NVDA Class One  
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# Introduction

NVDA is a free, open source, Windows screen reader from NV Access.

In this lesson, we'll discuss NVDA basics including adjusting speech parameters, NVDA cursors, reading commands, and more.

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# Launch NVDA

When NVDA is installed, it offers the option to create a Desktop shortcut and shortcut key.

If the Desktop shortcut is installed, launch NVDA with the keyboard accelerator CTRL-ALT-N.

If the Desktop shortcut wasn't created, open NVDA in the Windows Start Menu.

# NVDA Modifier Key

NVDA has default Modifier Keys.

* Desktop Layout: NUMPAD INSERT
* Laptop Layout: CAPS LOCK

Change the NVDA key in NVDA keyboard settings.

# Adjust Speech Rate and Parameters

increase or decrease NVDA speech rate with keyboard accelerators.

Adjust NVDA voice, rate, pitch, or volume with NVDA keyboard commands.

Adjust the speech rate:

* Increase the speech rate: CTRL-NVDA-UP ARROW
* Decrease the speech rate: CTRL-NVDA-DOWN ARROW

Adjust speech parameters:

* Desktop layout users: Press NVDA-CTRL and don’t release the keys.
* Laptop layout users: Press NVDA-SHIFT-CTRL and don’t release the keys
* While holding the keys, press RIGHT ARROW to choose a speech parameter:
  + Voice - Select a voice.
  + Rate - Adjust the speech rate.
  + Pitch - Adjust the voice pitch.
  + Volume - Adjust speech volume.
* Press UP and DOWN ARROW to configure a parameter value

Repeat these steps to configure each parameter and release all keys.

# NVDA Cursors

NVDA has several cursors. The cursors are referenced as "Review Modes.

NVDA Review modes are:

* System Carat or Edit Cursor - This is the default cursor. The System Carat accesses text documents, ribbons, menus, and other Windows display elements.
* Object Cursor - This cursor navigates and reviews objects. Objects are Windows controls: edit boxes, buttons, combo boxes, radio buttons, etc.
* Review Cursor - The Review cursor navigates any part of the display.
  + This cursor reviews text and objects on the screen that aren’t accessible to the System Carat.
  + By default, the Review Cursor follows the System Carat.
* Browse Cursor - This cursor is enabled when accessing web pages or HTML formatted email.

We'll discuss these cursors or "Modes" later.

The Review Cursor follows the System Carat. The Review Cursor has most NVDA reading commands.

Let's discuss the System Carat and Review Cursor.

## The System Carat

Windows text navigation commands read next and previous text passages.

Use NVDA to read current information.

The System Carat is the default Windows cursor.

System Carat Desktop reading commands include:

* Read the current line.
  + Desktop Layout: NVDA-UP ARROW.
  + Laptop Layout: NVDA-L.
* Read Selected Text.
  + Desktop Layout: NVDA-SHIFT-UP ARROW.
  + Laptop Layout: NVDA-SHIFT-S.
* Read Clipboard Text: NVDA-C.

NVDA has a "Say All" command. "Say All" Reads from the System Carat location to the end of a document.

* Desktop Layout: NVDA-DOWN ARROW.
* Laptop Layout: NVDA-A.
* Press SHIFT to stop and start speech.
* Press CTRL to silence speech.
  + The System Carat stops at the last echoed text.

To read display elements:

* Read the Title Bar: NVDA-T.
* Read the focused control: NVDA-TAB.
* Read the Status Bar.
  + Desktop Layout: NVDA-END.
  + Laptop Layout: NVDA-SHIFT-END.
* Read the focused Window: NVDA-B.
* Read the time and date: NVDA-F12.

## The Review Cursor

The Review Cursor can move anywhere on the display. By default, it follows the System Carat.

The Review Cursor moves independent of the System Carat but, when the System Carat moves, the Review Cursor returns to, and moves with, the System Carat.

This feature can be toggled off. I leave it enabled as the Review Cursor has excellent reading commands.

Read text and navigate the display with the Review Cursor near, or independent of, the System Carat:

* Read the focused character
  + Desktop Layout: NUMPAD 2.
  + Laptop Layout: NVDA-PERIOD.
* Read the focused word.
  + Desktop Layout: Numpad 5.
  + Laptop Layout: NUMPAD CTRL-PERIOD.
* Read the focused Line:
  + Desktop Layout: NUMPAD 8.
  + Laptop Layout: NUMPAD-SHIFT-PERIOD.

"Say All" Reads from the Review Cursor location to the end of a document or screen.

This Say All command is nice when text isn't accessible to the System Carat.

Say All commands include:

* Desktop Layout: NUMPAD PLUS.
* Laptop Layout: NVDA-SHIFT-A.
* Stop and Start speech: SHIFT.
* Silence speech: CTRL.
  + The Review Cursor stops at the last echoed text.
  + If the System Carat moves, the Review Cursor moves to that location.

Navigate text with Review Cursor commands:

* Move to the previous character
  + Desktop Layout: NUMPAD 1
  + Laptop Layout: NVDA-LEFT ARROW
* Move to the next character:
  + Desktop Layout: NUMPAD 3
  + Laptop Layout: NVDA-RIGHT ARROW
* Move to the previous word
  + Desktop Layout: NUMPAD 4
  + Laptop Layout: NVDA-CTRL-LEFT ARROW
* Move to the next word
  + Desktop Layout: NUMPAD 6
  + Laptop Layout: NUMPAD-CTRL-RIGHT ARROW
* Move to the top line
  + Desktop Layout: SHIFT-NUMPAD 7
  + Laptop Layout: NVDA-CTRL-HOME
* Move to the previous line
  + Desktop Layout: NUMPAD 7
  + Laptop Layout: NVDA-UP ARROW
* Move to the next line
  + Desktop Layout: NUMPAD-9
  + Laptop Layout: NVDA-DOWN ARROW
* Move to the start of a line
  + Desktop Layout: SHIFT-NUMPAD 1
  + Laptop Layout: NVDA-HOME
* Move to the end of a line
  + Desktop Layout: SHIFT-NUMPAD 3
  + Laptop Layout: NVDA-END
* Move to the previous page
  + Desktop Layout: NVDA-PAGE UP
  + Laptop Layout: NVDA-SHIFT-PAGE UP
* Move to the next page
  + Desktop Layout: NVDA-PAGE DOWN
  + Laptop Layout: NVDA-SHIFT-PAGE DOWN

Read the focused character font attributes with NVDA-SHIFT-F.

# NVDA Sleep Mode

NVDA can sleep in self-voicing applications or to temporarily disable speech output.

Toggle NVDA Sleep mode on and off with NVDA-SHIFT-S.

# NVDA Speech Mode

NVDA has three speech modes. Rotor through speech modes with the NVDA Speech mode keyboard accelerator: NVDA-S.

NVDA has three speech modes:

* Talk - The default speech echo. NVDA functions as expected
* Beeps - NVDA has no speech. NVDA beeps when it encounters a new line, word, paragraph, etc.
* Off - Speech is disabled

This is an easy keyboard command to accidentally press.

Experiment with this feature, so you aren’t lost if you accidentally press this command.

# NVDA Input Help

Use NVDA Input help to identify keyboard commands.

To use Input Help:

* Execute Input Help: CTRL-NUMBER ROW 1.
* Press a keystroke.
* NVDA reports the command action.

Press NVDA-NUMBER ROW 1 to toggle Input Help off.

# The NVDA Menu

All NVDA configurations and tools are in the NVDA Menu.

Open the NVDA Menu with NVDA-N.

Let’s explore some NVDA settings.

## NVDA Speech Settings

Open NVDA Speech Settings in the NVDA Menu or with an NVDA keyboard accelerator.

In the NVDA menu:

* Open the NVDA Menu: NVDA-N
* Activate the Preferences submenu.
* Activate “Settings."

The NVDA Settings dialog opens:

* A list of property sheets is on the left side of the dialog.
* Selected property sheet controls are on the right.
* Select the “Speech” property sheet.

Directly open the Speech Settings property sheet from anywhere in Windows with an NVDA keyboard accelerator: CTRL-NVDA-V.

Configure the following:

* Synthesizer - a read-only edit box shows the current synthesizer.
* Change - This button opens a dialog through which a synthesizer is selected.
* Voice - Select a voice in this combo box.
* Rate - Select a speech rate with this slider bar.
* Rate Boost - Check this checkbox to significantly increase the speech rate.
  + This option is dependent on synthesizer support.
* Pitch - Select a pitch with this slider bar.
* Volume - Set NVDA volume with this slider bar.
* Automatic Language Switching - When this checkbox is checked, NVDA acknowledges languages.
  + For example, NVDA switches between English and Spanish according to document markup.
  + This option is dependent on synthesizer support.
* Punctuation/Symbol Level - Select a punctuation level in this combo box.
  + None
  + Some
  + Most
  + All
* Trust voice's language when processing characters and symbols - This checkbox uses the synthesizers character and symbol pronunciation.
  + Uncheck this checkbox and NVDA switches to the global language setting.
  + This option is available if a synthesizer mispronounces characters or symbols.
* Include Unicode Consortium data (including emoji) when processing characters and symbols - When this checkbox is checked, NVDA incorporates additional character pronunciation dictionaries.
* Delay descriptions for characters on cursor movement - Check this checkbox to add a delay to character echo when the cursor moves.
* Capital pitch change - Select a percentage by which the pitch changes when NVDA echoes a capital letter.
* Say "Cap" before capitals - NVDA says "Cap" before echoing a capital letter while navigating characters.
* Beep for capitals - NVDA beeps before echoing a capital letter while navigating characters.

Activate the OK button to save the changes and exit the dialog.

Activate the Cancel button to cancel the changes and exit the dialog.

## Select a Synthesizer

Open the "Select Synthesizer" dialog to select a synthesizer.

* Open the NVDA Menu.
* Activate the Preferences submenu.
* Activate “Settings."

The NVDA Settings dialog opens:

* A list of property sheets is on the left side of the dialog.
* Selected property sheet controls are on the right.
* Select the “Speech” property sheet.
* Select and activate the "Change button.

The Select Synthesizer dialog opens.

NVDA keyboard accelerator: CTRL-NVDA-S.

Select a synthesizer in the combo box.

Activate the OK button to save the changes and exit the dialog.

Activate the Cancel button to cancel the changes and exit the dialog.

## NVDA General Settings

Open NVDA General Settings in the NVDA Menu or with an NVDA keyboard accelerator.

In the NVDA menu:

* Open the NVDA Menu.
* Activate the Preferences submenu.
* And activate “Settings."

The NVDA Settings dialog opens:

* A list of property sheets is on the left side of the dialog.
* Selected property sheet controls are on the right.
* Select the “General” property sheet.

Directly open the General Settings property sheet from anywhere in Windows with an NVDA keyboard accelerator: CTRL-NVDA-G.

Configure the following:

* Language - Select a synthesizer language In this combo box.
* Save Configuration on Exit - When this checkbox is checked, configuration changes are saved when NVDA exits.
* Show exit options when exiting NVDA - When this checkbox is checked, NVDA shows a shutdown dialog. The dialog has a combo box with exit options.
* Play sounds when starting or exiting NVDA - When this checkbox is checked, NVDA plays sounds when NVDA starts and exits.
* Logging level - Use this combo box to set the level at which NVDA logs performance information
  + This is an advanced developer feature.
  + Combo box options are:
    - Info
    - Debug warning
    - Input/output
    - Debug
* Start NVDA after I sign in - When this checkbox is checked, NVDA automatically starts after login.
* Use NVDA during sign-in (requires administrative privileges) - When this checkbox is checked, NVDA starts at the sign-in page.
* Use currently saved settings during sign-in and on secure screens (requires administrative privileges) - Current saved settings are used at the sign-in screen.
  + This button opens a confirmation dialog.
  + After accepting the change, accept the administrative alert.
* Automatically check for updates to NVDA - When this checkbox is checked, NVDA checks for updates on launch and alerts if one is available.
* Notify for pending update on startup - When this checkbox is checked, NVDA opens a reminder screen of pending updates on launch.
* Allow NV Access to gather NVDA usage statistics - When this checkbox is checked, NV Access gathers anonymous data about NVDA.

Activate the OK button to save the changes and exit the dialog.

Activate the Cancel button to cancel the changes and exit the dialog.

## NVDA Keyboard Settings

Open NVDA Keyboard Settings in the NVDA Menu or with an NVDA keyboard accelerator.

In the NVDA menu:

* Open the NVDA Menu.
* Activate the Preferences submenu.
* Activate “Settings."

The NVDA Settings dialog opens:

* A list of property sheets is on the left side of the dialog.
* Selected property sheet controls are on the right.
* Select the “Keyboard” property sheet.

Directly open the General Settings property sheet from anywhere in Windows with an NVDA keyboard accelerator: CTRL-NVDA-K

Configure the following:

* Keyboard layout - Select an NVDA keyboard layout in this combo box:
  + Desktop
  + Laptop
* Select an NVDA Modifier Keys:
  + This is a set of checkboxes.
  + Check one or more modifier key:
    - Caps Lock
    - Numpad Insert
    - Insert (The extended or six-pack insert)

The remaining controls are checkboxes:

* Speak Typed Characters - As you type, each character is echoed.
* Speak Typed Words - As you type, each word is echoed.
* Speech interrupt for typed characters - Speech is interrupted when you strike a key.
* Speech interrupt for ENTER - Speech is interrupted when you strike ENTER
* Allow Skim Reading in Say All - Text navigation commands don't interrupt Say All. The commands skip forward and backward in the text allowing skim reading.
* Beep if typing lower case letters when Caps Lock is on - When Caps Lock is enabled, NVDA alerts when a lower-case character is typed
* Speak Command Keys - CTRL, ALT and other command keys echo when pressed.
* Play sound for spelling errors while typing - NVDA alerts to spelling errors
* Handle keys from other applications - Keyboard commands from on-screen keyboards and other software are processed by NVDA.

Activate the OK button to save the changes and exit the dialog.

Activate the Cancel button to cancel the changes and exit the dialog.

## NVDA Keyboard Echo Commands

Select a Keyboard Echo with NVDA Keyboard accelerators.

* Speak typed characters: NVDA-NUMPAD 2
* Speak typed words: NVDA-NUMPAD 3
* Speak Command keys: NVDA-NUMPAD 4
* Enable mouse tracking: NVDA-M
  + NVDA echoes text under the physical mouse

# Exit NVDA

Exit NVDA with a keyboard command: NVDA-Q.

A dialog opens. Select a combo box option:

* Exit
* Restart
* Restart with add-ons disabled
* Restart with debug logging disabled

Activate the OK button to take the selected action.

Configure NVDA to directly shut down in NVDA General settings.

# Exercises

1. Launch and Exit NVDA.
2. Adjust the speech rate.
3. Adjust speech parameters.
4. Navigate text with Windows text navigation commands.
5. Read the current line with the System Carat.
6. Read a document with the System Carat "Say All" command.
7. Read the current letter, word, and line with the Review Cursor.
8. Read a document or information dialog with the Review Cursor "Say All."
9. Rotor through the Speech Modes.
10. Navigate and review the Speech, General, and Keyboard property sheets.

--END—