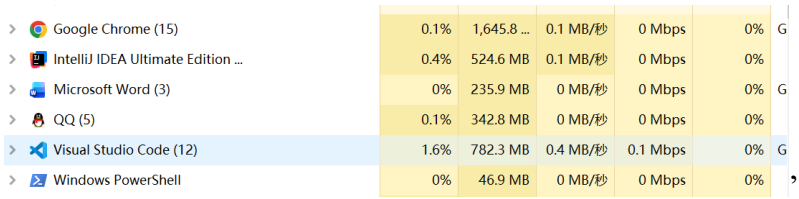
HARD DEVICES:

graphics card:	NVIDIA	Geforce RTX 4060ti
Solid-state drive:	KIOXIA	EXCERIA G2 SSD
Network Interface Card:	INTEL	AX211 WI-FI 6E

APPLICATION

GOOLE	chrome web browser
MICROSOFT	VS Code IDE, word
JETBRAINS	InteliJ IDE

```
PS C:\Windows\system32> Get-CimInstance Win32_VideoController | Select-Object Name, DriverVersion
>>

Name                     DriverVersion
----                     -------------
NVIDIA GeForce RTX 4060 Ti 32.0.15.8129


PS C:\Windows\system32> Get-CimInstance Win32_DiskDrive | Select-Object Model, InterfaceType, @{n='Size(GB)';e={[math]
Round($_.Size/1GB,0)}}
>>

Model                  InterfaceType Size(GB)
-----                  ------------- -------
KIOXIA-EXCERIA G2 SSD  SCSI              932
Predator SSD GM7000 2TB SCSI            1908


PS C:\Windows\system32> Get-CimInstance Win32_NetworkAdapter -Filter "PhysicalAdapter=True AND NetEnabled=True" |
>>  Select-Object Name, Speed
>>

Name                                Speed
----                                -----
Intel(R) Wi-Fi 6E AX211 160MHz 535500000


PS C:\Windows\system32>
```



Part B (The Command Prompt)

Objectives:

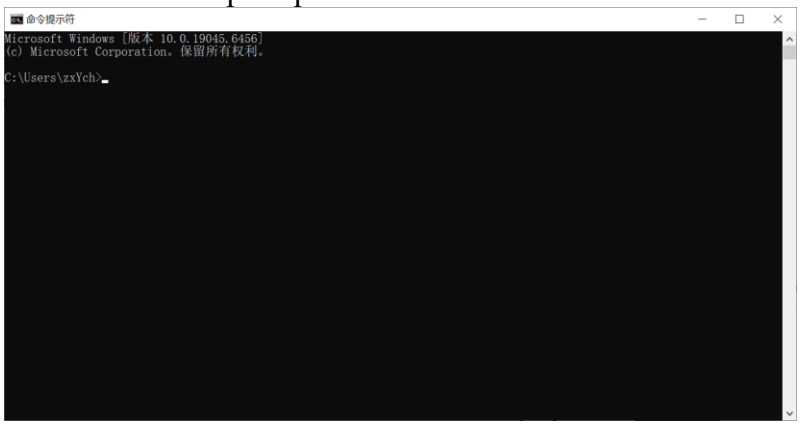
- use DOS commands to view, navigate, create and delete directories
- use DOS commands to copy, rename, and delete files

Microsoft's Disk Operating System (DOS), also called MS-DOS, is a collection of programs and commands used to control the overall computer operations system. All modern Windows versions support DOS commands from the command line.

1. Open a command line from Windows:

- Click the Start/Run button and type: ***cmd*** or ***command***

1. What directory are you in? C:\Users\zxYch>
2. What does the prompt look like? C:\Users\zxYch>



2. Displaying Directory Contents: Dir

DIR command will list directories and various files. Directories are specified with the<DIR> notation that precedes the file/directory. The DIR command also displays the volume name, free space, and total files and directories present.

Show a list of the directories located on this drive.

- type***: cd*** change to the root directory
- type: ***cd windows*** change to the windows directory
- *type* ***dir***

```
C:\Users\zxYch>cd\

C:\>cd windows

C:\Windows>dir
 驱动器 C 中的卷是 系统
 卷的序列号是 2E6C-0699

 C:\Windows 的目录

2025/11/02  13:57    <DIR>          .
2025/11/02  13:57    <DIR>          ..
2019/12/07  22:45    <DIR>          addins
2025/09/23  00:36    <DIR>          appcompat
2025/10/24  00:38    <DIR>          apppatch
2025/11/06  19:20    <DIR>          AppReadiness
2025/10/23  20:10    <DIR>          assembly
2025/10/24  00:38    <DIR>          bcastdvr
2025/08/09  06:30            93,696 bfsvc.exe
2025/08/09  06:35    <DIR>          Boot
2019/12/07  17:14    <DIR>          Branding
2025/10/23  14:58    <DIR>          CbsTemp
2019/12/07  23:07    <DIR>          Containers
2025/09/06  21:24    <DIR>          CSC
2019/12/07  17:14    <DIR>          Cursors
2025/09/06  21:31    <DIR>          debug
2019/12/07  17:31    <DIR>          diagnostics
2025/08/09  06:35    <DIR>          DiagTrack
2019/12/07  22:44    <DIR>          DigitalLocker
2025/10/30  19:47            11,822 DirectX.log
2025/09/06  21:19             2,271 DtcInstall.log
2025/09/12  01:59    <DIR>          en-US
2025/10/23  14:57         6,089,584 explorer.exe
2019/12/07  17:14    <DIR>          GameBarPresenceWriter
2019/12/07  17:31    <DIR>          Globalization
2019/12/07  22:44    <DIR>          Help
2025/08/09  06:32         1,065,984 HelpPane.exe
2019/12/07  17:09            18,432 hh.exe
2019/12/07  17:31    <DIR>          IdentityCRL
2025/09/24  21:24    <DIR>          IME
2025/10/24  00:38    <DIR>          ImmersiveControlPanel
2025/08/09  06:35    <DIR>          InboxApps
2025/11/05  02:07    <DIR>          INF
2019/12/07  17:14    <DIR>          InputMethod
2019/12/07  17:14    <DIR>          L2Schemas
2025/09/28  20:45    <DIR>          LiveKernelReports
2025/10/30  19:47    <DIR>          Logs
2025/09/06  21:18             1,378 lsasetup.log
2019/12/07  17:08            43,131 mib.bin
2025/11/05  21:52    <DIR>          Microsoft.NET
2019/12/07  17:14    <DIR>          Migration
2025/09/08  20:52    <DIR>          Minidump
2019/12/07  17:14    <DIR>          ModemLogs
2025/08/09  06:32           200,704 notepad.exe
2025/08/24  13:45             1,951 NvContainerRecovery.bat
2025/09/24  17:34    <DIR>          OCR
2019/12/07  17:14    <DIR>          Offline Web Pages
2025/09/08  22:30    <DIR>          Panther
2019/12/07  17:14    <DIR>          Performance
```

What happened? _____

The screen lists the contents of the C:\Windows directory: including several <DIR> (subdirectories) and files, and at the bottom it shows the number of files and directories, volume label, available space, etc.

- type: ***dir /p*** *Press enter to continue the list*

```
C:\Windows>dir /p
 驱动器 C 中的卷是 系统
 卷的序列号是 2E6C-0699

 C:\Windows 的目录

2025/11/02  13:57    <DIR>          .
2025/11/02  13:57    <DIR>          ..
2019/12/07  22:45    <DIR>          addins
2025/09/23  00:36    <DIR>          appcompat
2025/10/24  00:38    <DIR>          apppatch
2025/11/06  19:20    <DIR>          AppReadiness
2025/10/23  20:10    <DIR>          assembly
2025/10/24  00:38    <DIR>          bcastdvr
2025/08/09  06:30            93,696 bfsvc.exe
2025/08/09  06:35    <DIR>          Boot
2019/12/07  17:14    <DIR>          Branding
2025/10/23  14:58    <DIR>          CbsTemp
2019/12/07  23:07    <DIR>          Containers
2025/09/06  21:24    <DIR>          CSC
2019/12/07  17:14    <DIR>          Cursors
2025/09/06  21:31    <DIR>          debug
2019/12/07  17:31    <DIR>          diagnostics
2025/08/09  06:35    <DIR>          DiagTrack
2019/12/07  22:44    <DIR>          DigitalLocker
2025/10/30  19:47            11,822 DirectX.log
2025/09/06  21:19             2,271 DtcInstall.log
2025/09/12  01:59    <DIR>          en-US
2025/10/23  14:57         6,089,584 explorer.exe
2019/12/07  17:14    <DIR>          GameBarPresenceWriter
2019/12/07  17:31    <DIR>          Globalization
2019/12/07  22:44    <DIR>          Help
2025/08/09  06:32         1,065,984 HelpPane.exe
2019/12/07  17:09            18,432 hh.exe
2019/12/07  17:31    <DIR>          IdentityCRL
2025/09/24  21:24    <DIR>          IME
2025/10/24  00:38    <DIR>          ImmersiveControlPanel
2025/08/09  06:35    <DIR>          InboxApps
2025/11/05  02:07    <DIR>          INF
2019/12/07  17:14    <DIR>          InputMethod
2019/12/07  17:14    <DIR>          L2Schemas
2025/09/28  20:45    <DIR>          LiveKernelReports
2025/10/30  19:47    <DIR>          Logs
2025/09/06  21:18             1,378 lsasetup.log
2019/12/07  17:08            43,131 mib.bin
2025/11/05  21:52    <DIR>          Microsoft.NET
2019/12/07  17:14    <DIR>          Migration
2025/09/08  20:52    <DIR>          Minidump
2019/12/07  17:14    <DIR>          ModemLogs
2025/08/09  06:32           200,704 notepad.exe
2025/08/24  13:45             1,951 NvContainerRecovery.bat
2025/09/24  17:34    <DIR>          OCR
2019/12/07  17:14    <DIR>          Offline Web Pages
2025/09/08  22:30    <DIR>          Panther
```

How many directories do you have in the windows folder?

77_____

What does the /p switch do? _____

The "/p" indicates pagination display (pausing at each screen, press any key to continue), to prevent long lists from flashing by in a flash.

3. The absolute path and relative path

The commands related with file and directory allows **two ways in specifying location** (for source or target), which are called the ***relative path*** and ***absolute path***. A path is the direction from the current directory or other specific location to the intended file or directory (e.g. *c:mydir\mysubdir\file.txt*).

When you only specify a source or target without the parent directory name (e.g. *file.txt*), the command will search the source/target in current directory. This is known as relative path. But you may specify source/target located outside the current directory by providing the absolute path (e.g. *c:mydir\mysubdir\file.txt*).

Absolute path will allow you to specify to any source/target when you run a command from any location in the system/directory structure. There are also special sub directories named '.' and '..' provided in all directories.

- Find out the content of your current directory (use **DIR** command)
  Find out the content of the root/base directory e.g. c:\ (use **DIR** command)

- Type the following command -> **dir .** ☜ **don't ignore the dot !**
  What is displayed on the screen? So what is the purpose of the dot ('.')?

  What is displayed? : Same as dir (the current directory listing)
  Purpose of '. ' : Represents the **current directory** in a path.

- Type the following command -> **dir ..** ☜ **don't ignore the dots !**
  What is displayed on the screen? So what is the purpose of the dots ('..')?

  What is displayed? : The contents of the parent (upper-level) directory.
  Purpose of ".. " : Refers to the **parent directory** (one level above the current).

- What is the command to determine the existence of a file named 'file1.txt' in the current directory?

```
C:\Windows>if exist file1.txt (echo exists) else (echo does not exist)
does not exist
```

if exist file1.txt (echo exists) else (echo does not exist) in CMD

- What is the command to determine the existence of a file named 'file1.txt' in a directory named 'mydir' in the upper level (1 level) above of the current directory?

```
C:\Windows>if exist ..\mydir\file1.txt echo Found
```

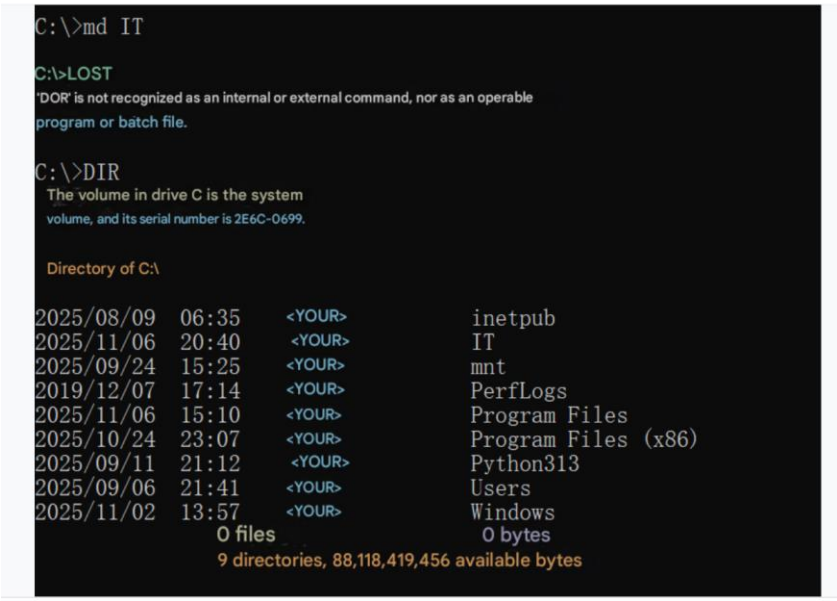
if exist ..\mydir\file1.txt echo Found

4. **Create and change a directory**
   To create directories in DOS, use the **md directory_name** or **mkdir directory_name** command.
   To change directories use the **cd directory_name** command. To move up one level in the directory structure, use the command *cd...*

   Create an **IT** directory in the C drive
   - type***: cd*** change to the root directory
   - type: ***md IT***

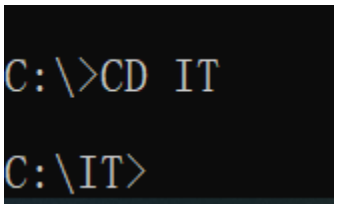
   Verify the creation of the directory
   - type: ***dir***

   Is the **IT** directory in the list? yeS



   How to change to the **IT** directory?

   CD IT

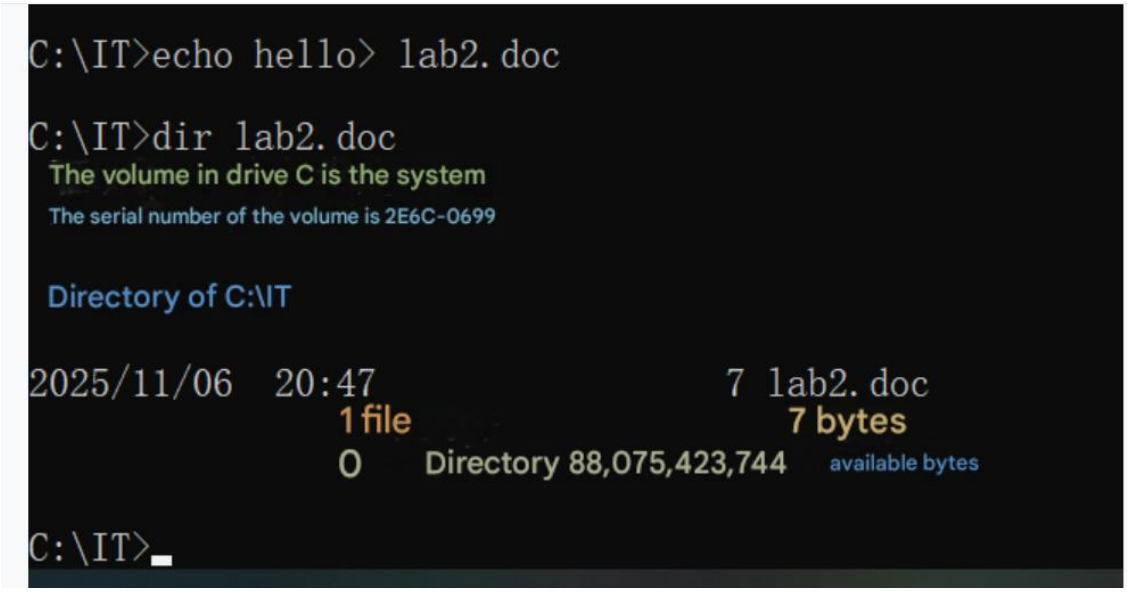


5. **Managing Files: copy, ren, del**

You can use the **copy** command to make a 2nd copy of a file, with a new name.

Save a file to IT directory (file name ***lab2.doc***)
How to verify whether ***lab2.doc*** file is in the **IT** directory?

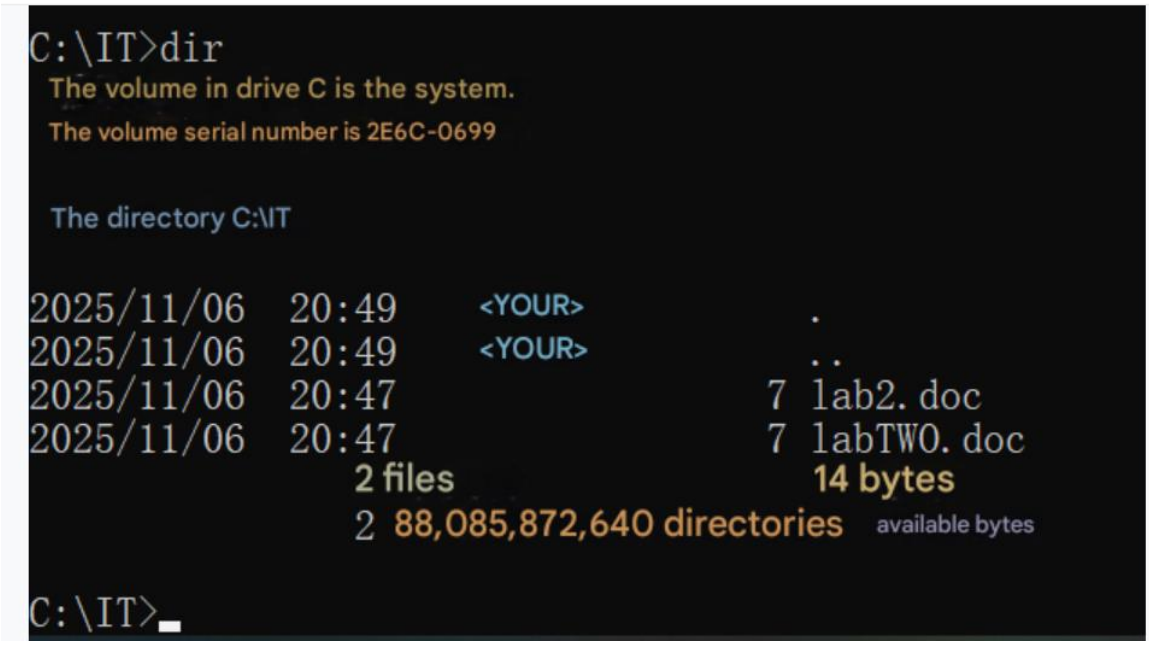
dir lab2.doc



Make a backup of the ***lab2.doc*** file with other name ***labTWO.doc***

- type: ***copy lab2.doc labTWO.doc***
- type: ***dir***

Are the new backup file and the original there? YES

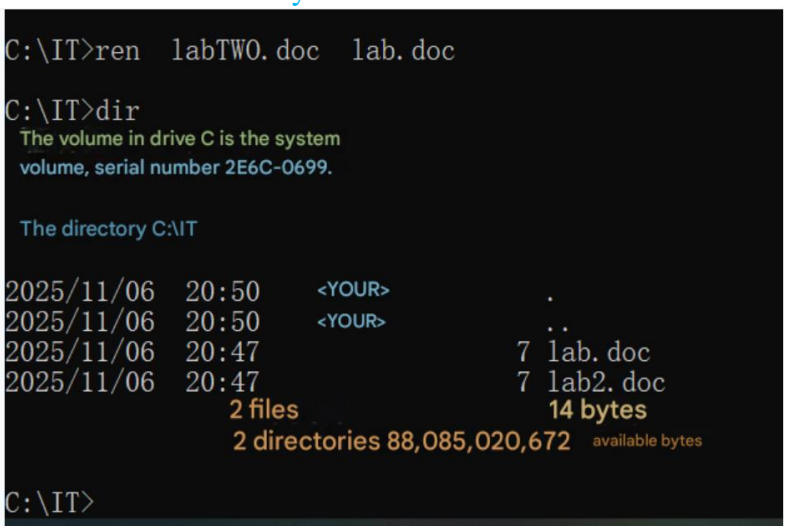


To rename a file, you can use the **ren** command.

Rename ***lab2.doc*** to ***lab.doc***

- type: ***ren labTWO.doc lab.doc***
- type: ***dir***

Did the file renamed? yes



Delete files in DOS by using the **del** command.

Delete ***lab.doc*** file

- type: ***del labTWO.doc***

Is the file has been deleted? NO

Why? There isn't a file named labTWO, We have changed it into lab2

6. Delete a directory

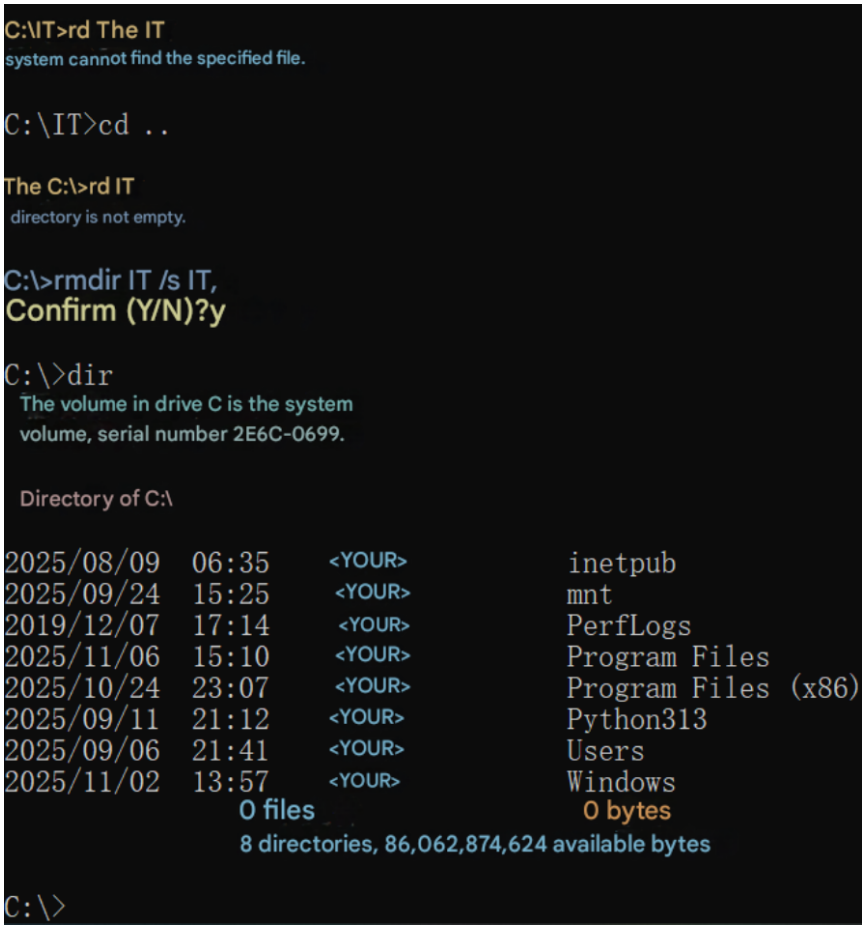
To delete a directory in DOS, use the **rd directory_name** or **rmdir directory_name** command.

Delete the IT directory

- type: ***rd it***

Is the folder deleted? NO

Why? The folder IT is not empty/ or we are now still in the path of IT



If your directories can't be deleted, try this command:

- type cd\ to change to the c:\ drive
- type: ***rmdir IT /s***
- type Y to confirm the removal of the it directory and all its subdirectories

Verify directory removal

- type: ***dir***

Is the directory still exists? NO

Questions end. However students are encouraged to search and practice other commands that are provided by the command prompt shell to have more exposure to the shell.