AS322572-L - AutoCAD Customization Boot Camp: Basic (No Experience Required)

Lee Ambrosius

Principal Learning Experience Designer

AUTODESK. UNIVERSITY

Where Am I and Who Should Be Here

You are in session:

- AS322572-L - AutoCAD Customization Boot Camp: Basic (No Experience Required)

You should know:

- AutoCAD 2020 (or AutoCAD 2009 and later)

You should want to:

- Learn how to perform basic AutoCAD customization
- Get the AutoCAD program to work for you

Where Am I and Who Should Be Here

My name is Lee Ambrosius:

- Principal Learning Experience Designer at Autodesk, Inc.
  - Technical writer and data analyst
  - Customization, Developer, and CAD Administration documentation
- Over 20+ years of AutoCAD customization and programming experience
- Author of the AutoCAD Customization Platform book series published by Wiley & Sons

My job in a nutshell:

- Document the past and present AutoCAD releases for the future

Who Are the Lab Assistants?

Lab assistants:

- Chris Lindner
- Craig Black
- Scott Wilcox

Their roles are to:

- Help out when you get stuck
- Ensure no one gets left behind

Session Rules

- Silence your mobile phone, tablet, and any other device
- If you have to leave, please do so quietly
- Hold all questions to the end
- If you get stuck, raise your hand

Enjoy the Journey

The path isn’t the same for everyone…

but the goal is often shared by many.

To the left and right of you is someone

with a shared interest, talk and learn from them.

Yeah, running 48.6 miles in 4 Days is Dopey

Welcome to Basic Training

What You Will Learn Today

At the end of this session, you will know how to:

- Create and modify command aliases
- Create and run scripts
- Define tools and tool palettes
- Modify the QAT, ribbon, and workspaces

NO prior customization experience is required

Customization **COULD BE** programming, but not Today

What You Need to Get Started

For this session, you will be using:

- AutoCAD 2020
- Notepad; part of the Windows operating system
- Customize User Interface (CUI) Editor
- Knowledge of commands and system variables

What is Going to be Covered

Handouts for this session are divided into two separate parts/files:

- **Exercises** – What we will be doing during this session
- **Supplemental** – Content for the flight back or in the office

Do You Customize AutoCAD Today?

Customization Options Available

Levels of customization expertise:

- Basic
- Intermediate
- Advanced (programming required)

Types of customization:

- Drawing
- Application

Basic Customization

DRAWING

- Layers
- Blocks
- Annotation styles (text, dimensions, multileaders, and tables)
- Materials for rendering
- Visual styles
- Drawing templates

APPLICATION

- Desktop icon
- Command aliases
- Tool palettes
- Workspaces
- User profiles
- Plot styles

Basic Customization

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- Layers
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- Materials for rendering
- Visual styles
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APPLICATION

- Desktop icon
- Command aliases
- Tool palettes
- Workspaces
- User profiles
- Plot styles

Intermediate Customization

DRAWING

- Dynamic Blocks

APPLICATION

- Action macros
- Scripts
- User interface (CUI Editor)
- DIESEL
- Custom linetypes and hatch patterns
- Custom shapes and text styles

Intermediate Customization

DRAWING

- Dynamic Blocks

APPLICATION

- Action macros
- Scripts
- User interface (CUI Editor)
- DIESEL
- Custom linetypes and hatch patterns
- Custom shapes and text styles

Advanced Customization (Programming)

APPLICATION

- AutoLISP / Visual LISP
- Visual Basic for Applications (VBA)
- ActiveX / COM
  (VBScript, VB.NET, C#, C++)
- Managed .NET (VB.NET, C#)
- ObjectARX (C++)
- JavaScript (JS)
- Sheet Set Object (SheetSet command)
- CAD Standards plug-ins
  (Standards/CheckStandards commands)
- Transmittal API (eTransmit command)
- Connectivity Automation Object
  (dbConnect command)
- Forge APIs

Advanced Customization (Programming)

APPLICATION

- AutoLISP / Visual LISP
- Visual Basic for Applications (VBA)
- ActiveX / COM
  (VBScript, VB.NET, C#, C++)
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  (Standards/CheckStandards commands)
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  (dbConnect command)
- Forge APIs

Things We Need to Know Before Proceeding

Setting Up for the Lab

For this lab:

- Open the dataset folder for this session:

  C:\Datasets

  AS322572-L AutoCAD Customization Boot Camp - Basic (No Experience Required)

- Open the class handout for this session in the dataset folder:

  ClassHandout- AS322572-L-Ambrosius-AU2019.pdf

- Recommend snapping the handout and AutoCAD application to opposites sides of the Windows Desktop

Exercise: E0 - Add the Dataset Folder to AutoCAD’s Support File Search Path

In this exercise, you will:

- Add the dataset folder to the current AutoCAD profile

Starts on page 3 of the handouts.

Command Aliases

Command Aliases

What is a command alias?

- Shortened name used to start a command
- **DOESN’T** support command options or values
- Often consistent between releases
- Stored in the *acad.pgp* (AutoCAD) or *acadlt.pgp* (AutoCAD LT) file

Example:

L is the command alias for the **LINE** command

Command Aliases

Syntax:

```
abbreviation, *command_name
```

Examples:

```
C,  *CIRCLE

L,  *LINE

M,  *MOVE
```

To Create or Modify a Command Alias

1. Open the program’s PGP file.
2. Add or edit an existing command alias.
3. Save the changes to the PGP file.
4. Reload the changed PGP file with the REINIT command or close/restart the program.

Exercise: E1 - Define Custom Command Aliases

In this exercise, you will:

- Open the PGP file associated with AutoCAD
- Create a few new command aliases and override an existing command alias
- Reload the PGP file in AutoCAD

Starts on page 5 of the handouts.

Script Files

Script Files

What is a script file?

- An ASCII text file with the SCR extension
- Sequence of commands and system variables to be executed in a linear order
- Can include AutoLISP statements

Script Files

Why create or use scripts?

- Low learning curve
- Leverage your knowledge of commands and system variables
- No special editor or programming skills required
- Execute many commands rapidly without user input
- Work across multiple releases and toolsets
- Transparent execution is supported

Script Files

Known Limitations:

- User can’t be prompted for input at the Command line
- Dialog boxes can’t be displayed
- Commands are executed as if the FILEDIA and CMDDIA system variables are set 0
- In AutoCAD 2015 and earlier, only one script can be executed at a time

Script Files

Example of input entered at the Command prompt:

```
Command: LIMITS
Reset Model space limits:
Specify lower left corner or [ON/OFF] <0.0000,0.0000>: 0,0
Specify upper right corner <12.0000,9.0000>: 1056,816
Command: ZOOM
Specify corner of window, enter a scale factor (nX or nXP), or
[All/Center/Dynamic/Extents/Previous/Scale/Window /Object] <real
time>: E
Command: GRIDDISPLAY
Enter new value for GRIDDISPLAY <3>: 2
```

Script Files

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Command: GRIDDISPLAY
Enter new value for GRIDDISPLAY <3>: 2
```

Script Files

Examples of scripts with the same input:

```
LIMITS
0,0
1056,816
ZOOM
E
GRIDDISPLAY
2
```

```
LIMITS 0,0 1056,816
ZOOM E
GRIDDISPLAY 2
```

Script Files

Formatting of a script file:

- Commands and options aren’t case specific
- Text values
  - Are case sensitive
  - With spaces must be surrounded with double quotation marks; in most cases
- A space or new line is equivalent to pressing Enter
- A blank line must always be placed at the end of the file

Script Files

Formatting of a script file (cont.):

- A period in front of a command name ensures the execution of the natively defined command

```
.LINE
```

- An underscore in front of a command name forces the use of a global command or option name; global command and option names are always the English name

```
_ZOOM _E    or    _.ZOOM _E
```

- A semi-colon denotes a comment in a script, text to the right of a semi-colon isn't executed

```
; Created on: 10/11/19
```

Script Files

Techniques to run a script file:

- SCRIPT command
- Drag and drop (Windows only)
- `/b` (Windows) or `-b` (Mac OS X) command line switch
- ScriptPro (Windows only) - http://autode.sk/2fS0Rml

Script Files

Commands related to script files:

- **DELAY** – Pauses the execution of a script for a specified duration in milliseconds
- **RESUME** – Resumes the execution of a script that was paused by pressing the Backspace key
- **RSCRIPT** – Repeats the previous executed script in the current AutoCAD session
- **SCRIPT** – Runs a SCR file
- **SCRIPTCALL** – Used to run a nested script file; AutoCAD 2016 and later

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- **SCRIPTCALL** – Used to run a nested script file; AutoCAD 2016 and later

To Create a Script File

1. At the Command prompt, walkthrough the commands and options to be executed by the script.
2. Create the script (SCR) file.
3. Add the commands and options to the SCR file to be executed.
4. Save the SCR file.
5. Create or open a drawing file.
6. Run the SCR file and validate the results.

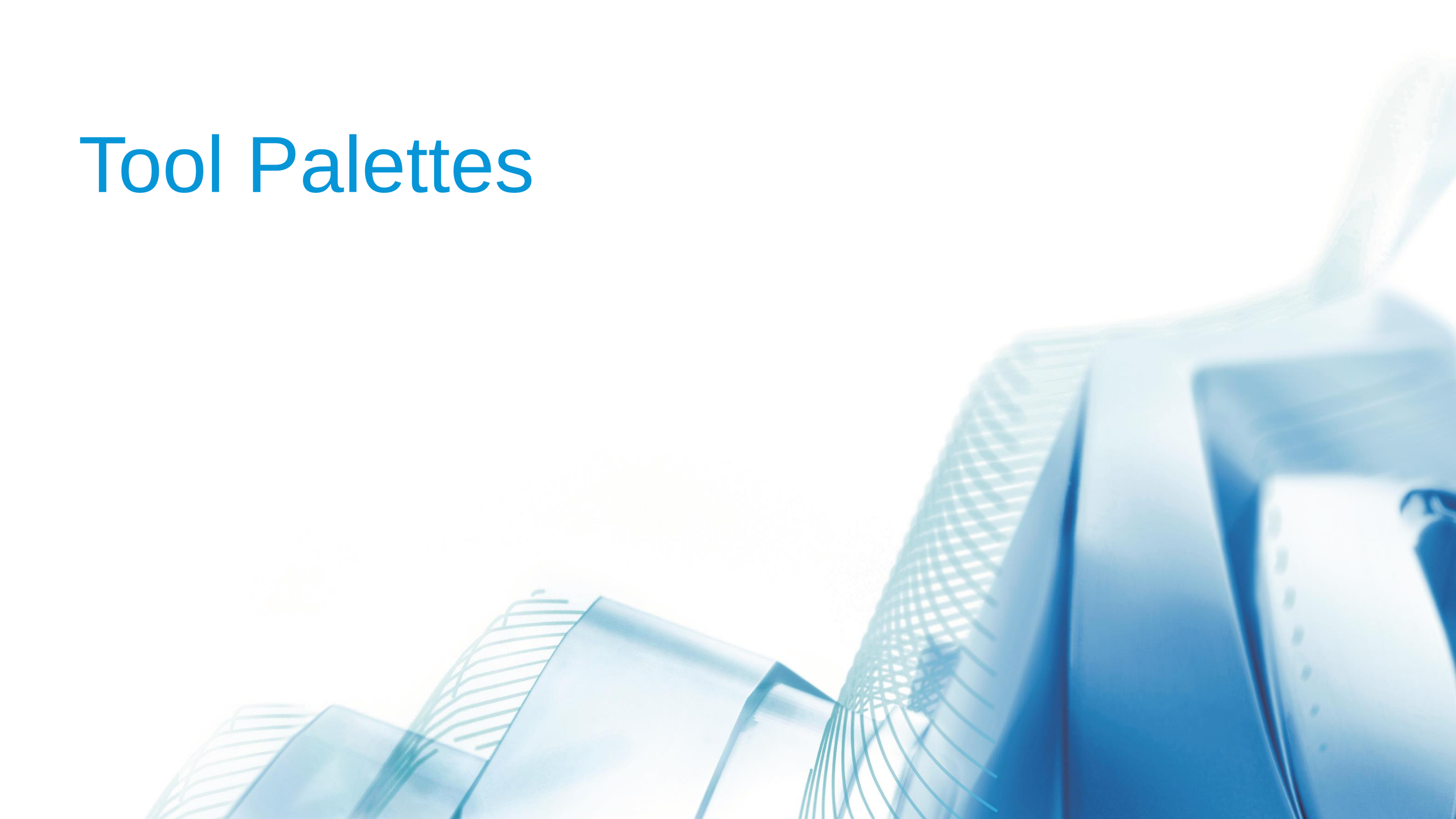
Exercise: E2 - Create and Run a Script

In this exercise, you will:

- Create a new SCR file that performs some basic drawing setup tasks
- Run a SCR file with the SCRIPT command

Starts on page 6 of the handouts.

Tool Palettes



Tool Palettes

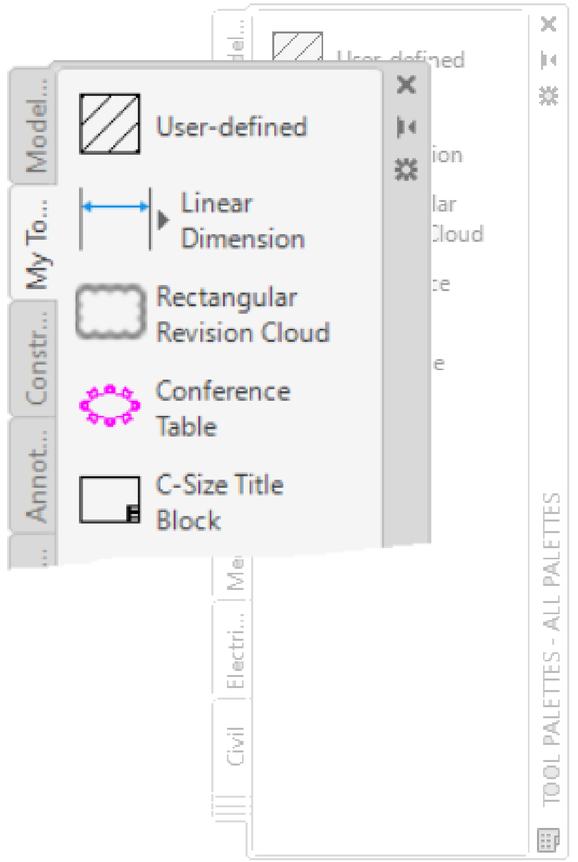
Collection of tools that can be used to:

- Start commands
- Create new geometry
- Insert or attach external files

New tool palettes can be created

Similar tool palettes can be grouped together

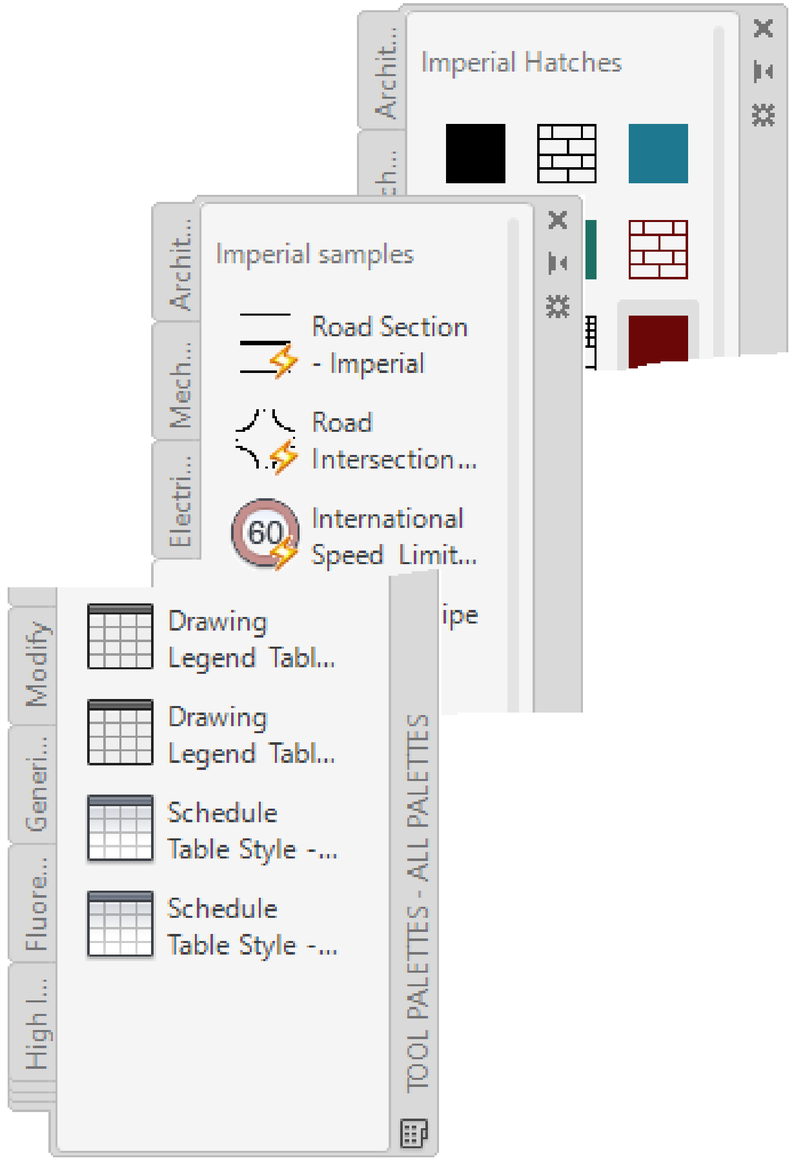
Can be shared with others



Tool Palettes

Tools can be created from:

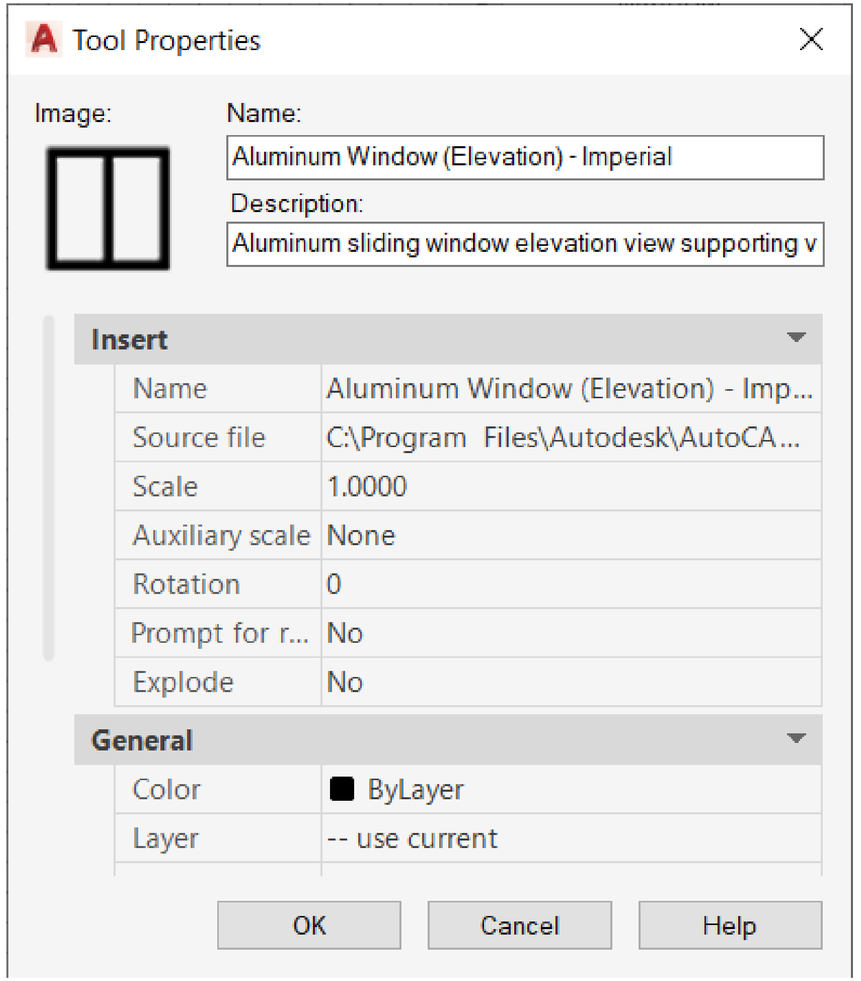
- Geometry and annotation objects in the current drawing
- Commands from the Customize User Interface (CUI) Editor
- Hatch patterns and blocks in the DesignCenter
- Drawing and external files from Windows Explorer or File Explorer
- Visual styles, lights, cameras, and materials in the current drawing



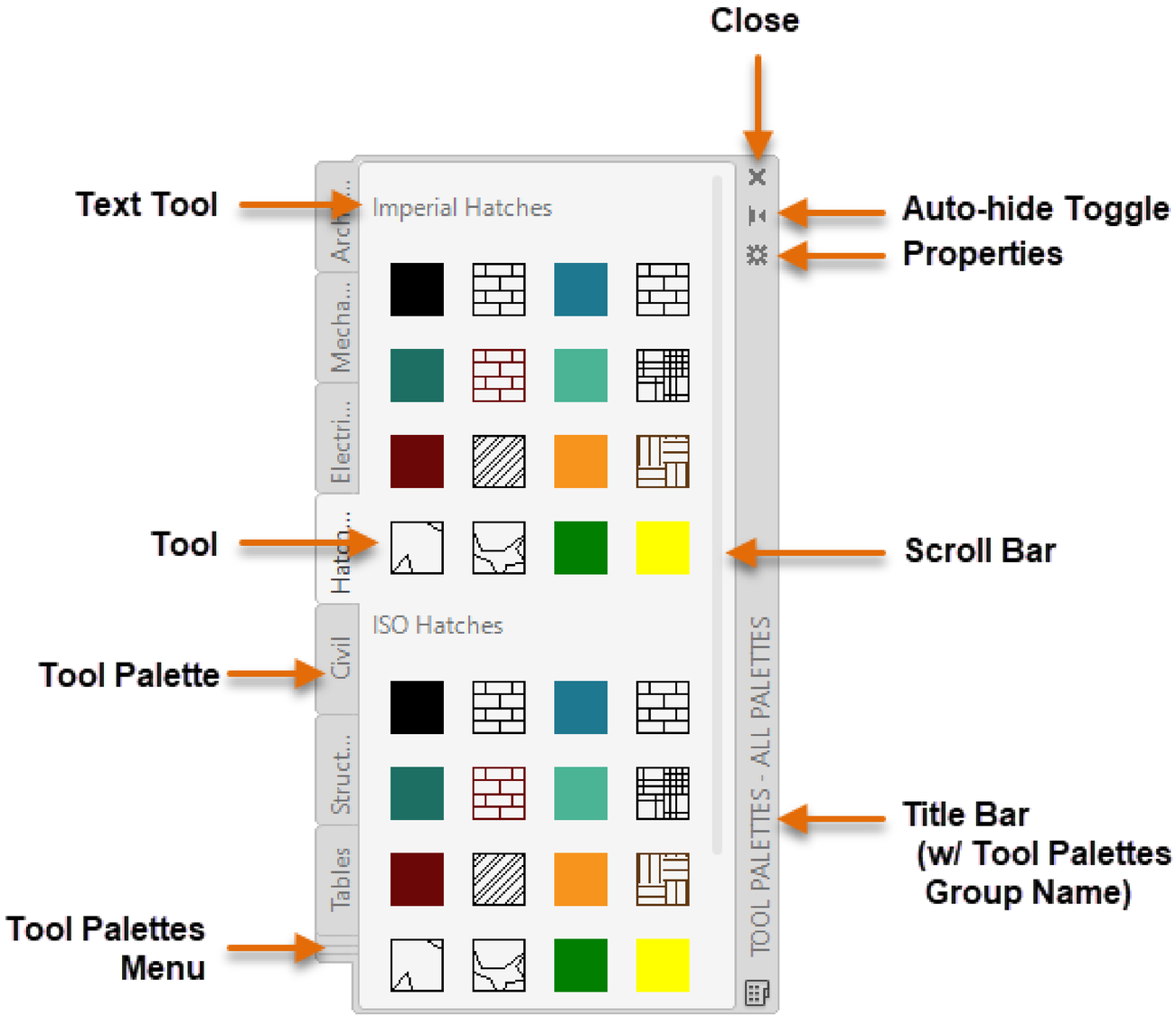
Tool Palettes

After a tool has been created, you can:

- Edit its properties
- Use the tool (via drag and drop, or a simple click)
- Organize similar tools with text and separators



Tool Palettes



To Create and Add Tools to a Tool Palette

1. Create a new or work with an existing tool palette.
2. Add tools to a tool palette.
3. Edit the properties of tools.
4. Test new tools created.
5. Organize the tools on a tool palette and group related tool palettes.

Exercise: E3 - Create a Tool Palette and Tools

In this exercise, you will:

- Create a new tool palette
- Add tools to the new tool palette
- Modify the properties of tools on a tool palette

Starts on page 9 of the handouts.

Quick Access Toolbar (QAT)

Quick Access Toolbar (QAT)

Contains drawing file management related tools:

- Creating
- Opening
- Saving
- Plotting

Provides access to common tools across all ribbon tabs

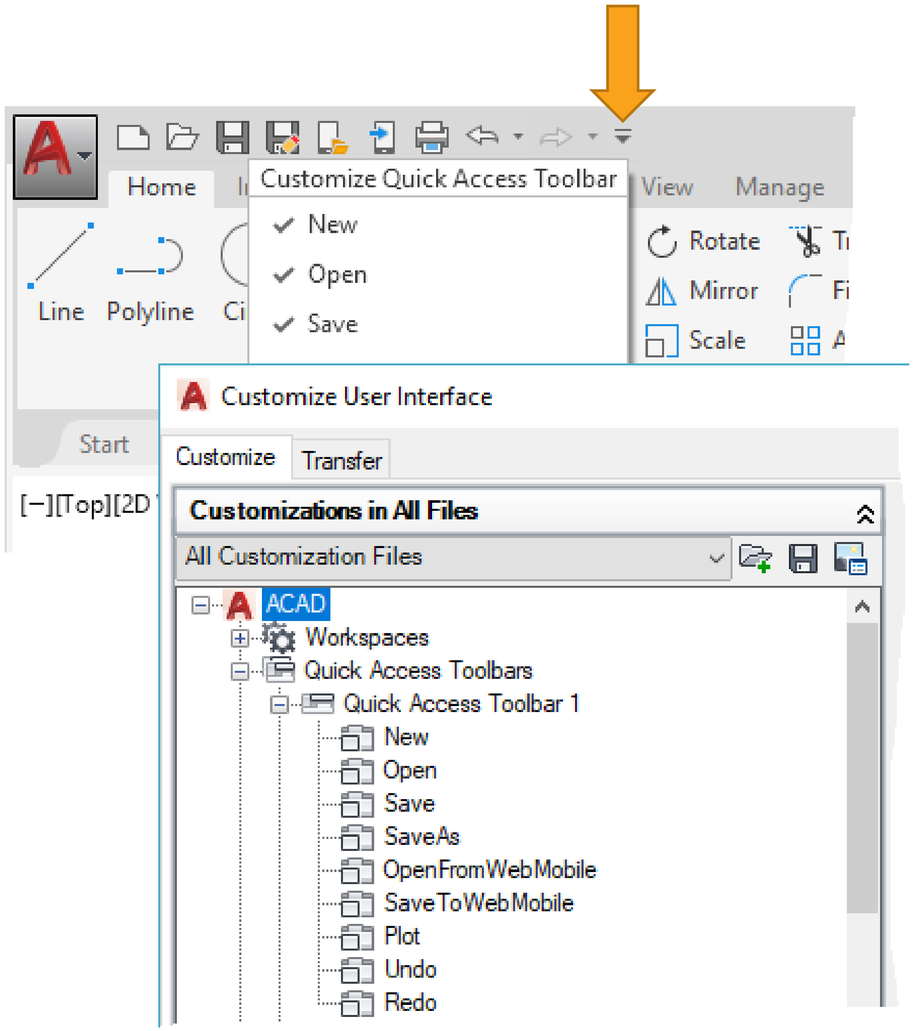
Displayed in the upper-left corner of the application by default

Multiple QATs can be created, but only one can be displayed at a time

Quick Access Toolbar (QAT)

Can be customized by:

- Clicking the Customize button on the QAT (right side)
- Right-clicking over a button on the QAT or ribbon
- Using the Customize User Interface (CUI) Editor



To Create a Quick Access Toolbar (QAT)

1. Start the Customize User Interface (CUI) Editor.
2. Create a new QAT.
3. Add or remove commands from the QAT.
4. Assign the new QAT to a workspace.
5. Set the modified workspace current.

Exercise: E4 - Create a Quick Access Toolbar

In this exercise, you will:

- Create a new Quick Access toolbar (QAT)
- Add a few commands to the new QAT
- Remove a command from the new QAT
- Assign the new QAT to a workspace

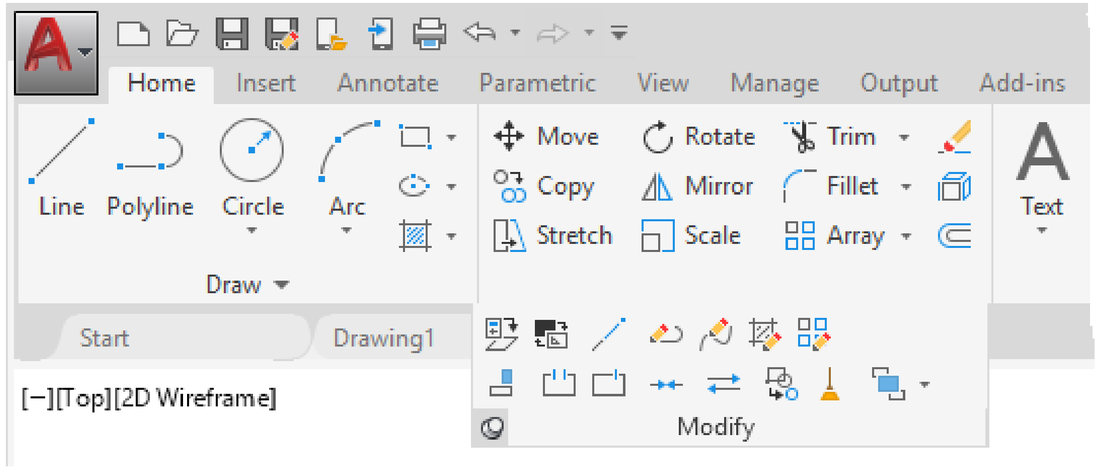
Starts on page 14 of the handouts.

Ribbon

Ribbon

Contains tools organized by task, such as:

- Creating and editing objects
- Working w/ blocks and references
- Adding annotation
- Outputting drawings

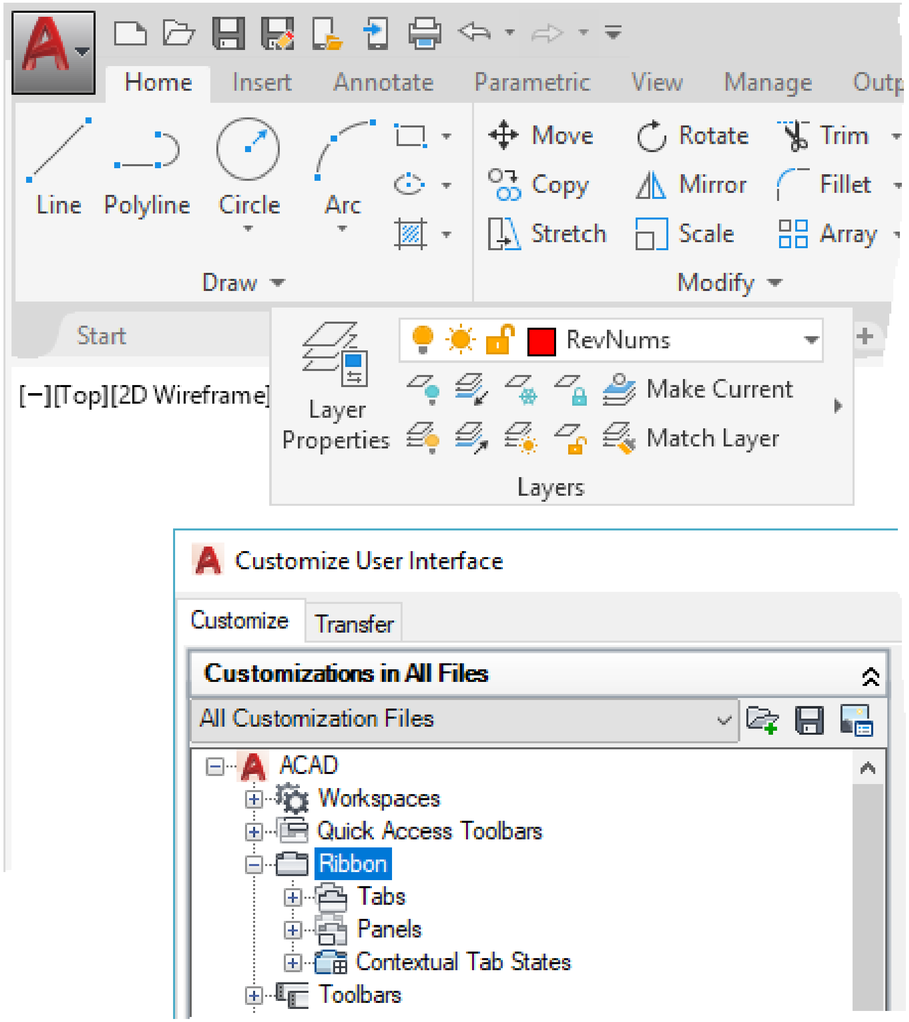


Displayed across the top of the application window and below the Quick Access toolbar (QAT)

Ribbon

Can be customized by:

- Right-clicking over a ribbon panel or tab
- Dragging and dropping a ribbon panel over the drawing area or ribbon
- Using the Customize User Interface (CUI) Editor



To Create Ribbon Panels and Tabs

1. Start the Customize User Interface (CUI) Editor.
2. Create a new ribbon panel and add commands/controls to it.
3. Create a new ribbon tab and add ribbon panels to it.
4. Assign new ribbon panels to a new ribbon tab.
5. Assign a new ribbon tab to a workspace.
6. Set the modified workspace current.

Exercise: E5 - Create a Ribbon Tab and Panel

In this exercise, you will:

- Create a new ribbon panel
- Add commands to a ribbon panel
- Create a new ribbon tab
- Add a ribbon panel to a ribbon tab
- Assign a ribbon tab to a workspace

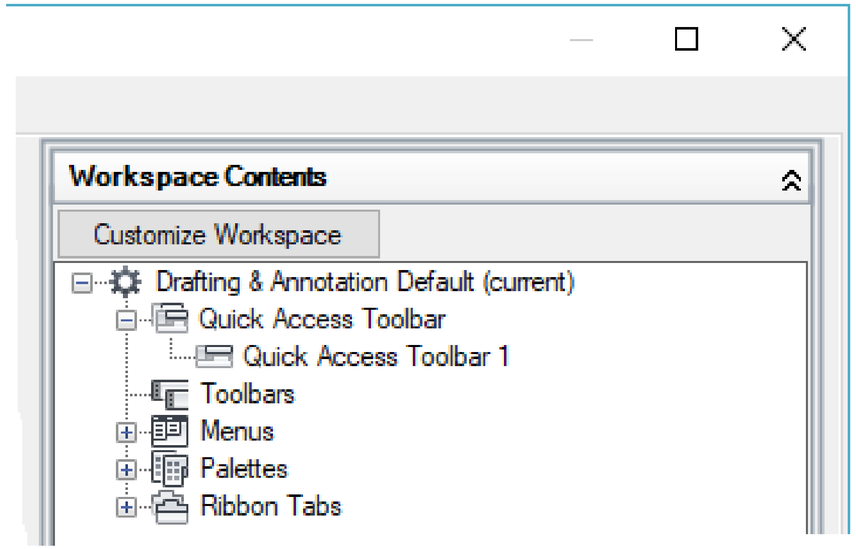
Starts on page 21 of the handouts.

Workspaces

Workspaces

Control the visibility and placement of user interface (UI) elements, such as:

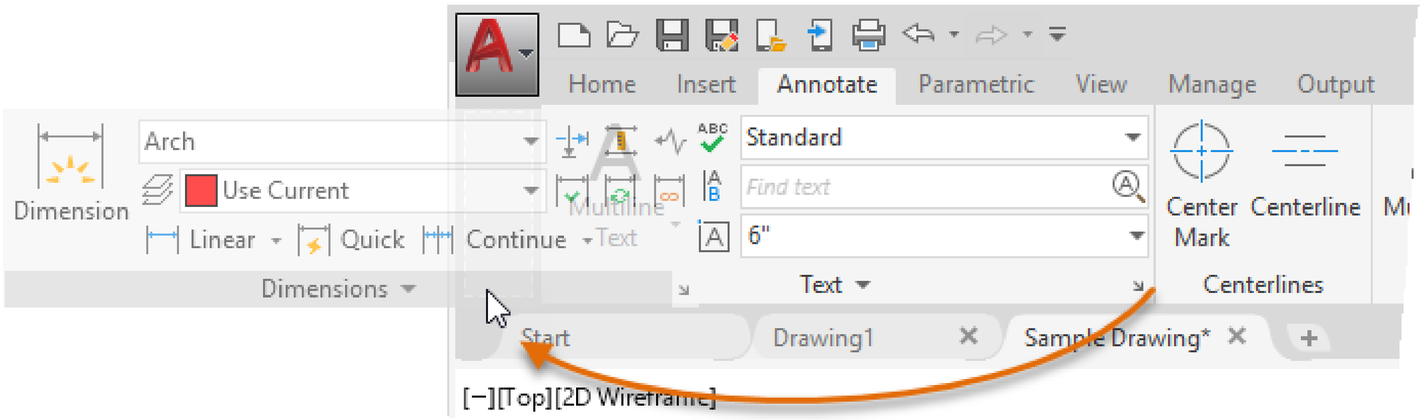
- Quick Access toolbar (QAT)
- Ribbon tabs
- Palettes
- “Classic” toolbars
- Pull-down menus

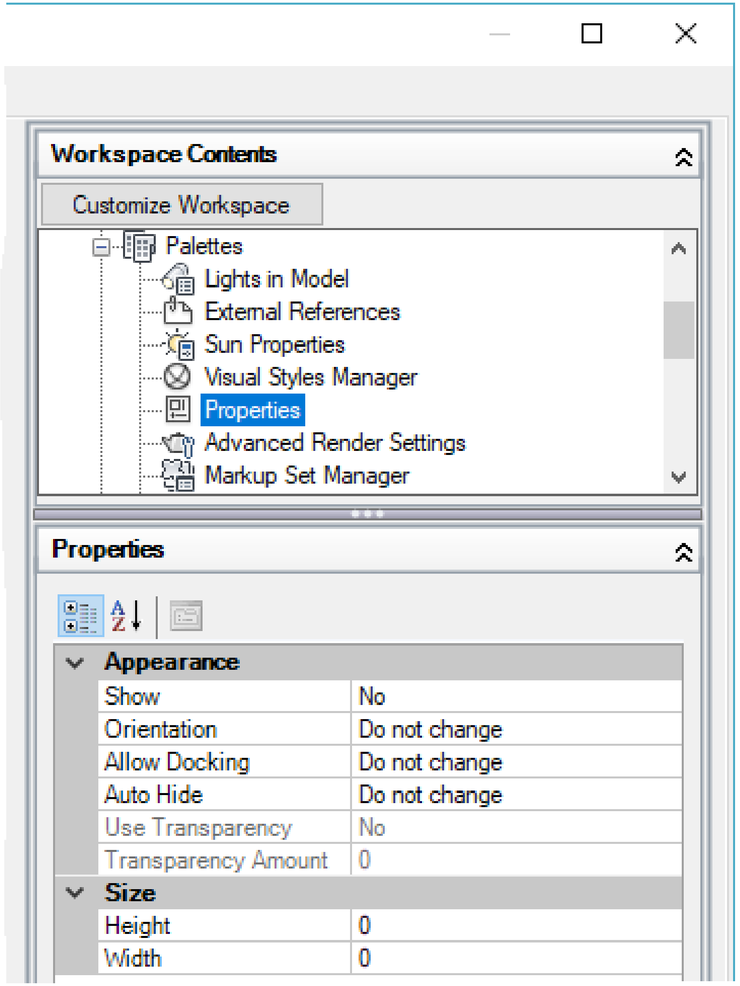


Workspaces

Can be customized:

- Directly in the AutoCAD user interface (UI)
- Using the Customize User Interface (CUI) Editor





To Create a Workspace with the CUI Editor

1. Start the Customize User Interface (CUI) Editor.
2. Create a new workspace.
3. Add or remove user interface (UI) elements to the workspace.
4. Set the modified workspace current.

To Create a Workspace from the AutoCAD UI

1. Arrange the elements of the AutoCAD user interface (UI).
2. Start the WSSAVE command.
3. Enter the name of the workspace to create or modify.
4. Save the workspace.

Exercise: E6 - Modify and Create a Workspace

In this exercise, you will:

- Modify the placement of elements in the AutoCAD user interface (UI)
- Control the visibility of a “Classic” toolbars and ribbon tabs
- Create a new workspace

Starts on page 29 of the handouts.

Final Thoughts and Questions

Final Thoughts

Customization and programming can:

- Enhance productivity
- Improve or introduce new workflows

Customizing has many similarities to *Wonderland in Lewis Caroll's Alice's Adventures*.

Both:

- Are virtually endless
- Hold many mysteries just waiting to be discovered

Questions and ….

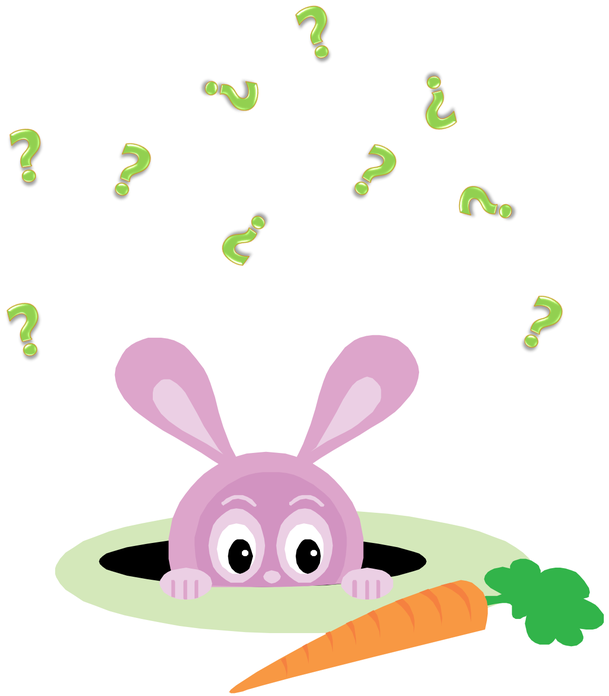
Questions? Questions? Questions?

If you have any further questions, contact me via:

email: lee.ambrosius@autodesk.com

twitter: @leeambrosius

Thanks for choosing this session!



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Desktop Shortcuts

Desktop Shortcuts

Used to:

- Launch an application
- Open a folder location or website

Command line switches can be used to alter an application during startup

- AutoCAD supports 15+ command line switches

Desktop Shortcuts

Some of the most commonly used command line switches:

Command Line Switch	Description/Example
/t	Specifies the drawing template for the default drawing Example: */t "mytemplate.dwt"*
/w	Sets a named workspace current from a loaded CUIx file Example: */w "2D Drafting"*
/p	Sets a named user profile current or loads a previously exported user profile (ARG) file Example: */p "<<Unnamed Profile>>"*
/nologo	Disables the splash screen at startup Example: */nologo*

Standard AutoCAD 2020 Shortcut

"C:\Program Files\Autodesk\AutoCAD 2020\acad.exe" ***/product*** ***ACAD***

/language ***"en-US“***

- **/product** – Specifies the AutoCAD-based product to launch when multiple products are installed
- **/language** – Specifies the language pack to use when the product is launched

Shortcut w/ Additional Command Switches

"C:\Program Files\Autodesk\AutoCAD 2020\acad.exe" ***/product*** ***ACAD***
/language ***"en-US"*** ***/nologo*** ***/t*** ***"C:\Datasets\AS322572-L AutoCAD Customization Boot Camp - Basic (No Experience Required)\C-size.dwt"*** ***/w*** ***"3D Basics"***

To Create a Desktop Shortcut

1. Copy the existing AutoCAD 2020 desktop shortcut.
2. Modify the properties of the copied desktop shortcut.
3. Add the command line switches you want to use.

or

1. Create a new shortcut on the Windows Desktop.
2. Specify the location of the AutoCAD executable.
3. Add the command line switches you want to use.

Exercise: E8 - Create a Desktop Shortcut

In this exercise, you will:

- Create a new AutoCAD 2020 shortcut
- Add command line switches to a shortcut

Starts on page 33 of the handouts.