How Does a Screen Reader Work?

A screen reader is a software program that allows a blind person to read text on the screen and identify some graphics like buttons on a toolbar or icons on the Desktop. A person hears the information from a speech synthesizer or the computer's sound card.

A screen reader also allows a person to control the computer using the keyboard rather than the mouse. Many of the keyboard commands that a blind person uses are the same keyboard commands a sighted person can use on their PC. For example, open your File menu by pressing Alt-F. To close the File menu, press the Alt key again.

A blind person also uses special keyboard commands that were created by the screen reader. For example, most screen readers offer a keystroke to read the information in the title bar or in the status bar.

Some people use a refreshable Braille display rather than listening to the information. A Braille display is not like a computer screen. Usually, it is placed near or under the keyboard. The screen reader sends the information on the screen to the Braille display. Then, a person places his or her fingers on the display and reads the information in Braille as it appears. Braille displays are helpful to people who are deafblind and to people who work at jobs that require them to talk to customers on the phone.

Here's a more technical explanation of how a screen reader works.

A screen reader is a memory resident program that uses a text to speech synthesizer to relay information about what is appearing on the screen. Currently, most Windows screen readers use system hooks to gain access to keyboard input and menu and dialog box messages. It will call the Windows API to determine some information about the current status. It monitors some API functions to catch changes to the cursor, focus, and other elements on the screen. Finally, it creates an off-screen model that contains information about each point on the screen (e.g. character, font, font size, class, etc.). The user can then use a keystroke to access this information when he or she wants to find out about an element on the screen (e.g. the current title in the title bar).

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