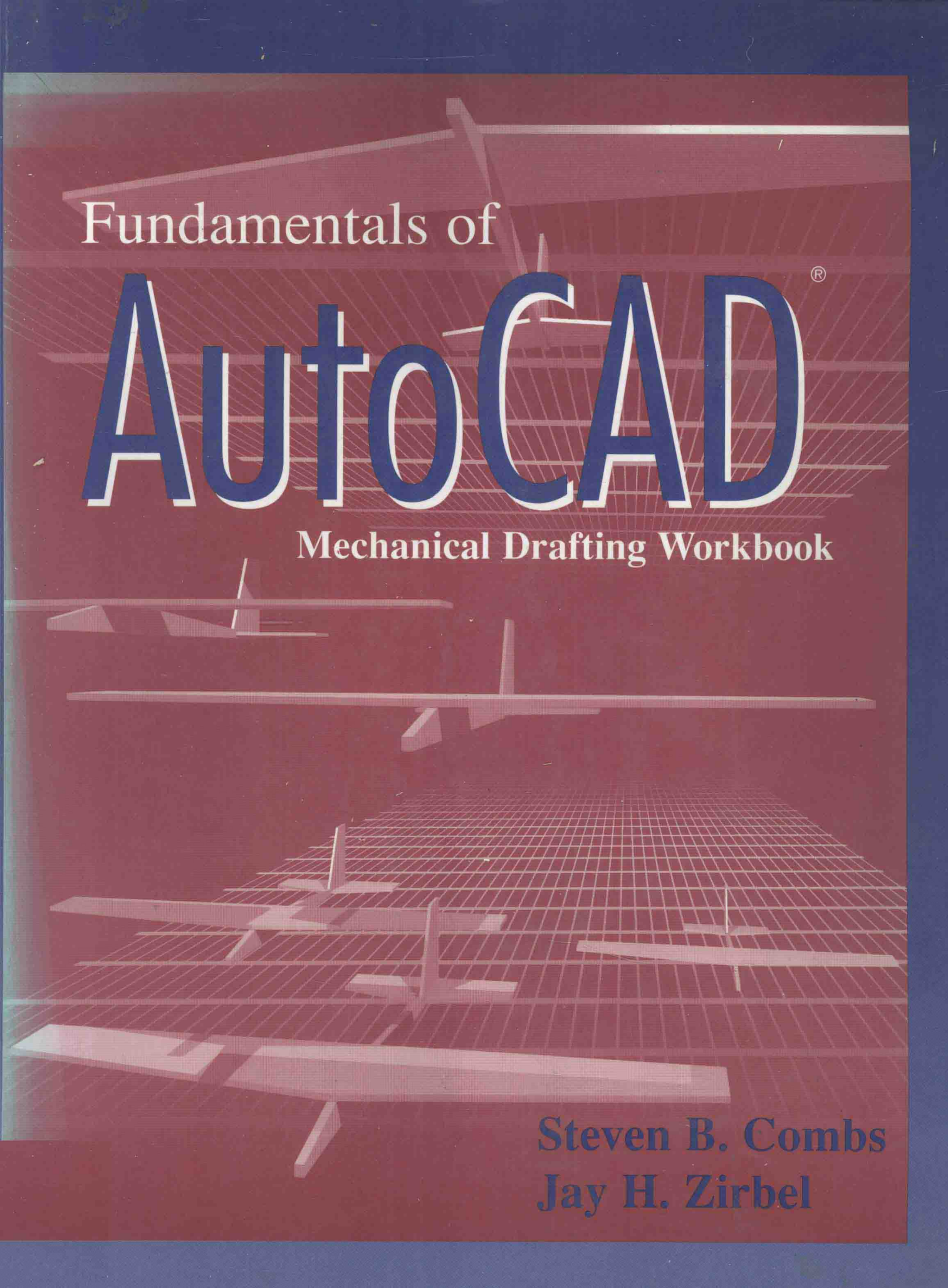


The background of the cover is a deep red color. It features a perspective grid that recedes into the distance. Overlaid on this grid are several three-dimensional, light-colored geometric shapes, including rectangular prisms and triangular prisms, some of which are tilted or stacked. The overall aesthetic is technical and architectural.

Fundamentals of

AutoCAD[®]

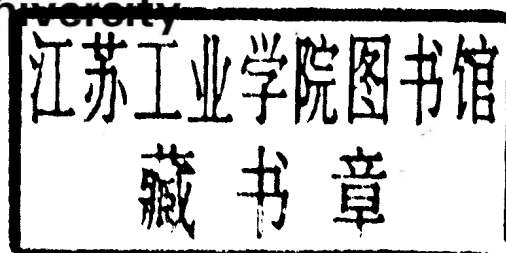
Mechanical Drafting Workbook

Steven B. Combs
Jay H. Zirbel

Fundamentals of AutoCAD® Mechanical Drafting Workbook

**Steven B. Combs
Ivy Tech State College**

**Jay H. Zirbel
Murray State University**



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Editor: Stephen Helba
Production Editor: Patricia S. Kelly
Design Coordinator: Karrie M. Converse
Cover Designer: Proof Positive/Farrowlyne Assoc., Inc.
Production Manager: Deidra M. Schwartz
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Table of Contents

UNIT: 1 INTRODUCTION TO AUTOCAD AND WORKING WITH THE WINDOWS ENVIRONMENT	1
OVERVIEW	1
OBJECTIVES	1
INTRODUCTION	1
SECTION 1: THE BASICS OF WINDOWS FOR MECHANICAL USERS	1
CREATING PROJECT FOLDERS	2
SECTION 2: WORKING WITH FOLDERS	4
<i>Creating Mechanical Specific Folder and File Names</i>	5
<i>Adding Files to Project Folders</i>	5
<i>Using Find to Locate Lost Files</i>	6
SECTION 2: SAVING A DRAWING	7
<i>Using Sequential File Saves</i>	7
<i>File Archives and Compression</i>	7
UNIT 1 REVIEW	9
UNIT 1 ASSIGNMENT	11
UNIT: 2 CREATING YOUR FIRST DRAWING	12
OVERVIEW	12
OBJECTIVES	12
INTRODUCTION	12
SECTION 1: SETTING UP A DRAWING	12
<i>Mechanical Units</i>	12
<i>Setting the Limits for Mechanical Paper Sizes</i>	13
SECTION 2: USING AUTOCAD DRAFTING TOOLS	13
<i>Adjusting the Grid and Snap for Mechanical Drawings</i>	13
SECTION 3: DRAWING LINES	14
<i>Line Widths in Mechanical Drawings</i>	14
UNIT 2 REVIEW	17
UNIT 2 ASSIGNMENT #1	19
UNIT 2 ASSIGNMENT #2	22
UNIT: 3 VIEWING AND PLOTTING A DRAWING	25
OVERVIEW	25
OBJECTIVES	25
INTRODUCTION	25
SECTION 1: USING ZOOM AND PAN TO CONTROL THE DISPLAY	25
<i>Using RTPAN</i>	26
<i>Using RTZOOM</i>	26
SECTION 2: CREATING VIEWS	27
<i>Advantages of Using DDVIEW When Creating Mechanical Drawings</i>	27
<i>Creating Multiple Views of Mechanical Drawings</i>	32
SECTION 3: INTRODUCTION TO PLOTTING	34

<i>Plotting Drawings with Correct Line Widths</i>	34
UNIT 3 REVIEW	37
UNIT 3 ASSIGNMENT #1	39
UNIT 3 ASSIGNMENT #2	40
UNIT: 4 BASIC CAD DRAWING TECHNIQUES	43
OVERVIEW	43
OBJECTIVES	43
INTRODUCTION	43
SECTION 1: SETTING DISPLAY FORMAT AND PRECISION (UNITS AND DDUNITS)	43
ANGULAR MEASUREMENT	44
TUTORIAL 4.1: SETTING UNITS AND ANGULAR MEASUREMENT	44
SECTION 2: WORKING WITH PROTOTYPE DRAWINGS	44
TUTORIAL 4.2: CREATING A METRIC PROTOTYPE DRAWING	44
SECTION 3: COORDINATE SYSTEM BASICS	45
UNIT 4 REVIEW	47
UNIT 4 ASSIGNMENT #1	49
UNIT: 5 UNDERSTANDING LAYERS AND LINETYPES	53
OVERVIEW	53
OBJECTIVES	53
INTRODUCTION	53
SECTION 1: WORKING WITH LAYERS	53
<i>Principles of the ISO Layer Naming Format</i>	54
<i>Agent Responsible</i>	54
<i>Element</i>	54
<i>Presentation</i>	54
TUTORIAL 5.1: CREATING A PROTOTYPE WITH ISO LAYERS	56
TUTORIAL 5.2: CHANGING LAYER COLOR	58
<i>Using Filters to Limit the Display of Layer Names</i>	58
TUTORIAL 5.3: FILTERING LAYER NAMES	59
SECTION 2: UNDERSTANDING LINETYPES	60
<i>What Are Linetypes?</i>	60
<i>Creating a Linetype</i>	60
TUTORIAL 5.4: CREATING ANSI LINETYPES	61
LOADING AND SETTING THE LINETYPE	62
TUTORIAL 5.5: LOADING AND SETTING ANSI LINETYPES	62
UNDERSTANDING LINETYPE SCALE (LTSCALE)	63
REVIEW	64
UNIT 5 REVIEW	65
UNIT 5 ASSIGNMENT #1	67
UNIT: 6 CREATING BASIC GEOMETRY	69
OVERVIEW	69
OBJECTIVES	69
INTRODUCTION	69
SECTION 1: DRAWING CIRCLES (CIRCLE)	70
TUTORIAL 6.1: BEGINNING THE SQUARE HEAD BOLT	70
SECTION 2: DRAWING ARCS (ARC)	71
TUTORIAL 6.2: CREATING ARCS WITH 3 POINT AND START, END, RADIUS	71
SECTION 3: DRAWING POLYGONS (POLYGON)	72
TUTORIAL 6.3: SPECIFYING A POLYGON BY EDGE	72
UNIT REVIEW	73
UNIT 6 REVIEW	75
UNIT 6 ASSIGNMENT #1	77

UNIT 6 ASSIGNMENT #2	79
UNIT: 7 ANNOTATING A DRAWING WITH TEXT AND HATCHING	81
OVERVIEW	81
OBJECTIVES	81
INTRODUCTION	81
SECTION 1: ADDING TEXT TO A DRAWING	81
<i>Selecting the Correct Font</i>	82
<i>Defining a Text Style for Mechanical Drawings (DDSTYLE)</i>	82
<i>Entering Text and Changing the Style</i>	84
SECTION 2: FILLING AREAS WITH HATCHING	84
<i>Defining the Pattern Type</i>	84
UNIT REVIEW	85
UNIT 7 REVIEW	87
UNIT 7 ASSIGNMENT #1	89
UNIT 7 ASSIGNMENT #2	89
UNIT 7 ASSIGNMENT #3	91
UNIT 7 ASSIGNMENT #4	93
UNIT: 8 DRAWING ACCURATELY	95
OVERVIEW	95
OBJECTIVES	95
SECTION 1: WORKING WITH ENTITY POINTS AND OBJECT SNAPS	96
<i>Using Various Object Snaps To Create Mechanical Parts</i>	96
<i>CENter</i>	100
<i>PERpendicular</i>	100
SECTION 2: USING POINT FILTERS FOR 2D CONSTRUCTION	100
<i>Using the .X Point Filter</i>	103
UNIT REVIEW	103
UNIT 8 REVIEW	105
UNIT 8 ASSIGNMENT #1	107
UNIT 8 ASSIGNMENT #2	110
UNIT: 9 CREATING SELECTION SETS	111
OVERVIEW	111
OBJECTIVES	111
INTRODUCTION	111
SECTION 1: METHODS FOR CREATING SELECTION SETS	111
<i>The Group Command</i>	111
UNIT 9 REVIEW	115
UNIT 9 ASSIGNMENT # 2	120
UNIT: 10 BASIC EDITING SKILLS	123
OVERVIEW	123
OBJECTIVES	123
INTRODUCTION	123
SECTION 1: OFFSETTING, ROTATING, MIRRORING, SCALING, AND STRETCHING OBJECTS	123
USING VARIOUS EDITING COMMANDS TO CREATE MECHANICAL PARTS	125
SECTION 2: EDITING EDGES AND CORNERS OF OBJECTS	131
<i>The FILLET Command</i>	131
<i>The CHAMFER Command</i>	131
SECTION 3: PRODUCING ARRAYS OF OBJECTS	131
<i>Using Rectangular Arrays to Create Schematic Representations of an External Thread</i>	131
<i>Using Polar Arrays to Create Equidistant Holes on a Cylinder</i>	132
UNIT 10 REVIEW	134

UNIT 10 ASSIGNMENT # 1	137
UNIT 10 ASSIGNMENT # 2	140
UNIT: 11 EDITING WITH GRIPS	141
OVERVIEW	141
OBJECTIVES	141
INTRODUCTION	141
SECTION 1: WORKING WITH GRIPS	141
<i>Using Grips to Assist in the Creation of Mechanical Drawings.</i>	141
UNIT 11 REVIEW	146
UNIT 11 ASSIGNMENT #1	148
UNIT 11 ASSIGNMENT #2	150
UNIT: 12 ADVANCED DRAWING TECHNIQUES	151
OVERVIEW	151
OBJECTIVES	151
INTRODUCTION	151
SECTION 1: WORKING WITH POINT AND DIVIDE TO CREATE THREADS	151
<i>Setting the Point Style and Size</i>	151
<i>Using Divide to Create Threads</i>	152
SECTION 2: CREATING A MULTIVIEW DRAWING WITH XLINE AND RAY	153
<i>Defining the Part Boundary Using XLINE</i>	153
USING RAY TO PROJECT GEOMETRY TO OTHER VIEWS	165
UNIT REVIEW	165
UNIT 12 REVIEW	174
UNIT 12 ASSIGNMENT #2	178
UNIT 12 ASSIGNMENT #3	181
UNIT: 13 DIMENSIONING A DRAWING	175
OVERVIEW	175
OBJECTIVES	175
INTRODUCTION	175
SECTION 1: DIMENSIONING BASICS	175
<i>ASME Standards</i>	175
CREATING DIMENSION STYLES	179
UNITED STATES (US) CUSTOMARY	179
INTERNATIONAL SYSTEM OF UNITS (SI)	180
SECTION 2: LINEAR AND RADIAL DIMENSIONING	183
 <i>Linear dimensions</i>	183
 <i>Aligned Dimensions</i>	183
 <i>Continued Dimensioning</i>	183
 <i>Radial Dimensioning</i>	183
SECTION 3: CREATING GEOMETRIC DIMENSIONING AND TOLERANCING SYMBOLS	183
UNIT 13 REVIEW	186
UNIT 13 ASSIGNMENT # 1	188
UNIT 13 ASSIGNMENT # 2	191
UNIT: 14 MODIFYING OBJECT CHARACTERISTICS AND EXTRACTING INFORMATION FROM YOUR DRAWING	191
OVERVIEW	191

OBJECTIVES	191
INTRODUCTION	191
SECTION 1: MODIFYING OBJECT PROPERTIES	191
<i>Moving an Object to a Different Layer</i>	192
<i>Modifying the Size of a Circle</i>	194
<i>Modifying the Location of a Line</i>	199
SECTION 2: EXTRACTING INFORMATION FROM YOUR DRAWING	201
UNIT REVIEW	201
UNIT 14 REVIEW	202
UNIT 14 ASSIGNMENT #1	204
UNIT 14 ASSIGNMENT #2	207
UNIT: 15 USING SYMBOLS AND ATTRIBUTES	205
OVERVIEW	205
OBJECTIVES	205
INTRODUCTION	205
SECTION 1: CREATING AND INSERTING A BLOCK OF THE SI SYMBOL	205
<i>Creating a Block of the SI Symbol</i>	205
INSERTING THE SI SYMBOL INTO A DRAWING	207
SECTION 2: ADDING INFORMATION TO A NUT SYMBOL WITH ATTRIBUTES	208
<i>Creating the Nut Symbol</i>	208
<i>Defining the Nut Attributes</i>	208
<i>Creating a Block of the Nut and Attributes</i>	211
<i>Inserting the Block of the Nut and Attributes</i>	211
UNIT REVIEW	211
UNIT 15 REVIEW	212
UNIT 15 ASSIGNMENT #1	214
UNIT 15 ASSIGNMENT #2	216
UNIT 15 ASSIGNMENT #3	218
UNIT: 16 CREATING ISOMETRIC DRAWINGS	219
OVERVIEW	219
OBJECTIVES	219
INTRODUCTION	219
SECTION 1: UNDERSTANDING ISOMETRIC AND PICTORIAL DRAWINGS	220
<i>Isometric Detail Drawings</i>	220
<i>Isometric Exploded Assembly Drawings</i>	223
UNIT 16 REVIEW	225
UNIT 16 ASSIGNMENT #1	227
UNIT 16 ASSIGNMENT #2	229

Unit 1: Introduction to AutoCAD and Working with the Windows Environment

Overview

In the textbook that this workbook accompanies, AutoCAD and the Windows Environment were introduced. In this supplement, features of AutoCAD and Windows that will assist the Mechanical Drafter/Designer in becoming a more efficient user are presented.

In general, AutoCAD will not be the only tool that is used by a mechanical drafter/designer. There are many occasions when a word processor is used to prepare memos, a spreadsheet to prepare a manufacturing budget, and presentation software to prepare sales or design presentations. The Windows environment allows the creation of folders that will group the shortcuts to the software and the files needed to complete a project. As projects are created and completed, it will be necessary to save and archive files for later editing.

Objectives

- Create project folders
- Create mechanical specific folders
- Create file shortcuts to project folders
- Use Find to locate lost files
- Create sequential files
- Understand file archiving and compression

Introduction

Using AutoCAD to create mechanical drawings can be a very rewarding and enjoyable experience. But, in order to make the experience pleasant, there is a fair amount of preparation that should be accomplished to avoid such frustrations as lost and corrupt files. Although lost files are not "show stoppers," it is very frustrating and time consuming to locate files. On the other hand, corrupt files can be the source of many hours of lost work. Used together, AutoCAD and Windows provide very efficient tools to ensure that these frustrations are minimized.

Section 1: The Basics of Windows for Mechanical Users

There are many occasions when it is necessary to use other software to complete a project. It may be necessary, for example, to insert an AutoCAD drawing into a word processing document or electronic presentation, or a bill of materials may need to be created in a spreadsheet so that the total cost of the part can be quickly calculated and then inserted into the AutoCAD drawing. While this section does not describe the procedures for these tasks, it does show how to group computer application shortcuts into a folder so that immediate access is available for all of the applications required to complete a project.

Creating Project Folders

One of the most unused features of Windows is the desktop. The desktop, as described in the main text, is the area that appears on the screen when Windows is started. A typical desktop is shown in figure 1.1.

The desktop is a great place to create project folders. Project folders allow files to be grouped for quick access. The creation of project folders is very easy. Follow these steps for creating a project folder on the desktop.

1. Ensure that the Windows desktop is displayed as shown in figure 1.1.
2. Place the cursor anywhere on the desktop except on top of an icon or the taskbar.
3. Click the right mouse button once. A menu will appear as shown in figure 1.2.
4. Move the cursor to the New selection. Another menu will appear as shown in figure 1.3.
5. Move the cursor to the Folder option and click the left mouse button to select that option. A new folder will appear on the desktop as shown in figure 1.4. The *New Folder* default name will be highlighted. This name should be changed to the name of the project that will be contained within this folder.
6. With the New Folder name highlighted, enter the new name for the project and press . The name will be changed as shown in figure 1.5. The project file has now been created.

Once this folder has been named, determine which computer applications will be necessary to complete the project. For this example, AutoCAD and Microsoft Excel, an electronic spreadsheet, will be necessary to complete our project.

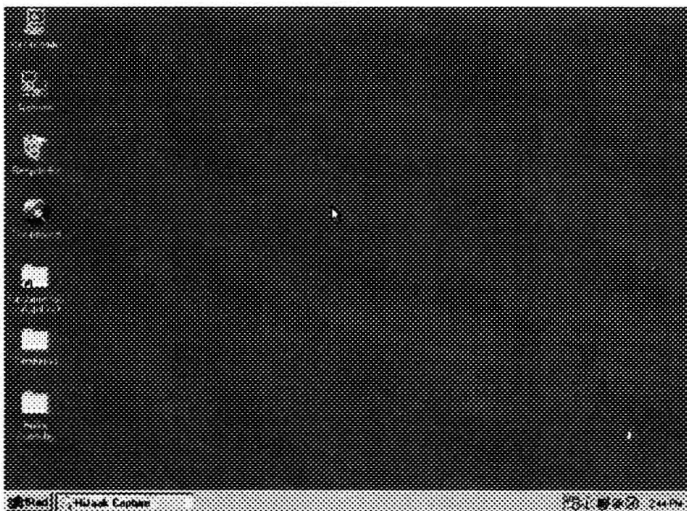


Figure 1.1 A typical mechanical draftsman's Windows.



Figure 1.2 Clicking the right mouse button on the desktop causes this menu to appear...

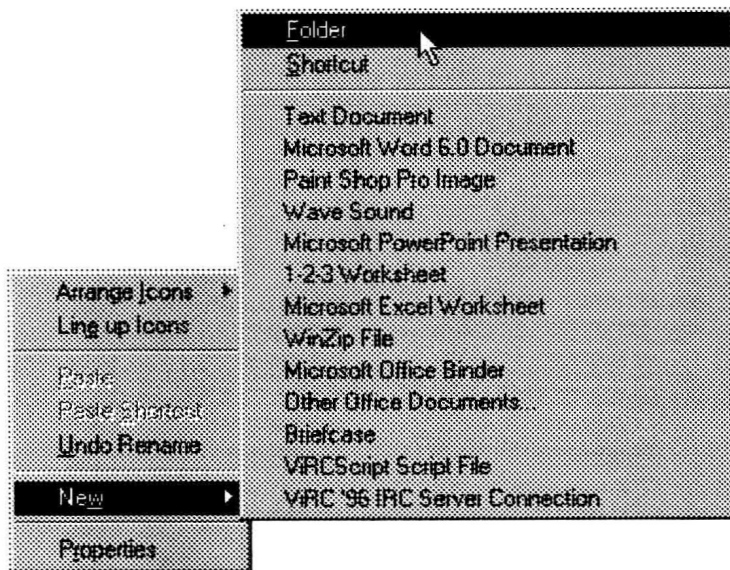


Figure 1.3 The New flyout menu.

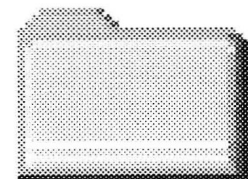


Figure 1.4 This New Folder icon will appear when the New Folder option is selected.

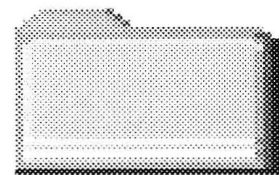


Figure 1.5 The named project folder.

SKILL BUILDER

Don't worry if you are unsure which applications are necessary at the beginning of a project. It is very easy to add application shortcuts at a later time as they are needed.

The complete application is not stored in this folder, only the shortcut to the application's *executable file*. The executable file is simply the file that starts the application. The shortcut is a pointer to the location of that file. Executable files usually have the .exe file extension. While locating this file may at first sound like a daunting task, Windows has already done so upon installation of the application. When Windows installs an application it places a shortcut on the taskbar. Copy the shortcut to the project file using the following method if a shortcut to the application is found on the taskbar.

1. Move the cursor to the Start button on the taskbar.
2. Right-click on the Start Button. A menu will appear.

3. Select the **E**xplore option. The Windows Explorer will be started as shown in figure 1.6. The Windows Explorer is a file management tool that is included with Windows to allow for easy file management. There are many functions and features of this tool. Consult a Windows manual for more information on its use. On the right-hand side of the Windows Explorer are all of the folders that are contained on the taskbar.
4. Double-click the folder that contains the application's shortcut.
5. Once the application's shortcut icon is found, single-click the icon.
6. Select **E**dit **C**opy from the Windows Explorer pulldown menu. The shortcut is copied to the clipboard. The clipboard is a temporary storage location and is used to allow easy exchange of information between applications.
7. Close Windows Explorer. The desktop should be displayed.
8. Double-click the project folder. The folder will open. Notice that there are no application shortcuts for files.
9. Select **E**dit **P**aste from the project file's window pulldown menu. The shortcut copied will appear in the project window as shown in figure 1.7. The application's shortcut icon has a curved arrow on the bottom left. This arrow indicates that a shortcut has been copied and not the actual file.

SKILL BUILDER

If the application shortcut cannot be found on the taskbar, that does not mean that the application has not been installed, it simply means that a shortcut has not been created. To create a shortcut, locate the executable file. Refer to the software's documentation for more information.

Section 2: Working with Folders

Once a project folder has been created and shortcuts to applications created, it is time to get to work.

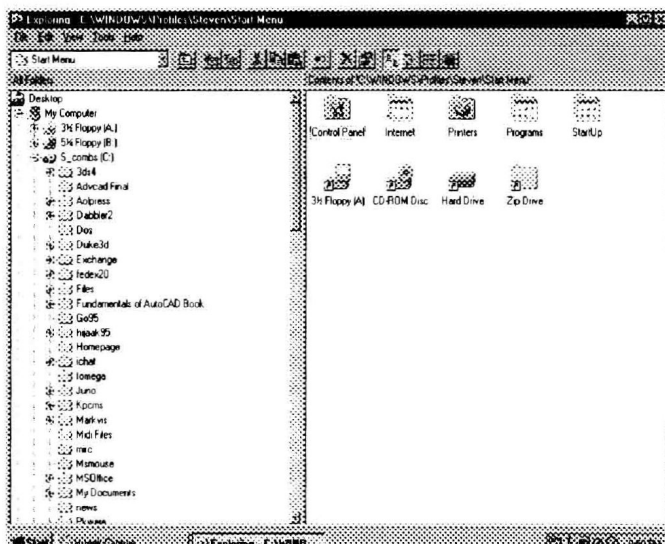


Figure 1.6 The Windows Explorer.

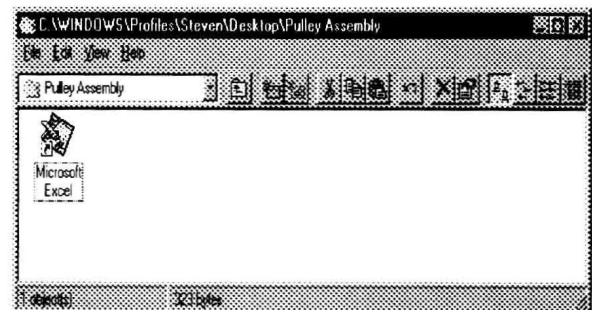


Figure 1.7 The project window with an application shortcut.

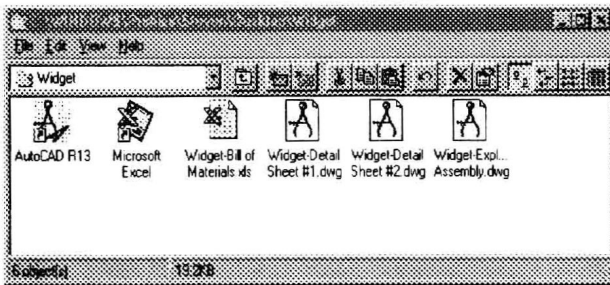


Figure 1.8 A sample project window for the widget working drawings

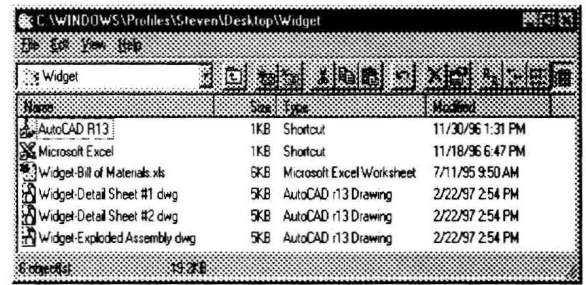


Figure 1.9 Displaying the filenames in the Details View.

As mentioned in the main text, it is important to store files in folders with proper naming conventions for both the files and the folders. Once files are saved in folders, then shortcuts to these files can be created in a project folder on the desktop for easy access. If you do not use the desktop and proper naming techniques, it may be necessary to use the Find function within Windows to locate a file. This is an extra step that takes time away from drawing and designing.

Creating Mechanical Specific Folder and File Names

With 256 characters and spaces, Windows allows very descriptive file names. Make use of this feature. It can save time. However, do not overdo it! Too many characters will clutter the windows and crowd icons. An example of a typical project may help to illustrate.

A mechanical firm is creating a set of working drawings for a new widget. The widget contains 6 different components and three C-size sheets; one sheet contains two of the six parts, one sheet contains the other four parts, and the last sheet contains an exploded assembly drawing as well as the bill of materials. The draftsman might use the folder and file names shown in figure 1.8.

By using descriptive folder names and file names, anyone in the mechanical firm can locate these files quickly for later viewing or editing. Dates in file names are not necessary since they can be displayed using the Details View as shown in figure 1.9. To choose the Details View select View Details from the folder window's pulldown menu. The dates and times shown in the Details View indicate the last date and time the file was modified.

Folders can be created on a storage device (hard drive, floppy, etc.) or on the desktop as described in the example project folder above.

Adding Files to Project Folders

Once a file has been created and saved to a storage device, a shortcut to that file may be added in the project folder as well. By including this file in the project folder, not only are the applications used to complete a project listed, but also the files. This is also handy if the project files themselves are located in various folders on a storage device. The project folder consolidates the files in a single location without affecting their actual storage location. To copy a file shortcut to a project window, use the following procedure:

1. Ensure that the desktop is displayed.

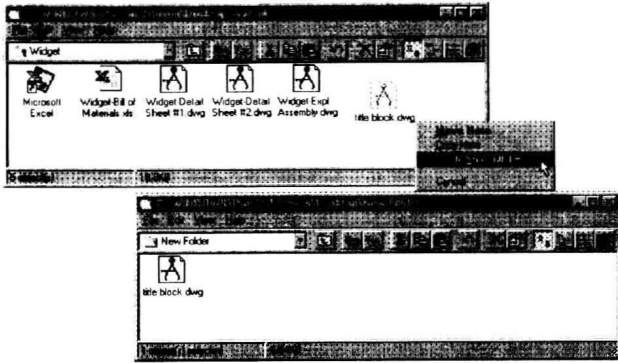


Figure 1.10 Creating a file shortcut in the project folder.

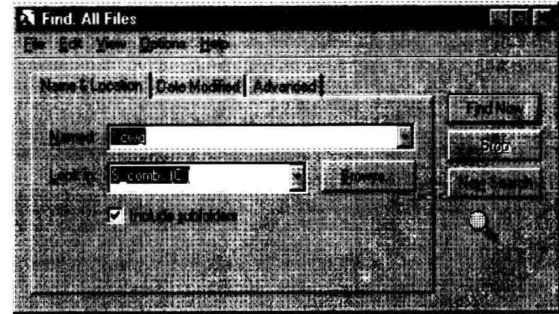


Figure 1.11 The Find Window.

2. Double-click on the My Computer Icon. A window that contains all storage devices will be displayed.
3. Continue working through the storage devices until the file to be included as a shortcut in the project folder is found.
4. Open the project folder.
5. Move the two folders, if necessary, so that both can be viewed on the desktop as shown in figure 1.10.
6. Using the right mouse button, drag the file from its storage device location to the project folder.
7. Release the button when the file icon is located in the project folder. A menu will appear as shown in figure 1.10.
8. Select the Create Shortcut(s) Here option. A shortcut icon for the file will be created in the project folder.
9. Close both windows.

Once the project folder has been created, and applications and files have been created within the folder, there is no longer a need to search the taskbars and storage devices for the applications and files; they are now conveniently on the desktop and may remain there until the project is completed. To continue working on the project, double click one of the files in the project folder. The file and the application used to create the file will be loaded automatically.

Using Find to Locate Lost Files

There are occasions when specific drawing files cannot be located. AutoCAD provides a search function that allows files to be found, but because of its many options it can be very intimidating to use. A quick and easy method of locating drawing files is to use the built-in Windows Find feature, located on the taskbar. Find will search for files, folders, or computers on a network. Selecting the Files or Folders option will display the Find: All Files window as shown in figure 1.11.

If *.dwg (all AutoCAD files have this extension) is entered in the Named text edit box, select the appropriate storage device, and select Find Now. Windows will locate every file with the .dwg extension as shown in figure 1.11.

Section 2: Saving a Drawing

As mentioned in the main text, there are many commands that save drawing files. Mechanical Draftsman/Designers must save drawings frequently and make constant back-ups. One technique that decreases the likelihood of lost files is to use a method known as Sequential File Saves.

Using Sequential File Saves

Sequential Files Saves (SFS) is a method whereby files are saved in numerical and chronological order. As any good CAD operator knows, files should be saved regularly during their creation and modifications. Exactly how often depends on the amount of time the CAD operator is willing to lose. But a good CAD operator should also save multiple copies of drawings at various stages. This procedure offers two advantages:

- A drawing can be retrieved at various stages during its development for further experimentation.
- If the present file happens to become corrupt (unusable) when being modified a backup file from a previous stage can be reloaded and the object recreated.

An example of the utilization of SFS can be found in the following example. Suppose that a file, *My Drawing.dwg*, is being created. During the next hour of work, the CAD operator issues a QSAVE every 15 minutes. After the first hour the CAD operator executes the SAVEAS command. The CAD operator saves the file as *My Drawing(01).dwg*. There are now two files. *My Drawing.dwg* contains the first hour of work, and *My Drawing(01).dwg* will contain the next hour of work. The CAD operator will continue doing this until the project is complete. If storage space becomes low, the CAD operator can then determine the need for retaining previous versions of the project and delete them accordingly.

File Archives and Compression

Once a project is complete, it is generally not needed again unless new hard copies are needed or a change in the initial design is needed before the drawings are used again. These unused files and projects take up valuable space on storage devices. When the files are no longer being used on a regular basis, they should be considered for *archival*. Archival simply means that the file will be moved from a primary storage device onto a floppy disk, tape, removable hard drive, or other device. Once archived, the file can be stored in a separate and safe location such as a vault or lock box. This allows for added security of critical files from damage and theft.

To further save space on the archival storage media, *compression* may be used. Compression is a technique for making file sizes smaller. A typical AutoCAD drawing can be compressed by as much as 75%. An advantage of compression is that multiple files may be compressed within a single file. This allows all files of a project to be stored in one small file. Once files are compressed, they cannot be used again until they are *decompressed*. A popular compression software for Windows is WinZip. Using the drag-and-drop technology of Windows, files can be compressed and decompressed with ease. A sample of the interface and a project file that has been compressed is shown in figure 1.12.

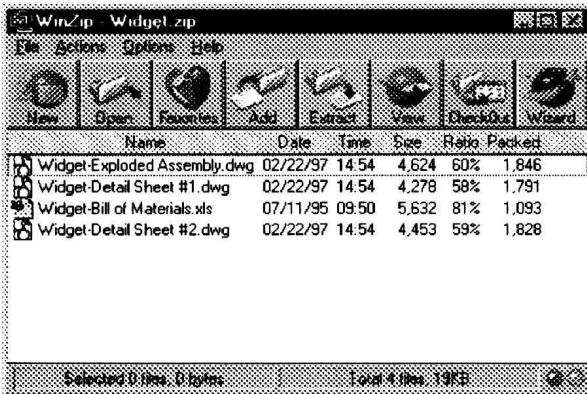


Figure 1.12 The WinZip compression software.

Unit 1 Review

1. _____ is the operating system that is necessary to run the Windows version of AutoCAD.
2. The _____ is used to issue commands via the keyboard.
3. _____ and _____ are used to issue commands with the mouse.
4. In Windows, _____ are used to group files on a storage device.
5. The _____ command allows drawing to be loaded in Read-only Mode.
6. The _____ command allows utilization of a prototype file.
7. _____ command saves a drawing file without displaying a dialog box.
8. The technique for storing frequently used files is known as _____.
9. _____ is used to make files smaller and conserve space,
10. The _____ command is used to close AutoCAD without saving the current drawing.