Infomation Technology Essentials

COMP106

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Chapter 9
Maintaining and Troubleshooting Microsoft Windows

Objectives

◆ In this session, you will learn to:

- ◆ Identify Windows operating system utilities to use in maintenance and troubleshooting.

- ◆ Perform backups.

- ◆ Troubleshoot Windows.

- ◆ Recover a damaged installation of Windows.

Operating System Utilities

◆ For learning operating system utilities, you need to understand the following:

- ◆ File management tools
- ◆ Disk management tools

File Management Tools

◆ File management tools are:

- Windows Explorer
- Command-line tools

Disk Management Tools

- ◆ Disk management tools are:
  - ◆ Disk management
  - ◆ Chkdsk
  - ◆ Format
 - ◆ Diskpart
  - ◆ Defrag

System Management Tools

◆ System management tools are:

- ◆ Device Manager
- ◆ Task Manager
- ◆ System Configuration Utility
- ◆ System Information Utility
- ◆ Event Viewer
- ◆ Registry Editor
- ◆ Computer Management

Maintain Microsoft Windows

◆ For maintaining Microsoft Windows, you need to understand the following:

- Backup and restore
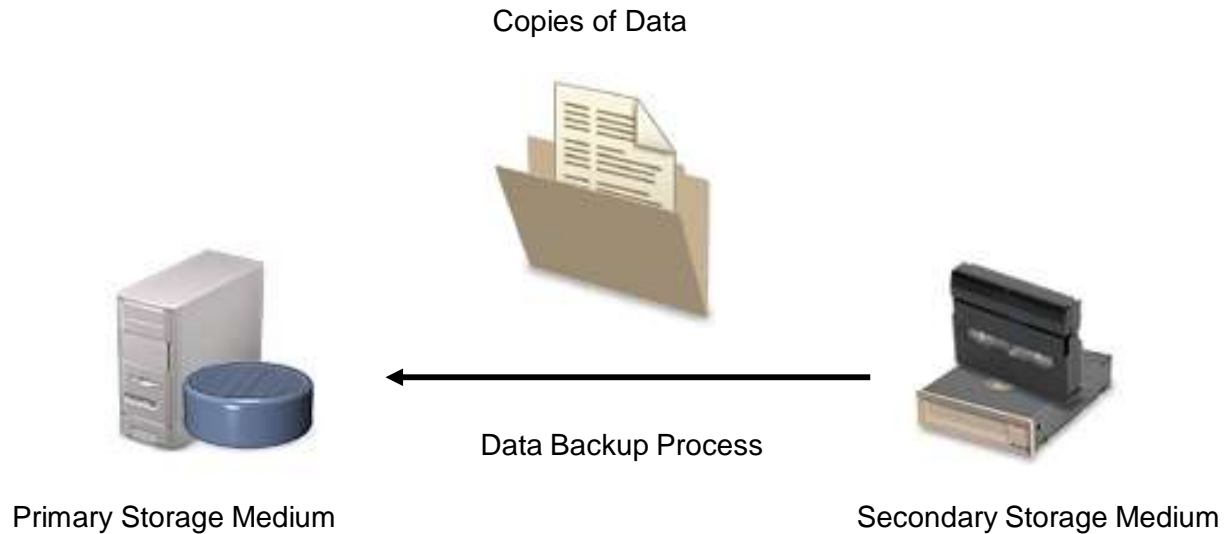- The Windows backup utility
- System state data

Backup and Restore

◆ The **backup** is a system maintenance task that helps store copies of data on another data storage medium.

Copies of Data

Data Backup Process

Primary Storage Medium   Secondary Storage Medium
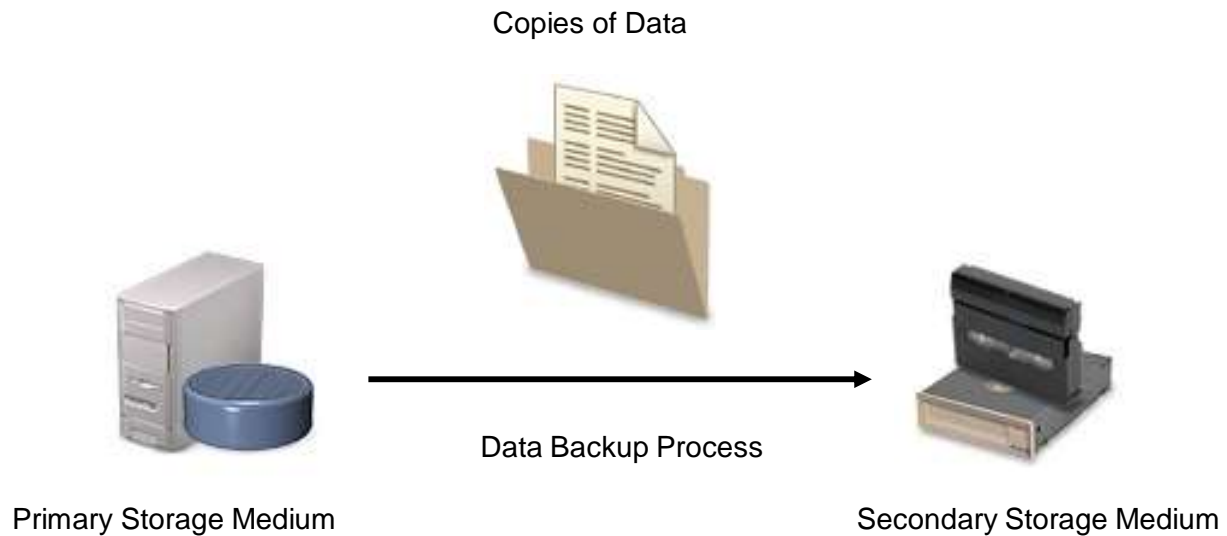
Backup and Restore (Contd..)

◆ The **restore** is a system recovery task that helps access the backed-up data.

Copies of Data

Data Backup Process

Primary Storage Medium

Secondary Storage Medium

The Windows Backup Utility

- The **backup utility** helps back up and restore files on local and remote Windows systems.

- The Backup types are:
  - Copy
  - Daily
  - Differential
  - Incremental
  - Normal
  - The built-in Windows

- The **built-in** Windows Backup utilities are:
  - Windows File Protection (WFP)
  - System File Checker

The Windows Backup Utility (Contd..)

Back up or restore

Backup Utility - [Untitled]

Job   Edit   View   Tools   Help

Welcome | Backup | Restore and Manage Media | Schedule Jobs

Click to select the check box for any drive, folder or file that you want to back up.

- Desktop
  - My Computer
    - 3½ Floppy (A:)
    - LEXAR MEDIA (F
    - Local Disk (C:)
    - ☑ Data (E:)
    - DVD Drive (D:)
    - System State
  - My Documents
  - My Network Places

Name	Comment
My Computer	
My Documents	
My Network Places	

Local or remote backups

Backup destination:
File

Backup options:
Normal backup. Summary log.
Some file types excluded.

Start Backup

Backup media or file name:
F:\DataBackup.bkf   Browse...

Backup set

Select backup media

System State Data

- The system state is a subset of system components.
- The *system state data* is:
  - Backed up as a unit
- The *system state data* consists of:
  - Boot files
  - System files protected by WFP
  - The Registry
  - COM+ object registrations

Activity 9-3

Activity on Backing Up System State Data

Troubleshoot Microsoft Windows

◆ Before troubleshooting Microsoft Windows, you need to understand the following:

- ◆ System stop errors
- ◆ System lockup errors
- ◆ Input/Output device issues
- ◆ Application errors
- ◆ Boot errors
- ◆ Error and warning messages in Event Viewer
- ◆ Registry error messages
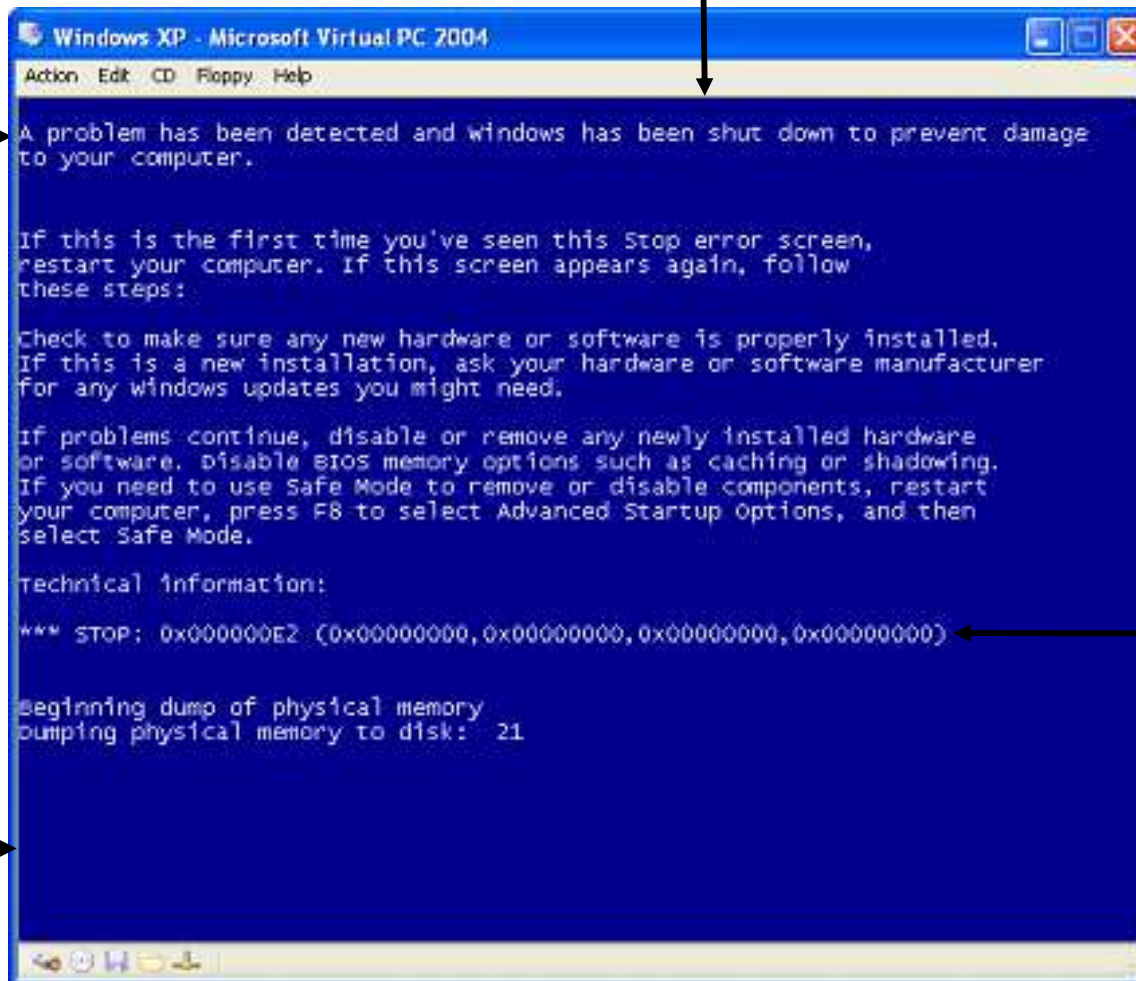- ◆ Remote diagnostic and troubleshooting tools

System Stop Errors

◆ The *system stop errors* are errors:

  ◆ Severe enough to stop all processes

  ◆ Shut the system down without warning

System Stop Errors (Contd..)

System shut down

Windows XP - Microsoft Virtual PC 2004

Action   Edit   CD   Floppy   Help

Summary statement

A problem has been detected and Windows has been shut down to prevent damage to your computer.

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

Technical information:

*** STOP: 0x000000E2 (0x00000000,0x00000000,0x00000000,0x00000000)

Memory data

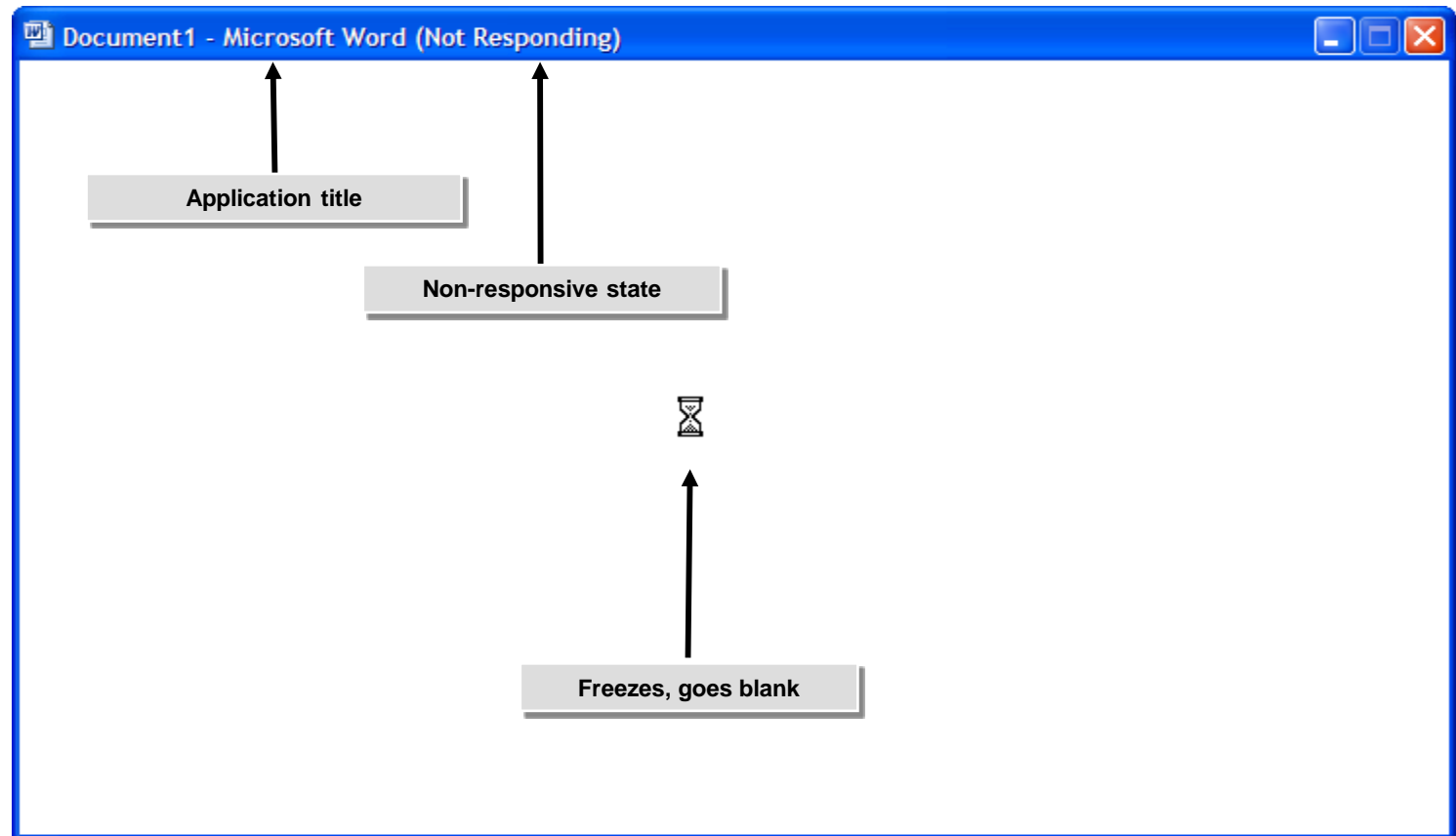Beginning dump of physical memory
Dumping physical memory to disk: 21

Blue background

System Lockup Errors

◆ A *lockup error* is an error condition in which:.

◆ The system or an application stops responding user input.

Document1 - Microsoft Word (Not Responding)

Application title

Non-responsive state

Freezes, goes blank

Input/Output Device Issues

◆ The input/output devices issues are:

- Missing or loose connections
- Blocked wireless signals
- Missing or incorrect driver
- Misconfigured display settings

Application Errors

- Common application errors are:
  - Application won't install
  - Application won't start or load
  - Application not found
  - General Protection Fault
  - Illegal operation
  - Invalid working directory

Boot Errors

- Common boot errors are:
  - POST errors
  - Invalid boot disk
  - Inaccessible boot device
  - Missing NTLDR
  - Other missing startup files
  - Device or service failed during startup
  - Device or program in registry not found

Error and Warning Messages in Event Viewer

- In Event Viewer, the structure of event log entries are:
  - Type
 - Source
  - Category
  - Event
  - User
  - Computer

Error and Warning Messages in Event Viewer (Contd..)

Sources of messages

Event Viewer

File   Action   View   Help

Event Viewer (Local)   System   403 event(s)
    Application
    Security   System log
    System   Warning

Type	Date	Time	Source	Category	Event	User
❌ Error	9/23/2006	3:16:06 AM	W32Time	None	29	N/A
❌ Error	9/23/2006	3:16:06 AM	W32Time	None	17	N/A
⚠️ Warning	9/23/2006	1:10:16 AM	W32Time	None	36	N/A
❌ Error	9/22/2006	7:16:05 PM	W32Time	None	29	N/A
❌ Error	9/22/2006	7:16:05 PM	W32Time	None	17	N/A
ℹ️ Information	9/22/2006	4:18:22 PM	Service Control Manager	None	7036	N/A
ℹ️ Information	9/22/2006	4:18:21 PM	Service Control Manager	None	7035	Admin01
ℹ️ Information	9/22/2006	4:18:19 PM	Service Control Manager	None	7036	N/A
ℹ️ Information	9/22/2006	4:18:19 PM	Service Control Manager	None	7035	Admin01
❌ Error	9/22/2006	3:16:04 PM	W32Time	None	29	N/A
❌ Error	9/22/2006	3:16:04 PM	W32Time	None	17	N/A
❌ Error	9/22/2006	1:16:04 PM	W32Time	None	29	N/A
❌ Error	9/22/2006	1:16:04 PM	W32Time	None	17	N/A
❌ Error	9/22/2006	12:16:04 PM	W32Time	None	29	N/A
❌ Error	9/22/2006	12:16:04 PM	W32Time	None	17	N/A
⚠️ Warning	9/22/2006	12:03:11 PM	Print	None	20	SYSTEM
❌ Error	9/22/2006	11:46:04 ...	W32Time	None	29	N/A

Error

Registry Error Messages

◆ Common registry error messages are:

- ◆ Stop errors or other errors
- ◆ Registry access, value entries, or files
- ◆ Maintain registry backups
- ◆ Find errors in KnowledgeBase
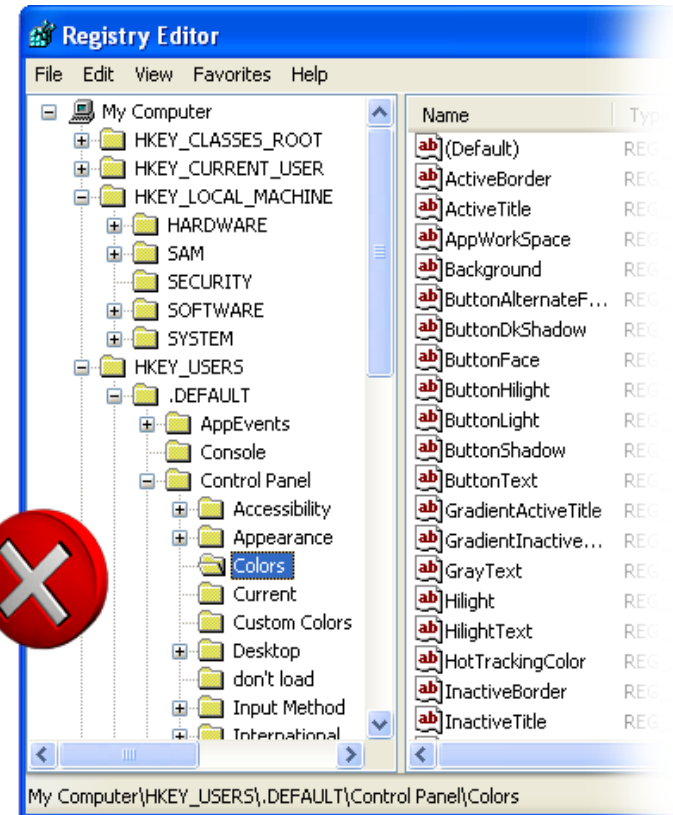
Remote Diagnostic and Troubleshooting Tools

◆ Tools for remote diagnostic and troubleshooting are:

- Remote Desktop
- Remote Assistance

Recover Microsoft Windows

◆ For recovering Microsoft Windows, you need to understand following:

  - ◆ System restore
  - ◆ Safe mode
  - ◆ Last Known good
  - ◆ Recovery console
  - ◆ Windows boot disk
  - ◆ Automated System Recovery (ASR)
  - ◆ Repair installations
  - ◆ Windows system issues

System Restore

◆ The *system restore* utility monitors the system to make changes into:

- ◆ Core system files
- ◆ Drivers
- ◆ Registries

◆ Type of restore points are:

- ◆ Initial system checkpoints
- ◆ System checkpoints
- ◆ Program name installation
- ◆ Auto update
- ◆ Manually created
- ◆ Restore operation
- ◆ Unsigned device driver
- ◆ Backup utility recovery

System Restore (Contd..)

System Restore

Welcome to System Restore

? Help

You can use System Restore to undo harmful changes to your computer and restore its settings and performance. System Restore returns your computer to an earlier time (called a restore point) without causing you to lose recent work, such as saved documents, e-mail, or history and favorites lists.

Any changes that System Restore makes to your computer are completely reversible.

Your computer automatically creates restore points (called system checkpoints), but you can also use System Restore to create your own restore points. This is useful if you are about to make a major change to your system, such as installing a new program or changing your registry.

System Restore Settings

To continue, select an option, and then click Next.

To begin, select the task that you want to perform:

⦿ Restore my computer to an earlier time

◯ Create a restore point

Next >   Cancel

Restore system to earlier state

Manual restore points

Automatic restore points

Safe Mode

- The safe mode:
  - Is a Windows system startup method
  - loads only a minimal set of drivers and services
  - Omits non-critical items from boot sequence
- The safe mode boot options are:
  - Safe mode
  - Safe mode with networking
  - Safe mode with command prompt

Last Known Good

◆ Last Known Good is an advanced boot option.

Last Known Good
Control Set

Last Known Good
Control Set

| 1 | Successful logon | 2 | System fails | 3 | Reboot to Last Known Good |

Recovery Console

◆ The recovery console:

- ◆ Is a minimal, administrative version of Windows
- ◆ Helps manage files and disks
- ◆ Helps correct boot problems
- ◆ Helps enable and disable services

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Microsoft Windows XP(TM) Recovery Console.

The Recovery Console provides system repair and recovery functionality.

Type EXIT to quit the Recovery Console and restart the computer.


1: C:\WINDOWS

Which Windows installation would you like to log onto
<To cancel, press ENTER>? 1
Type the Administrator password:
C:\WINDOWS>_
```

Windows Boot Disk

- A windows boot disk:
    - Starts system if key files are missing or damaged
    - Not a complete OS
- The Windows boot disk includes:
    - Boot.ini
    - Ntldr
    - Ntdetect.com
    - Bootsect.dos (if present)
    - Ntbootdd.sys, (if present)

Automated System Recovery (ASR)

◆ ASR helps rebuild a failed computer system.

◆ To perform ASR, you need:

- ◆ Windows installation CD-ROM
- ◆ ASR floppy disk,
- ◆ ASR backup set

Automated System Recovery (ASR) (Contd..)

Prepare for ASR

System fails

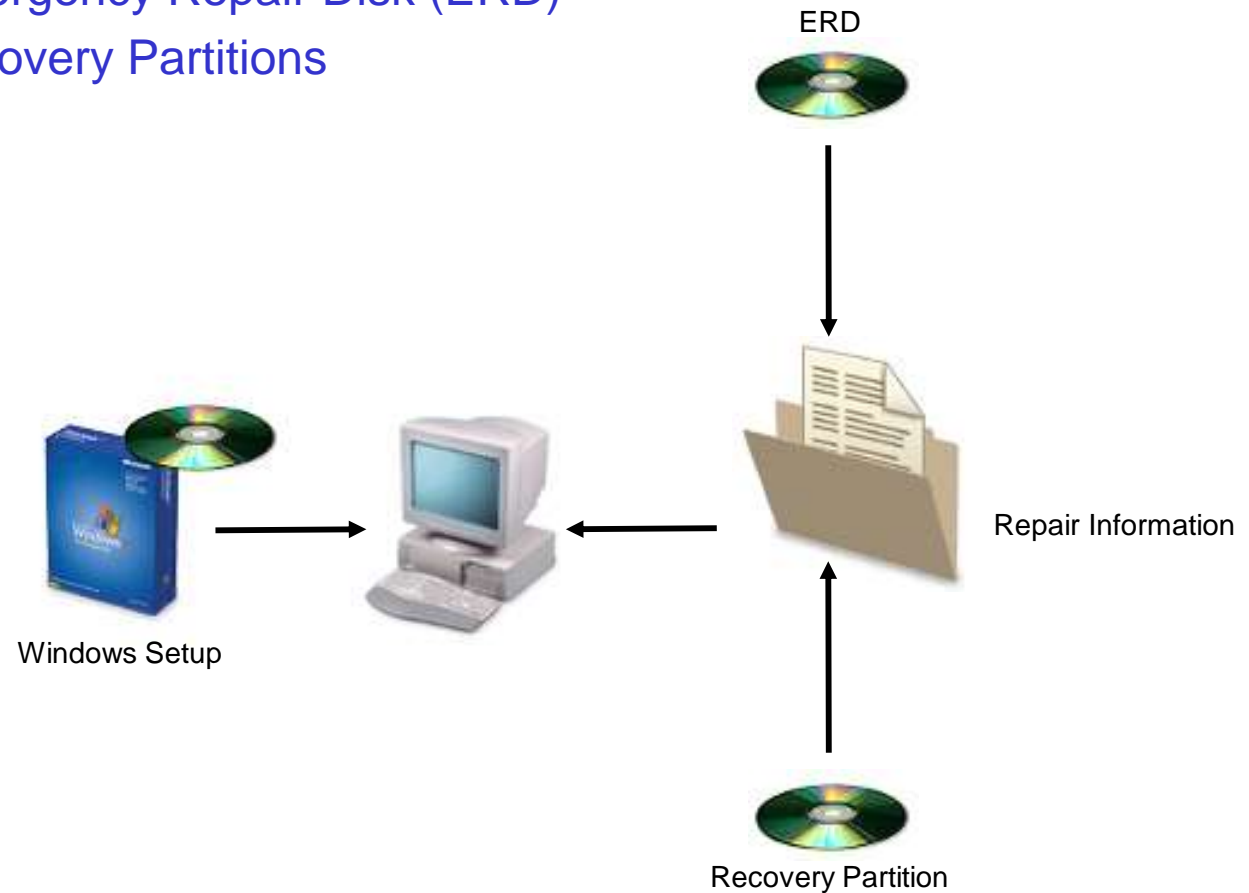| 1 | Use Setup to launch ASR | 2 | ASR floppy disk provides Setup Information | 3 | Setup installs OS | 4 | ASR backup set restores system configuration |

Repair Installations

- For repair installation, you can use:
    - Emergency Repair Disk (ERD)
    - Recovery Partitions

ERD

Repair Information

Windows Setup

Recovery Partition

Windows System Issues

◆ Windows system issues are:

- ◆ General issues
- ◆ Memory issues
- ◆ Disk issues
- ◆ CPU issues

Summary

◆ In this session, you learned that:

- Operating system provides utilities for file, disk and system management.

- For maintaining Microsoft Windows, you may use Windows backup utilities.

- There are various types of errors, such as system stop errors and application errors.

- For recovery Microsoft Windows, you may use system restore utilities.