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Temporary Screen Timeout Extension Based on User Intentions

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Abstract:

This publication describes techniques to provide a temporary screen timeout extension for displays on electronic devices. The timeout extension is prompted based on a Screen Manager detecting activity that indicates a user may desire to keep the screen active. The Screen Manager may give the user an option to extend the screen timeout past the default timeout setting, or it may extend the timeout automatically. The default timeout setting does not change when the temporary screen timeout extension is chosen. The extension allows the user to continue to use the device periodically without needing regular inputs to the device in order to keep the screen on and unlocked. The temporary timeout extension will cause less disruption to the user when using applications on the device that do not require the user to constantly interact with the device (*e.g.*, regularly provide input to the device keeping the screen active).

Keywords:

smartphone, tablet, timeout, display, screen, dim, lock, Heads-Up Notification (HUN), user input, user interface, settings, extension, notification, preferences, power saving mode

Background:

Many electronic devices equipped with display screens include a Screen Manager that will lock the device and shut off the screen after a certain amount of time has passed. The Screen Manager uses a timeout setting to dim and then turn off the screen of the device if a user has not provided input to the device within a certain time period. Possible inputs include touching the

screen, looking at the screen (attention recognition), or pushing a physical button on the device. Other sensor inputs on the device can also be used to reset the timeout including inputs from the proximity sensor, accelerometers, camera, and presence and gesture detectors. The timer commences after the last input is registered by the device and determines when the device shuts off responsive to the timer (timeout) expiring. This timeout is essential, as it saves battery power or provides security by locking the device until an authentication method (*e.g.*, facial recognition, fingerprint scan, pin code) is employed by the user to unlock the device.

On many occasions, when using an electronic device, a user will utilize an application on the device as a reference for some activity the user is doing. Examples may include following a recipe while the user is cooking, following instructions for playing a musical instrument, or playing a board game. The user may be engaging in this activity for a period of time that extends past the timeout setting. In this case, the user may opt to set a longer screen timeout as a default, or the user may provide input to the device each time the screen dims, keeping the screen from shutting off before the user is finished using the device.

Description:

This publication describes techniques to provide a temporary screen timeout extension for displays on electronic devices. The timeout extension is prompted based on a Screen Manager detecting activity that indicates a user may desire to keep the screen active. The user may be given an option by the Screen Manager to extend the screen timeout past the default timeout setting. In other aspects, the Screen Manager may extend the default timeout without user input. The default setting of the timeout does not change when the temporary screen timeout extension is chosen. The extension allows the user to continue to use the device periodically without regular inputs to

the device in order to keep the screen on and unlocked. The temporary timeout extension will cause less disruption to the user when using applications on the device that do not require the user to constantly interact with the device (*e.g.*, constantly provide input to the device keeping the screen active).

Electronic devices offering the temporary timeout extension include, but are not limited to, smartphones and tablets. These electronic devices include at least one processor having logic for executing instructions, a display screen, and a computer-readable medium (CRM). The CRM may include any suitable memory or storage device such as random-access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), non-volatile RAM (NVRAM), read-only memory (ROM), or Flash memory. The CRM includes a Screen Manager. The Screen Manager may be part of an operating system executing on the computing device. In other aspects, the Screen Manager may be a separate component (*e.g.*, an application) executing within an application environment or "framework" provided by the operating system.

The electronic device performs operations under the direction of the Screen Manager to monitor a timer, and when the timer expires, to initiate a timeout that shuts off the screen of the device. In some aspects, prior to shutting off the screen, the Screen Manager will dim the screen briefly, alerting the user that the timer is about to expire. The timer resets if the device receives input from the user before the timer expires.

The Screen Manager may consider the context of the user's use of the device when the user un-dims the screen several times in a row or when other sensor inputs suggest the device is being used by the user. Some examples include the user using a photo-viewing application or listening to a video (*e.g.*, listening to a video while driving) as opposed to viewing the video. These actions

together may further indicate that the user desires to keep the screen active for some period without providing more inputs to the device.

When the Screen Manager detects such user actions, the Screen Manager initiates a user interface (*e.g.*, a Heads-Up Notification window (HUN), a bottom half-sheet) to display a silent notification with short-term contextual solutions including multiple options (*e.g.*, 30 seconds, 5 minutes, 10 minutes) for extending the screen timeout for the screen of the electronic device. The user interface may or may not be accompanied by an audio or vibrating notification depending on the circumstances of the user (*e.g.*, driving, vision impairments, listening to a video as opposed to viewing a video). An example of a user interface is illustrated in Figure 1. The user may elect to extend the timeout for a certain period, or the user may ignore the timeout extension option, in which case no temporary extension will be granted. In other aspects, the user interface may notify the user that the screen timeout has been extended for a time period. The user may manually shut off the screen at any time before the temporary extension expires.

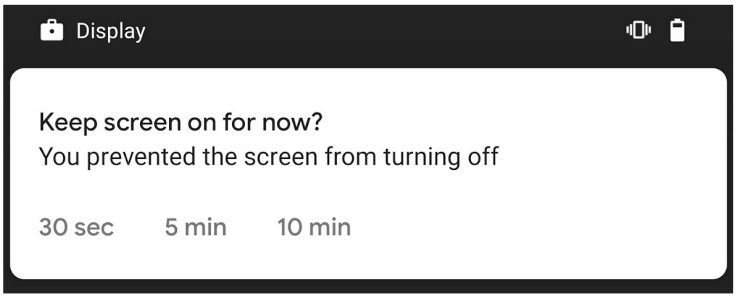

Figure 1

For example, John has a smartphone with the default screen timeout set to 30 seconds. He keeps his timeout short for security reasons and would prefer not to change the default timeout in the settings for fear of forgetting to change it back. John uses his smartphone to look up a recipe for his favorite meal. He becomes involved in gathering and mixing ingredients, only occasionally looking at the recipe displayed on his smartphone for reference as he progresses through the steps

of the recipe. While he is cooking, John's smartphone screen dims twice in a row, and John reactivates the screen each time with a touch. On his second touch, a window pops up at the bottom of the screen, asking John if he would like to keep the screen on for another five or ten minutes. John decides that his meal preparation may take another ten minutes, so he selects the ten-minute option. The screen stays on without further input from John while he finishes cooking. John manually locks his screen eight minutes after he chose the temporary extension, knowing that his default timeout has remained at 30 seconds.

A Screen Manager that automatically detects the desire of a user to keep a device screen active provides the user a smoother and less-frustrating experience, as the user may not want to constantly provide input to the device.

References:

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[2] Patent Publication: US20160110051A1. System and Method to Control a Touchscreen User Interface. Priority Date: March 27, 2014.

[3] Patent Publication: US20120137217A1. System and Method for Adjusting Inactivity Timeout Settings on a Display Device. Priority Date: November 29, 2010.