

Dell Chromebook 3400

Service Manual



Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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Working on your computer

Safety instructions

Prerequisites

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.

About this task

 **NOTE:** Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the [Regulatory Compliance Homepage](#)

 **CAUTION:** Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

 **CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

 **CAUTION:** When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

 **NOTE:** The color of your computer and certain components may appear differently than shown in this document.

Storing Chromebooks for long term - best practices

Prior to long term (Summer) storage:

1. Update to the latest version of the Chrome OS and charge your Chromebooks so that the battery is at least 80% full.
 - a. This ensures that even when the battery discharges while unplugged over the summer, it will not fully run out of power.
2. Connect the device to a charger and then turn it on.
3. Hold Refresh  and Power  keys at the same time.
4. While holding these keys, remove the power cable from the device and then release the keys. The device should shut down and remain off.
5. Attempt to power the unit on, by pressing the power button. If the unit does not power on, you have completed the steps and can safely store the system. If the unit powers on, you should repeat steps 2 to 4.

Upon redeploying:

1. Connect the Chromebooks to a charger and a power source, which will get them out of the battery disconnect state. Power up your device.
2. Connect your Chromebooks to WiFi and update them to the latest Chrome OS release.
 - a. This can take time, as multiple Chrome OS versions may have been released since the last time the device was updated.

Before working inside your computer

About this task

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

Steps

1. Ensure that you follow the [Safety Instruction](#).
2. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
3. Turn off your computer.
4. Disconnect all network cables from the computer.

 **CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

5. Disconnect your computer and all attached devices from their electrical outlets.
6. Press and hold the power button while the computer is unplugged to ground the system board.

 **NOTE:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

After working inside your computer

About this task

After you complete any replacement procedure, ensure that you connect any external devices, cards, and cables before turning on your computer.

Steps

1. Connect any telephone or network cables to your computer.

 **CAUTION:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.

2. Connect your computer and all attached devices to their electrical outlets.
3. Turn on your computer.
4. If required, verify that the computer works correctly by running **ePSA diagnostics**.

Technology and components

NOTE: Instructions provided in this section are applicable on computers shipped with Windows 10 operating system. Windows 10 is factory-installed with this computer.

Topics:

- [USB features](#)
- [Keyboard](#)
- [Touchpad](#)
- [Bluetooth](#)

USB features

Universal Serial Bus, or USB, was introduced in 1996. It dramatically simplified the connection between host computers and peripheral devices like mice, keyboards, external drives, and printers.

Let's take a quick look on the USB evolution referencing to the table below.

Table 1. USB evolution

Type	Data Transfer Rate	Category	Introduction Year
USB 2.0	480 Mbps	High Speed	2000
USB 3.0/USB 3.1 Gen 1	5 Gbps	Super Speed	2010
USB 3.1 Gen 2	10 Gbps	Super Speed	2013

USB 3.0/USB 3.1 Gen 1 (SuperSpeed USB)

For years, the USB 2.0 has been firmly entrenched as the de facto interface standard in the PC world with about 6 billion devices sold, and yet the need for more speed grows by ever faster computing hardware and ever greater bandwidth demands. The USB 3.0/USB 3.1 Gen 1 finally has the answer to the consumers' demands with a theoretically 10 times faster than its predecessor. In a nutshell, USB 3.1 Gen 1 features are as follows:

- Higher transfer rates (up to 5 Gbps)
- Increased maximum bus power and increased device current draw to better accommodate power-hungry devices
- New power management features
- Full-duplex data transfers and support for new transfer types
- Backward USB 2.0 compatibility
- New connectors and cable

The topics below cover some of the most commonly asked questions regarding USB 3.0/USB 3.1 Gen 1.

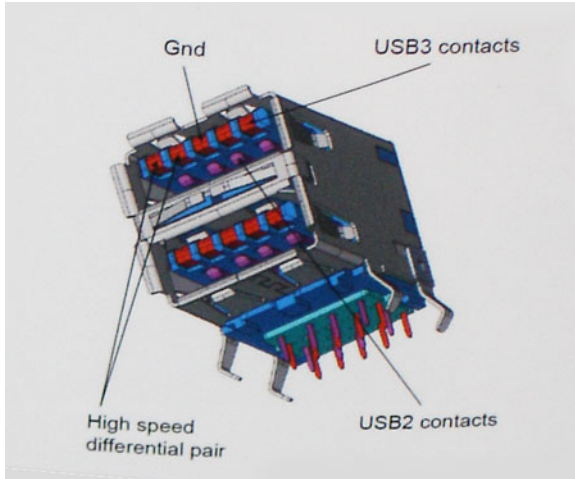


Speed

Currently, there are 3 speed modes defined by the latest USB 3.0/USB 3.1 Gen 1 specification. They are Super-Speed, Hi-Speed and Full-Speed. The new SuperSpeed mode has a transfer rate of 4.8Gbps. While the specification retains Hi-Speed, and Full-Speed USB mode, commonly known as USB 2.0 and 1.1 respectively, the slower modes still operate at 480Mbps and 12Mbps respectively and are kept to maintain backward compatibility.

USB 3.0/USB 3.1 Gen 1 achieves the much higher performance by the technical changes below:

- An additional physical bus that is added in parallel with the existing USB 2.0 bus (refer to the picture below).
- USB 2.0 previously had four wires (power, ground, and a pair for differential data); USB 3.0/USB 3.1 Gen 1 adds four more for two pairs of differential signals (receive and transmit) for a combined total of eight connections in the connectors and cabling.
- USB 3.0/USB 3.1 Gen 1 utilizes the bidirectional data interface, rather than USB 2.0's half-duplex arrangement. This gives a 10-fold increase in theoretical bandwidth.



With today's ever increasing demands placed on data transfers with high-definition video content, terabyte storage devices, high megapixel count digital cameras etc., USB 2.0 may not be fast enough. Furthermore, no USB 2.0 connection could ever come close to the 480Mbps theoretical maximum throughput, making data transfer at around 320Mbps (40MB/s) — the actual real-world maximum. Similarly, USB 3.0/USB 3.1 Gen 1 connections will never achieve 4.8Gbps. We will likely see a real-world maximum rate of 400MB/s with overheads. At this speed, USB 3.0/USB 3.1 Gen 1 is a 10x improvement over USB 2.0.

Applications

USB 3.0/USB 3.1 Gen 1 opens up the laneways and provides more headroom for devices to deliver a better overall experience. Where USB video was barely tolerable previously (both from a maximum resolution, latency, and video compression perspective), it's easy to imagine that with 5-10 times the bandwidth available, USB video solutions should work that much better. Single-link DVI requires almost 2Gbps throughput. Where 480Mbps was limiting, 5Gbps is more than promising. With its promised 4.8Gbps speed, the standard will find its way into some products that previously weren't USB territory, like external RAID storage systems.

Listed below are some of the available SuperSpeed USB 3.0/USB 3.1 Gen 1 products:

- External Desktop USB 3.0/USB 3.1 Gen 1 Hard Drives
- Portable USB 3.0/USB 3.1 Gen 1 Hard Drives
- USB 3.0/USB 3.1 Gen 1 Drive Docks & Adapters
- USB 3.0/USB 3.1 Gen 1 Flash Drives & Readers
- USB 3.0/USB 3.1 Gen 1 Solid-state Drives
- USB 3.0/USB 3.1 Gen 1 RAIDs
- Optical Media Drives
- Multimedia Devices
- Networking
- USB 3.0/USB 3.1 Gen 1 Adapter Cards & Hubs

Compatibility

The good news is that USB 3.0/USB 3.1 Gen 1 has been carefully planned from the start to peacefully co-exist with USB 2.0. First of all, while USB 3.0/USB 3.1 Gen 1 specifies new physical connections and thus new cables to take advantage of the higher speed capability of the new protocol, the connector itself remains the same rectangular shape with the four USB 2.0 contacts in the exact same location as before. Five new connections to carry receive and transmitted data independently are present on USB 3.0/USB 3.1 Gen 1 cables and only come into contact when connected to a proper SuperSpeed USB connection.

Windows 10 will be bringing native support for USB 3.1 Gen 1 controllers. This is in contrast to previous versions of Windows, which continue to require separate drivers for USB 3.0/USB 3.1 Gen 1 controllers.

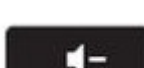
Keyboard

Dell keyboards have a few extra features to help you browse the web effortlessly and efficiently. The keyboard contains a dedicated search key and a new row of web shortcut keys. A standard USB Windows keyboard can also be used with the Chromebook, using the same keyboard shortcuts. The image below shows the keyboard layout.

Keyboard keys function

The Chrome device keyboard is designed to help you get to the things you need the most. The table below is an overview of the special keys on the top row of the keyboard:

Table 2. Special keys

Special keys	
	Go to the previous page in browser history
	Go to the next page in browser history
	Reload current page
	Enter Immersive mode, which hides the tabs and launcher
	Enter Overview mode, which shows all windows
	Decrease screen brightness
	Increase screen brightness
	Mute
	Decrease the volume
	Increase the volume
	Search applications and the web at the same time. On a Chromebook, this key is on the side, where the Caps Lock key is normally located.

Keyboard shortcut keys

Table 3. Shortcut keys

Shortcut keys	
Function	Combination keys
Page up	Press Alt and the up arrow

Shortcut keys

Page down	Press Alt and the down arrow
Home	Press Ctrl+Alt, and the up arrow
End	Press, Ctrl+Alt and the down arrow
Delete	Press Alt+Backspace
Toggle the bookmark bar	Ctrl+Shift+B
Search current webpage	Ctrl+F
Open a new tab	Ctrl+T
Open a new window	Ctrl+N
Open the link you clicked in a new background tab	Press Alt and click a link
Switch to next tab	Ctrl+Tab
Sign out of Google Account	Ctrl+Shift+Q
Close current tab	Ctrl+W

To see more shortcuts, simply press Ctrl+Alt+?. To open the keyboard viewer on your screen.

Touchpad

This page contains information for Dell touchpad gestures.

The following table lists some gestures and actions supported by the Chromebook touchpad:

Table 4. Touch pad gestures

Touchpad gestures

Gestures	Explanation
	Simply move your finger across the touchpad.
	Press down on the lower half of the touchpad. Since tap-to-click is enabled by default, you can quickly tap the touchpad to click.
	Click the touchpad with two fingers.

Touchpad gestures



Place two fingers on the touchpad and move them up and down to scroll vertically, left and right to scroll horizontally. If you have Australian scrolling enabled, move two fingers up to scroll down. (It works in the same way as say, your smartphone or tablet.) If you have multiple browser tabs open, you can also swipe left and right with three fingers to quickly move between tabs.

Swipe

Quickly move two fingers left or right to go backward or forward on web pages or while using apps.



Click the item you want to move with one finger. With a second finger, move the item. Release both fingers to drop the item at its new location.

Bluetooth

This section outlines the instruction to pair a bluetooth device with your Chrome devices.

Bluetooth technology lets you connect devices wirelessly over short distances. To use the Bluetooth accessories with your Chromebook, first check if your Chromebook supports Bluetooth. You will then need to pair it with the accessory.

To see if you can use the Bluetooth accessories with your Chromebook, click the status area in the lower right corner, where your account

picture appears. If you see the Bluetooth icon  or  in the menu, your Chromebook supports Bluetooth. If you do not see either of these icons, your Chromebook does not support Bluetooth. If your Chromebook supports Bluetooth, it can connect to a wide range of the Bluetooth accessories, including the following:

- Keyboards
- Mice
- Speakers
- Headphones
- Headsets (audio only)

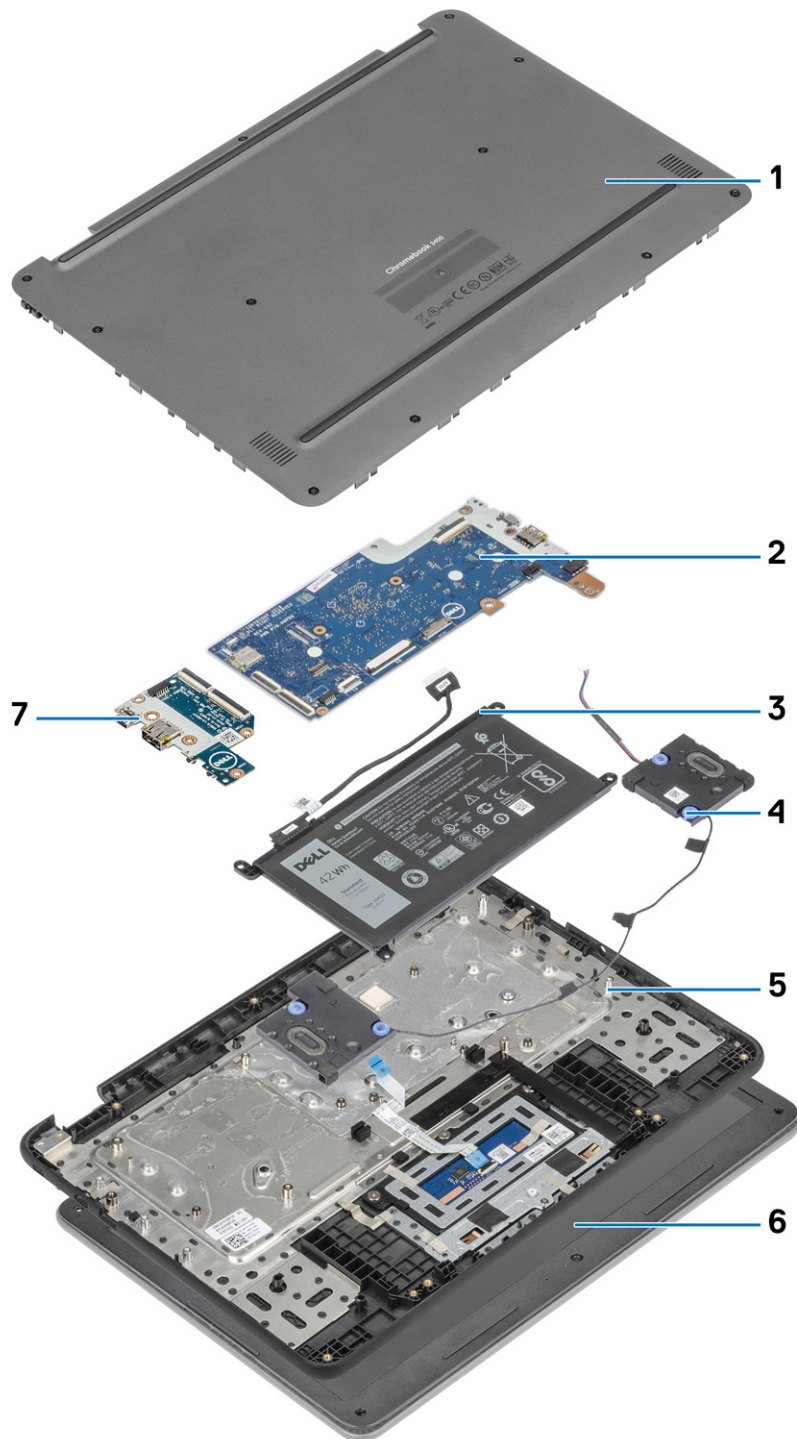
To connect a Bluetooth device with your Chromebook, you need to pair them. Here is how:

1. Sign in to your Chromebook.
2. Click the status area in the lower-right corner, where your account picture appears.
3. Select your Bluetooth status in the menu that appears.
4. If Bluetooth is disconnected, click the disconnected icon.  or click Enable Bluetooth in the menu. Your Chromebook will automatically begin scanning for available Bluetooth devices.
5. Pick the device you want to add from the list of available Bluetooth devices and click Connect.
6. Follow the instructions on the screen to connect your Bluetooth device.
 - If you are connecting a mouse, no PIN is normally required. If you are prompted for a PIN, enter the PIN for your mouse using your Chrome device's keyboard.
 - If you are connecting a keyboard, enter the randomly generated PIN on the keyboard you wish to pair and press Enter.

To confirm that your Bluetooth device is connected, check the Bluetooth status. You should see your device listed there.

NOTE: Just got your Chromebook or Chromebox? If you are turning on your chrome device for the first time and you have a Bluetooth device nearby that is also turned on, your chrome device may automatically detect the device and show you steps to pair it. You will see these instructions only if your chrome device does not already have a similar device connected or its functionality is not built in, like a keyboard or trackpad.

Major components of your system



- 1. Base cover
- 2. System board

3. Battery
4. Speaker
5. Palmrest assembly
6. Display assembly
7. Input and output board

 **NOTE:** Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

Removing and Installing

microSD card

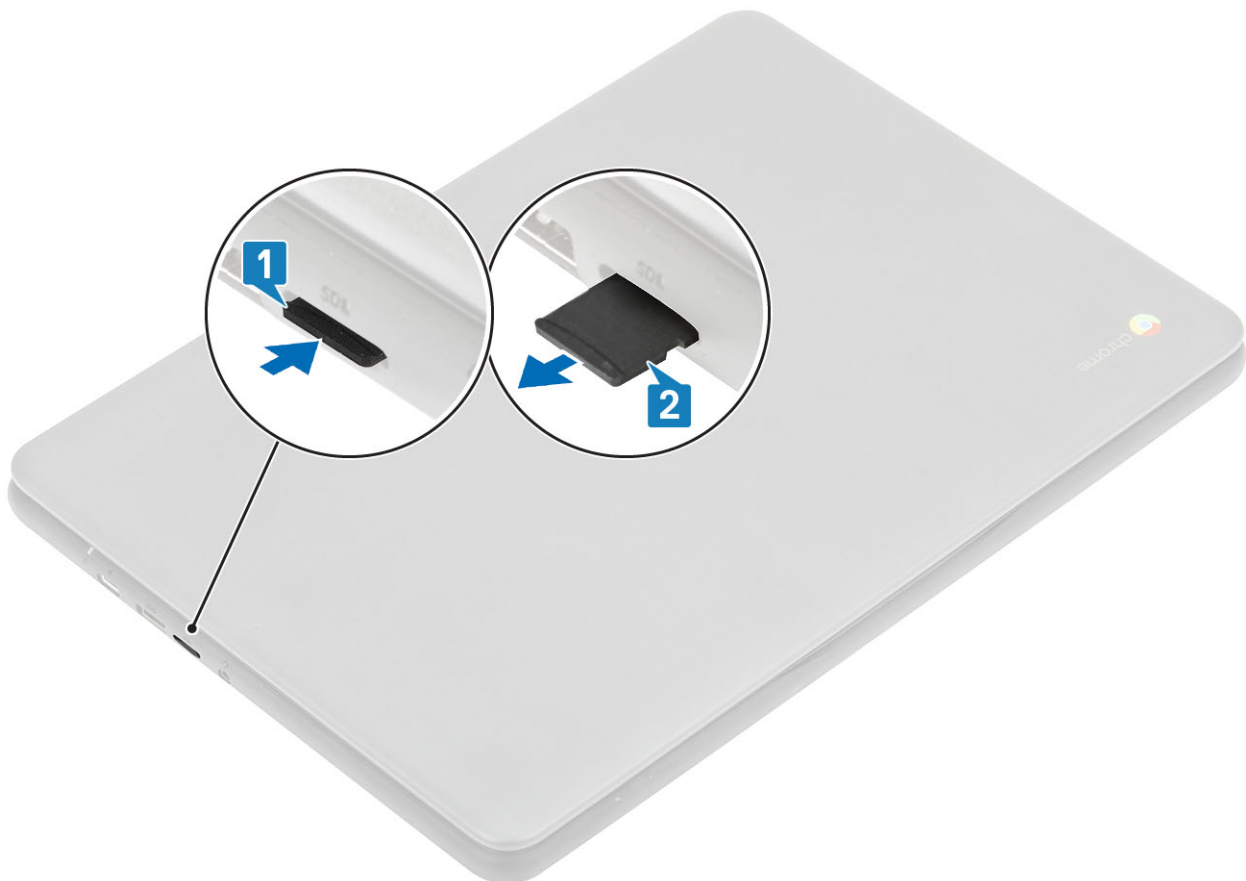
Removing microSD card

Prerequisites

Follow the procedure in [before working inside your computer](#).

Steps

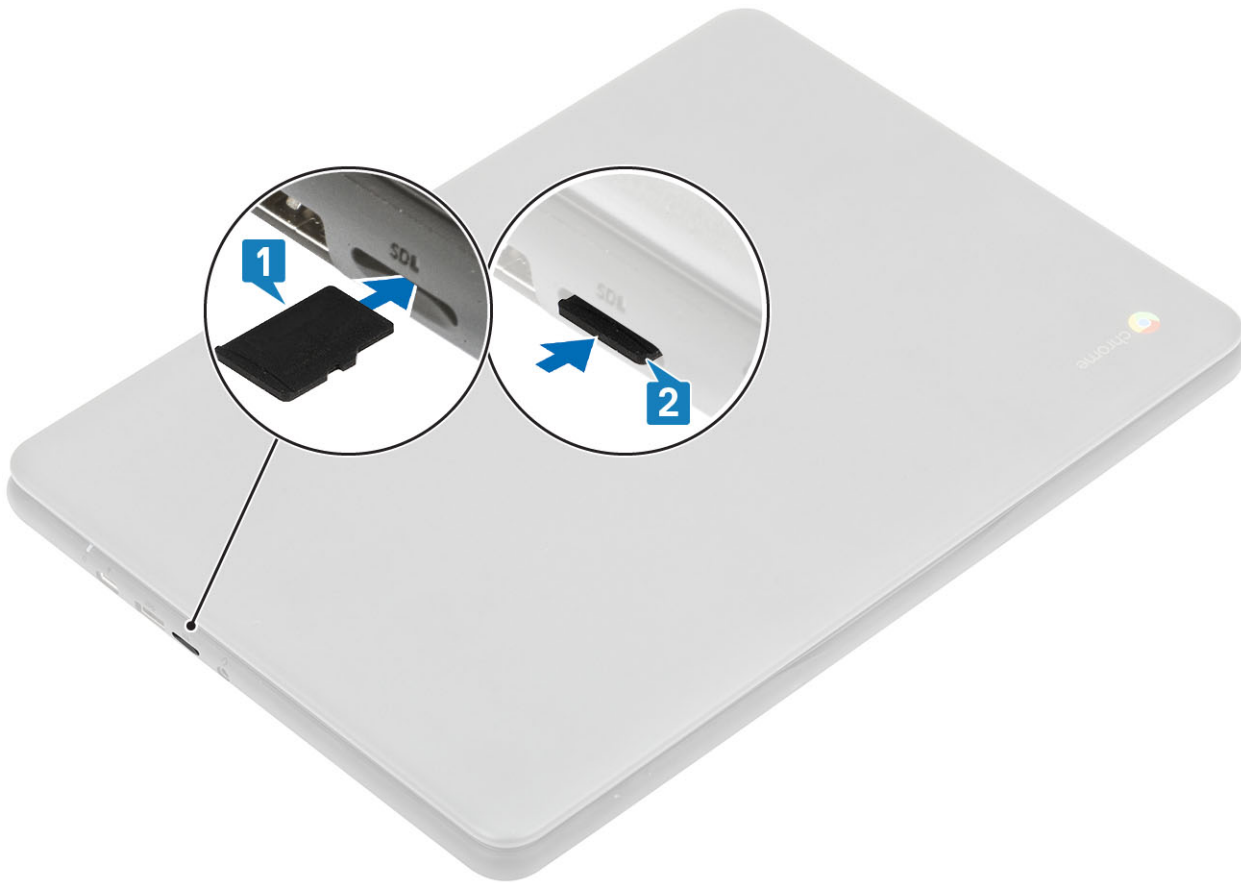
1. Press the microSD card to release it from the computer [1].
2. Remove the microSD card from the computer [2].



Installing microSD card

Steps

Slide the SD card into its slot until it clicks into place [1, 2].



Next steps

Follow the procedure in [after working inside your computer](#).

Base cover

Removing the base cover

Prerequisites

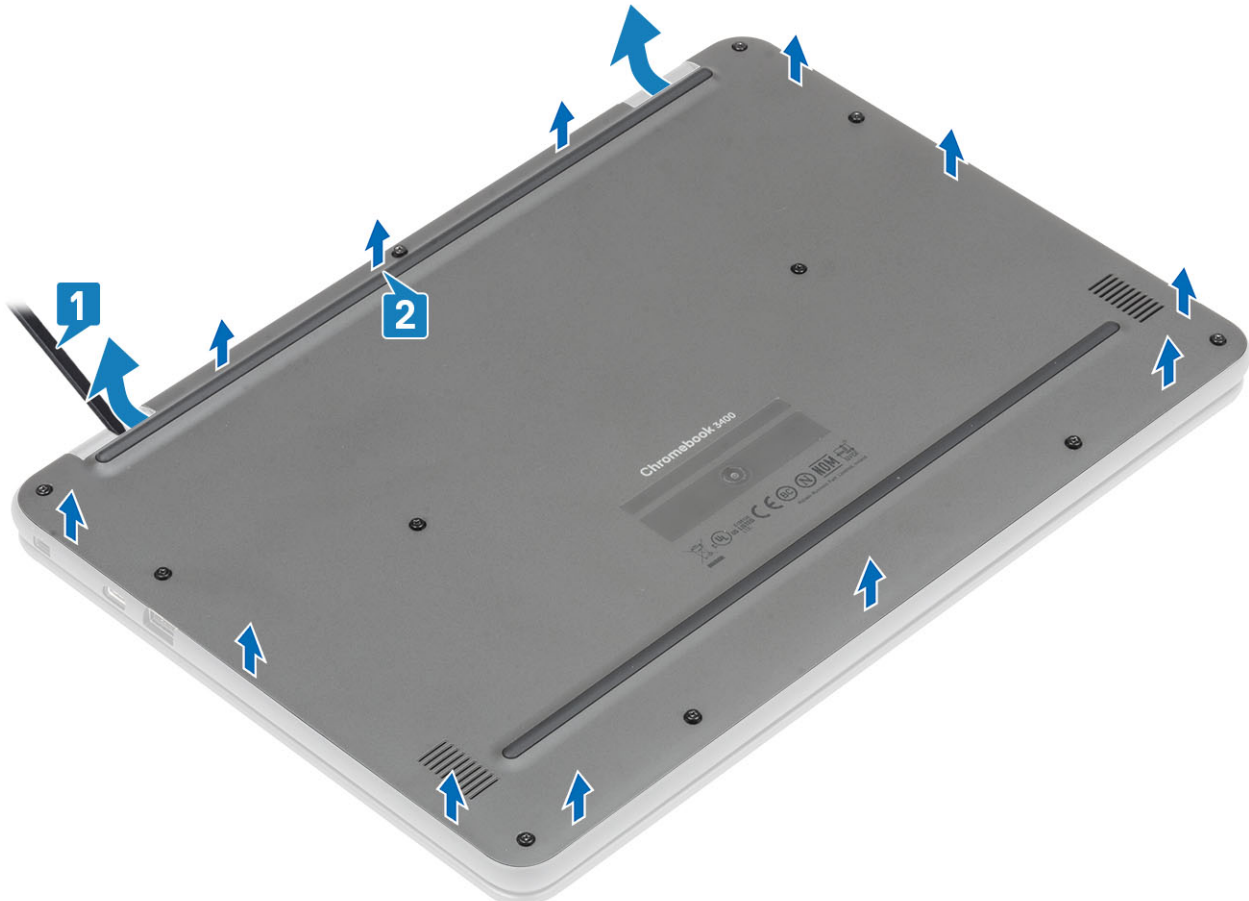
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).

Steps

1. Loosen the 11 captive screws that secure the base cover to the computer.



2. Pry the base cover from the edge using a plastic scribe [1, 2].



NOTE: While removing the base cover, on-site technicians must take care to remove the base cover carefully. There are prying recess points next to the left and right hinges which ease the disassembly procedure. With the help of a plastic scribe, pry open from the upper left side of the base cover, continue working your way around the left and right side of the base cover, then remove the base cover from the system.

3. Lift the base cover from the computer.



Installing the base cover

Steps

1. Align the base cover on the computer and press the edges of the cover until it clicks into place.



2. Tighten the 11 captive screws to secure the base cover to the computer.



Next steps

1. Install the [microSD card](#).
2. Follow the procedure in [after working inside your computer](#).

Battery

Lithium-ion battery precautions

⚠ CAUTION:

- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any kind to pry on or against the battery.
- Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.
- If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.
- Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.

Removing the battery

Prerequisites

1. Follow the procedure in [before working inside your computer](#)
2. Remove the [microSD card](#).
3. Remove the [base cover](#).

CAUTION: During a service incident, it is possible that a component of the system board could become damaged if the battery is disconnected from the system board prior to initiating the battery cut-off.

Steps

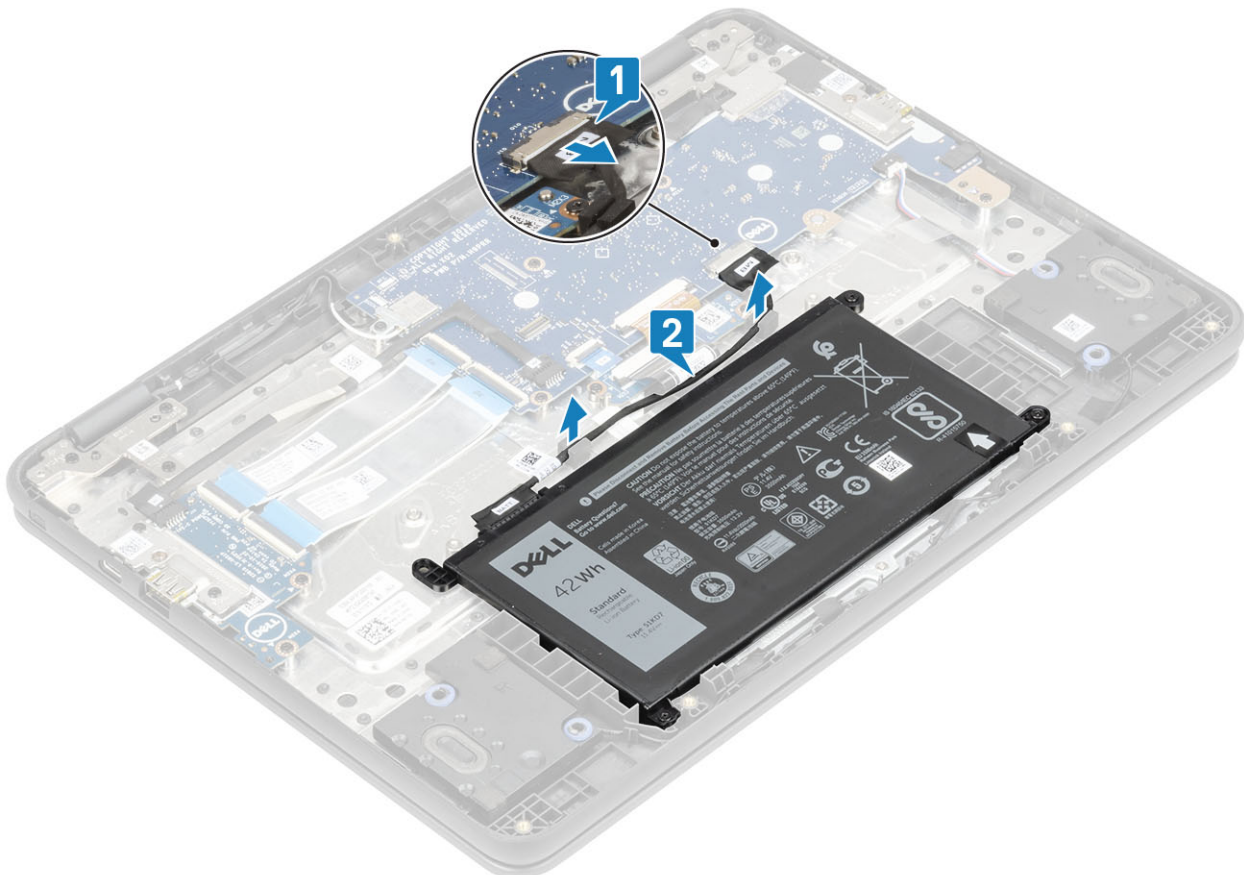
1. Connect the device to the AC adaptor and then turn it on.



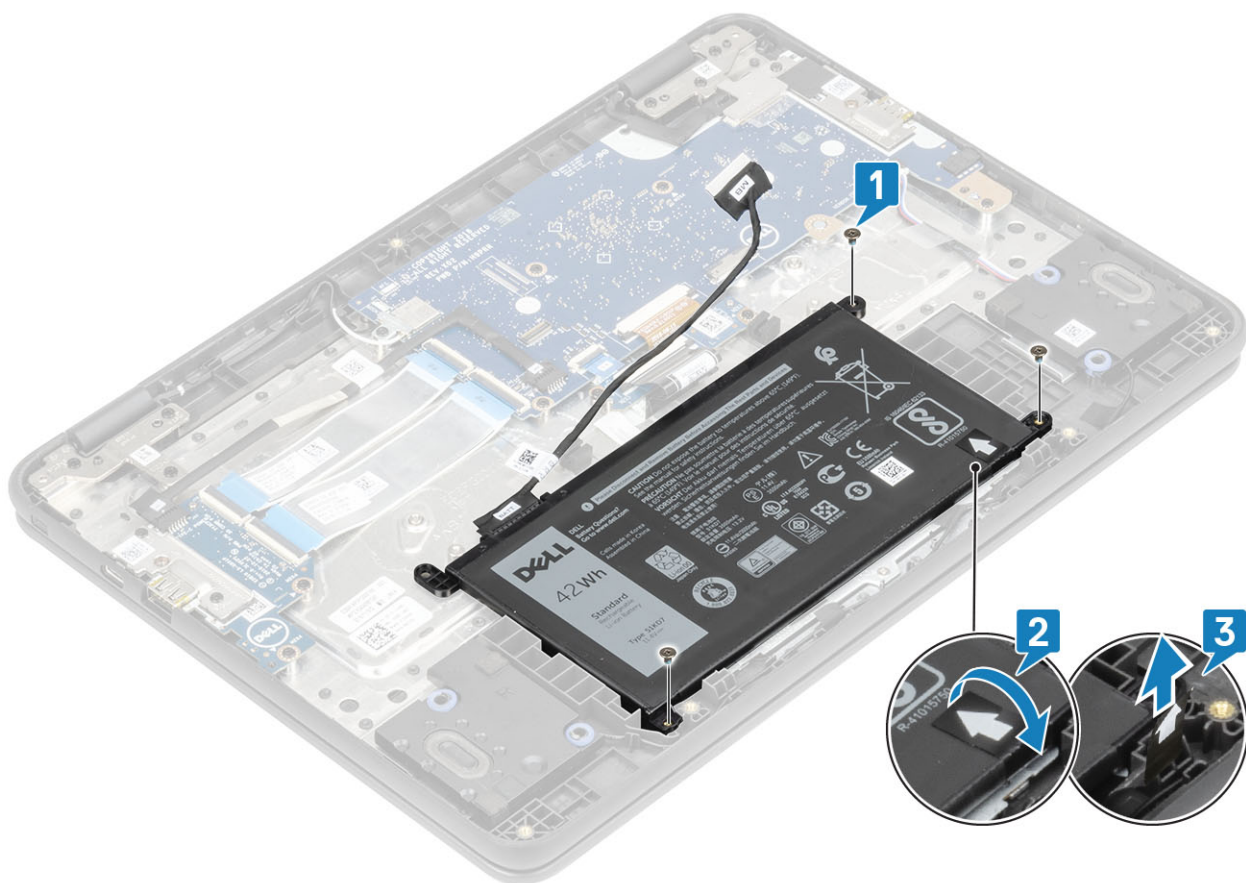
2. Hold Refresh and Power keys at the same time.
3. While holding these keys, remove the power cable from the device and then release the keys. The device should shut down and remain off.
4. Attempt to power the unit on, by pressing the power button. If the unit does not power on, you have completed the steps and can safely work on the Chromebook. If the unit powers on, you should repeat steps 1 to 3.

NOTE: It is now safe to unplug the battery and service the Chromebook.

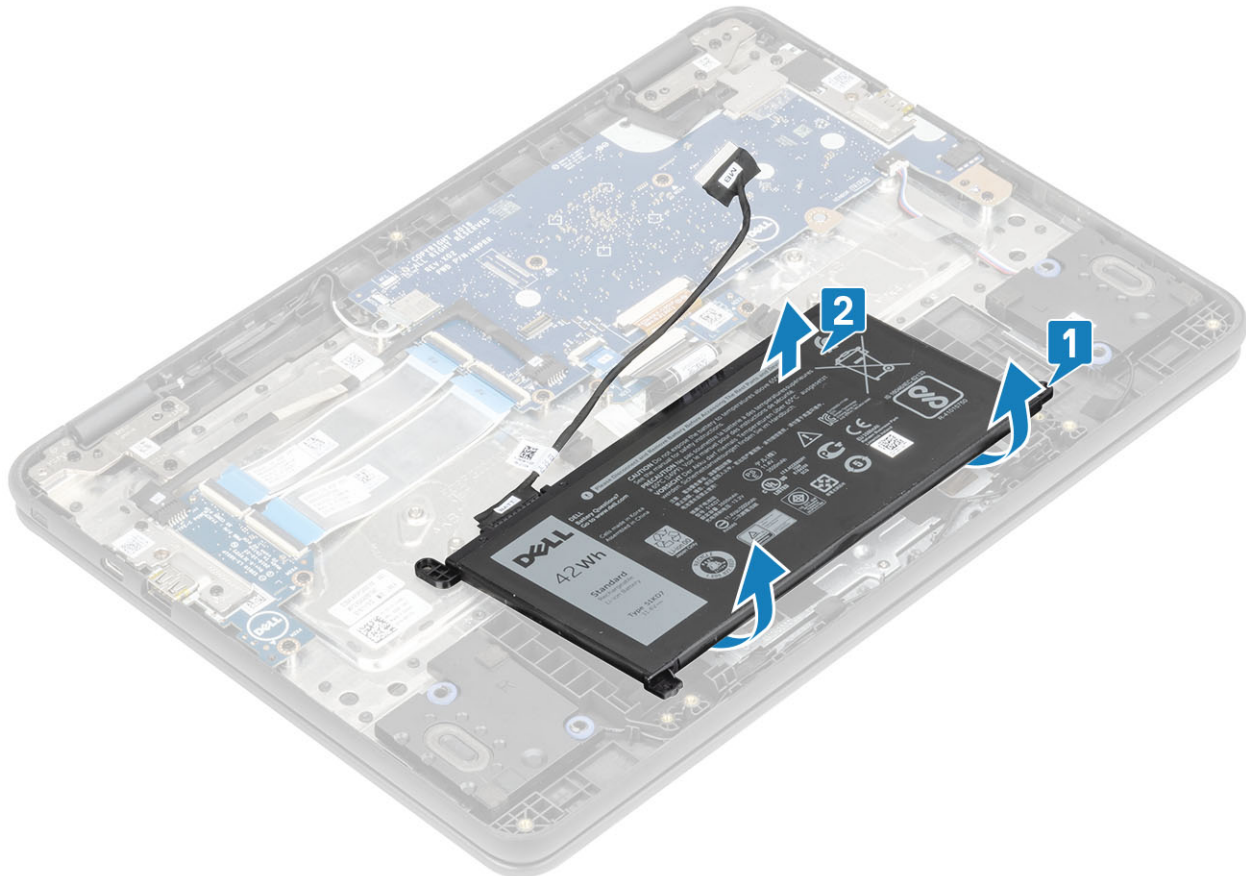
5. Disconnect the battery cable from the connector in the system board [1].
6. Unroute the battery cable from the routing channel [2].



7. Remove the three (M2.0x4.0) screws that secure the battery to the palmrest [1].
8. Peel the adhesive tape that secures the battery in place [2, 3].



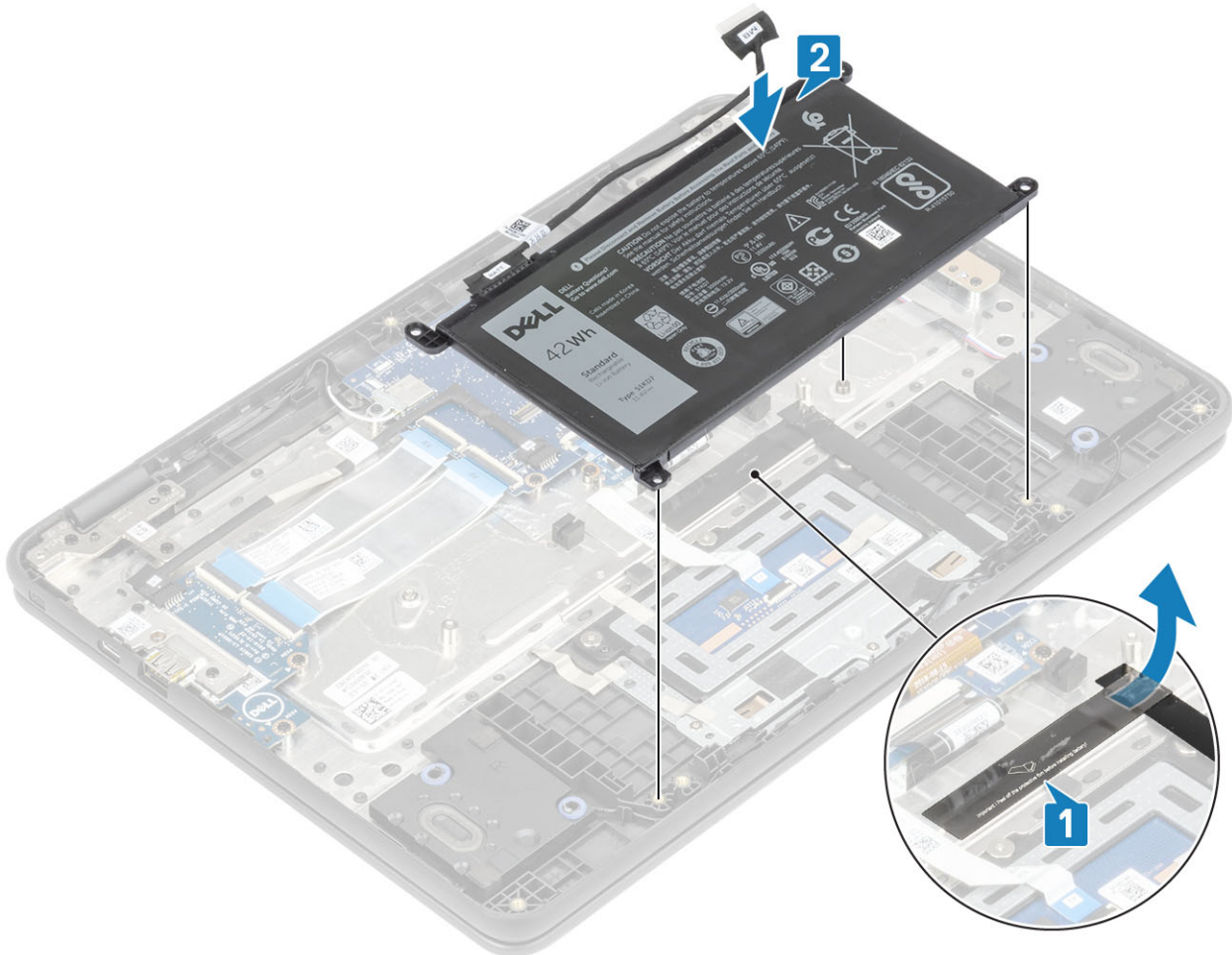
9. Pry the battery from the bottom edge [1] and remove the battery from the computer [2].



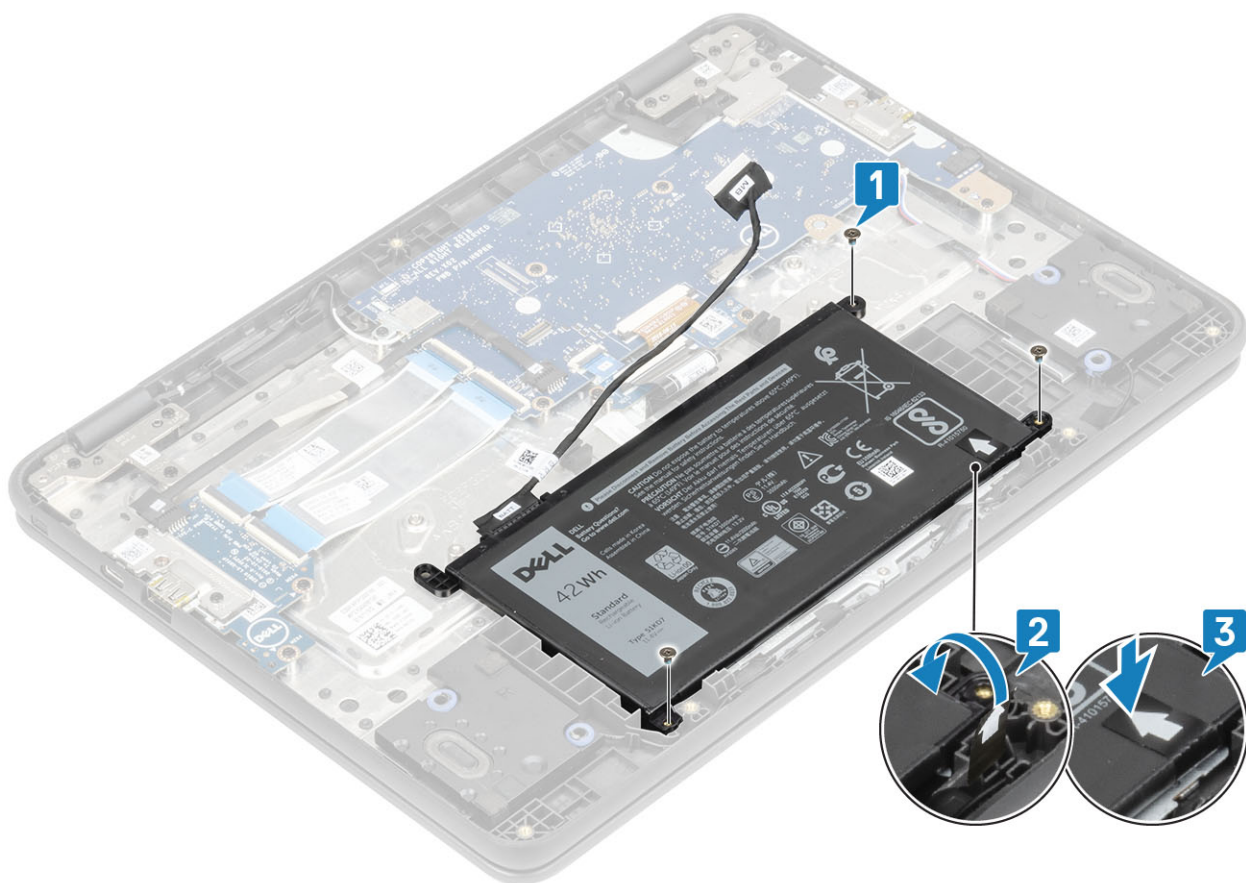
Installing the battery

Steps

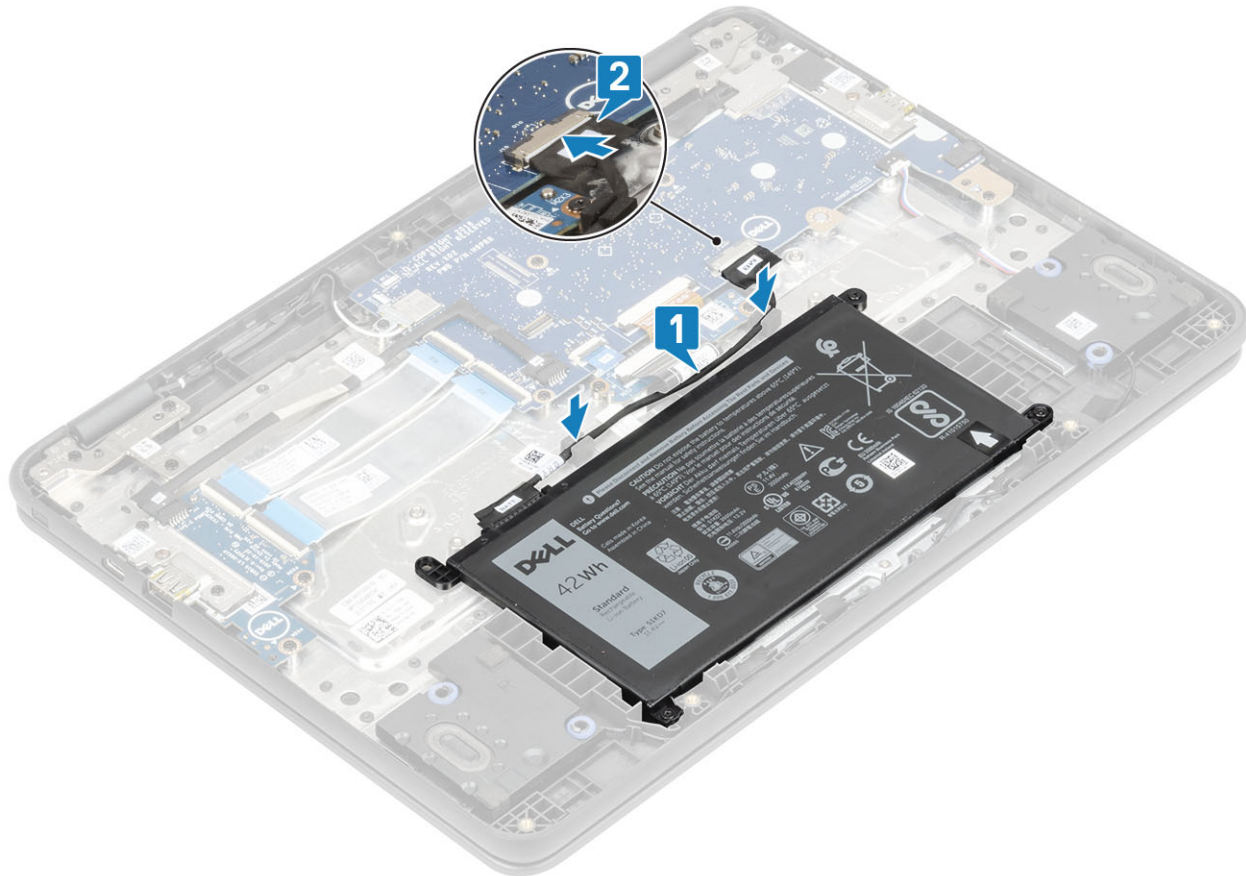
1. Peel the protective film before installing the battery [1].
2. Align the battery into the slot on the computer and press the battery on the upper right corner to fix it to the palmrest [2].



3. Replace the three (M2.0x4.0) screws to secure the battery to the palmrest [1].
4. Affix the adhesive tape to the battery [2, 3].



5. Reroute the battery cable and connect the cable to the connector on the system board [1, 2].



6. Connect the AC adaptor into the device to recover the battery from cutoff mode.

Next steps

1. Install the [base cover](#).
2. Install the [microSD card](#).
3. Follow the procedure in [after working inside your computer](#).

Speaker

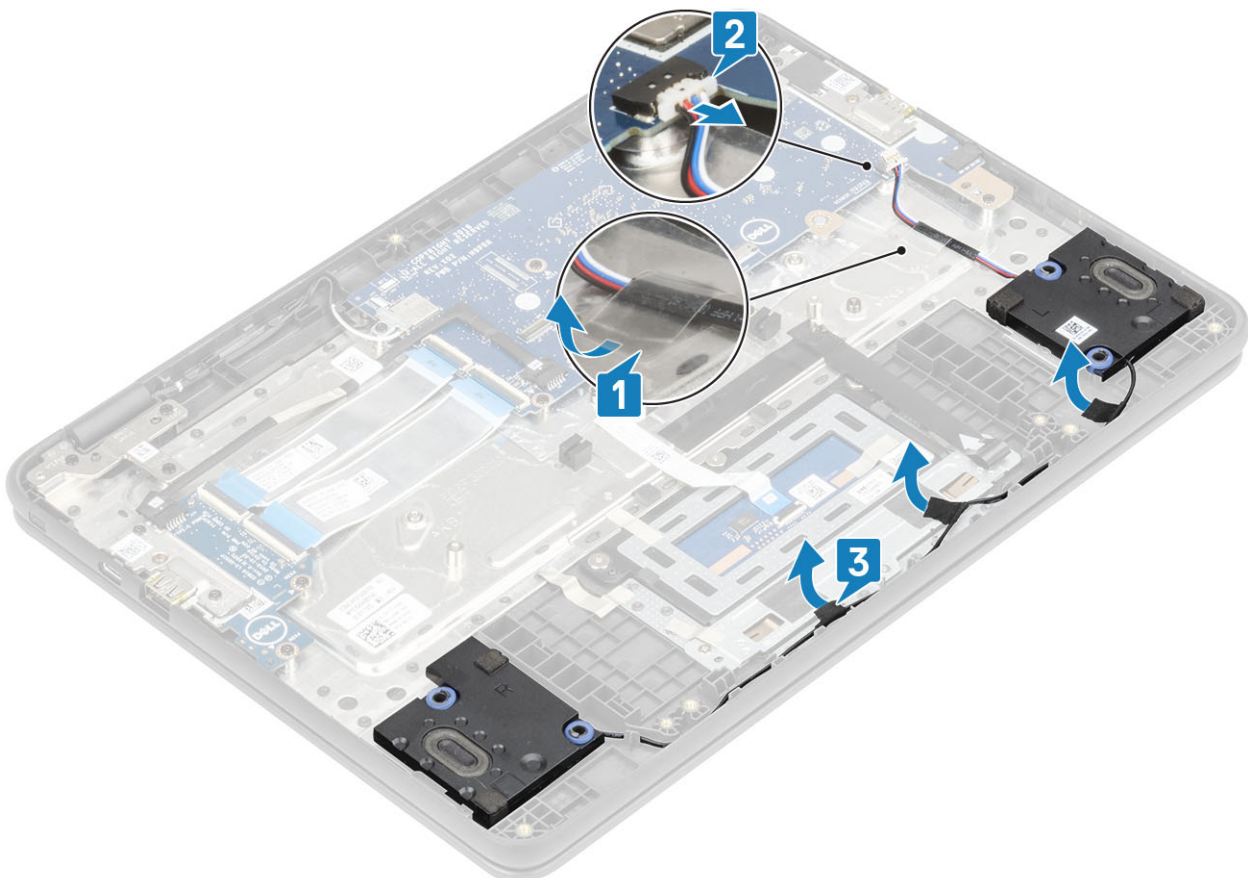
Removing the speakers

Prerequisites

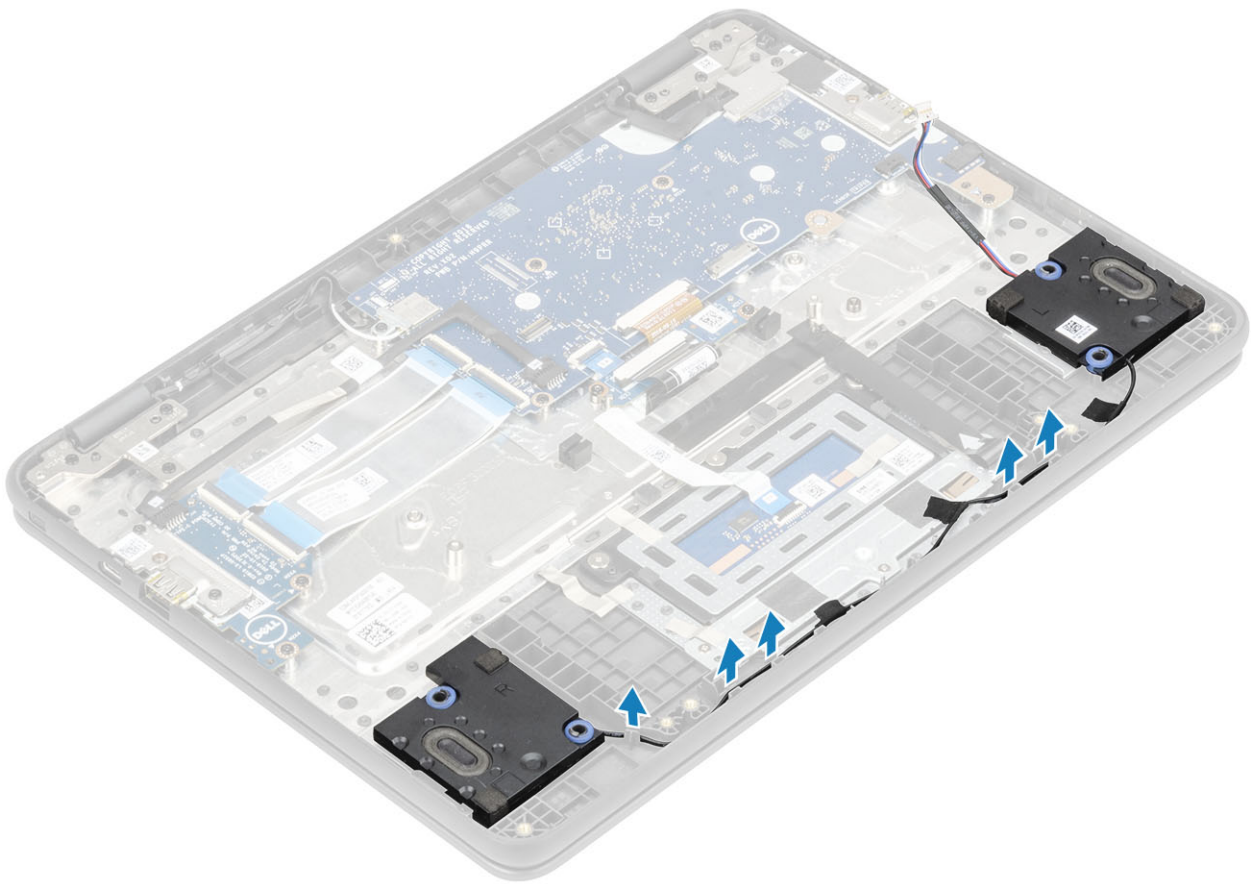
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).

Steps

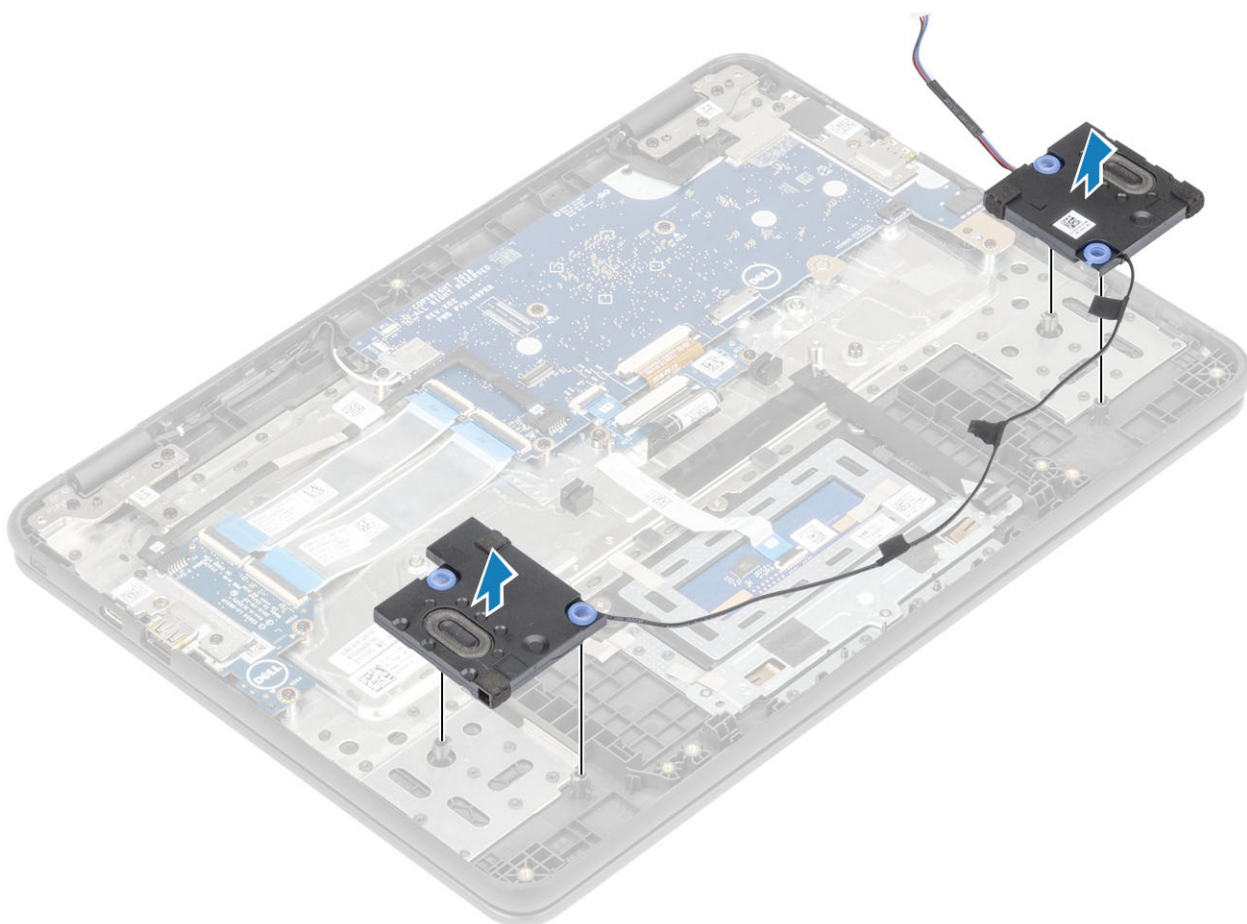
1. Peel the adhesive tape that secures the speaker cable to the palmrest [1].
2. Disconnect the speaker cable from the connector on the system board [2].
3. Peel the adhesive tape that secures the speaker cable to the palmrest [3].



4. Unroute the cable from retention clips in the routing channel.



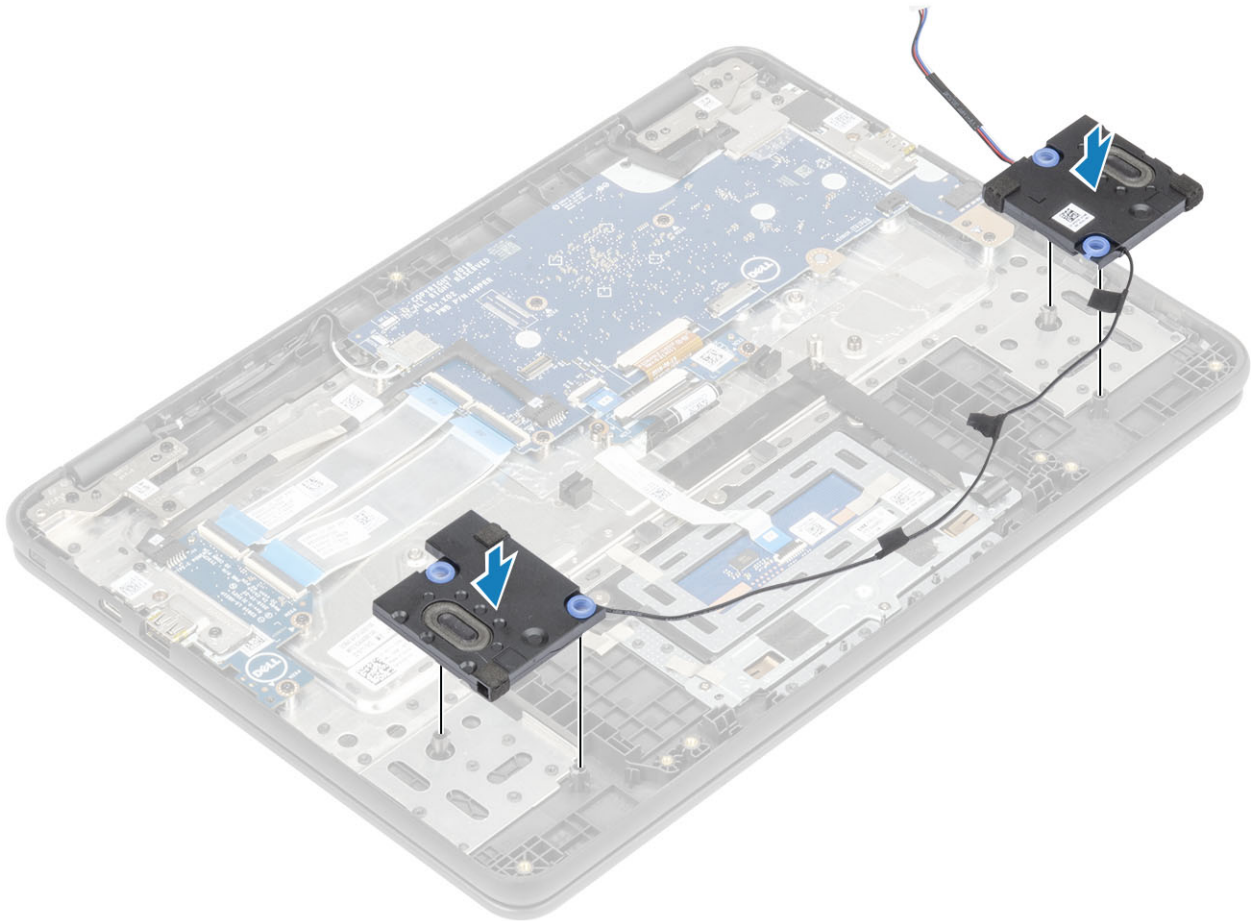
5. Lift the speakers away from the computer.



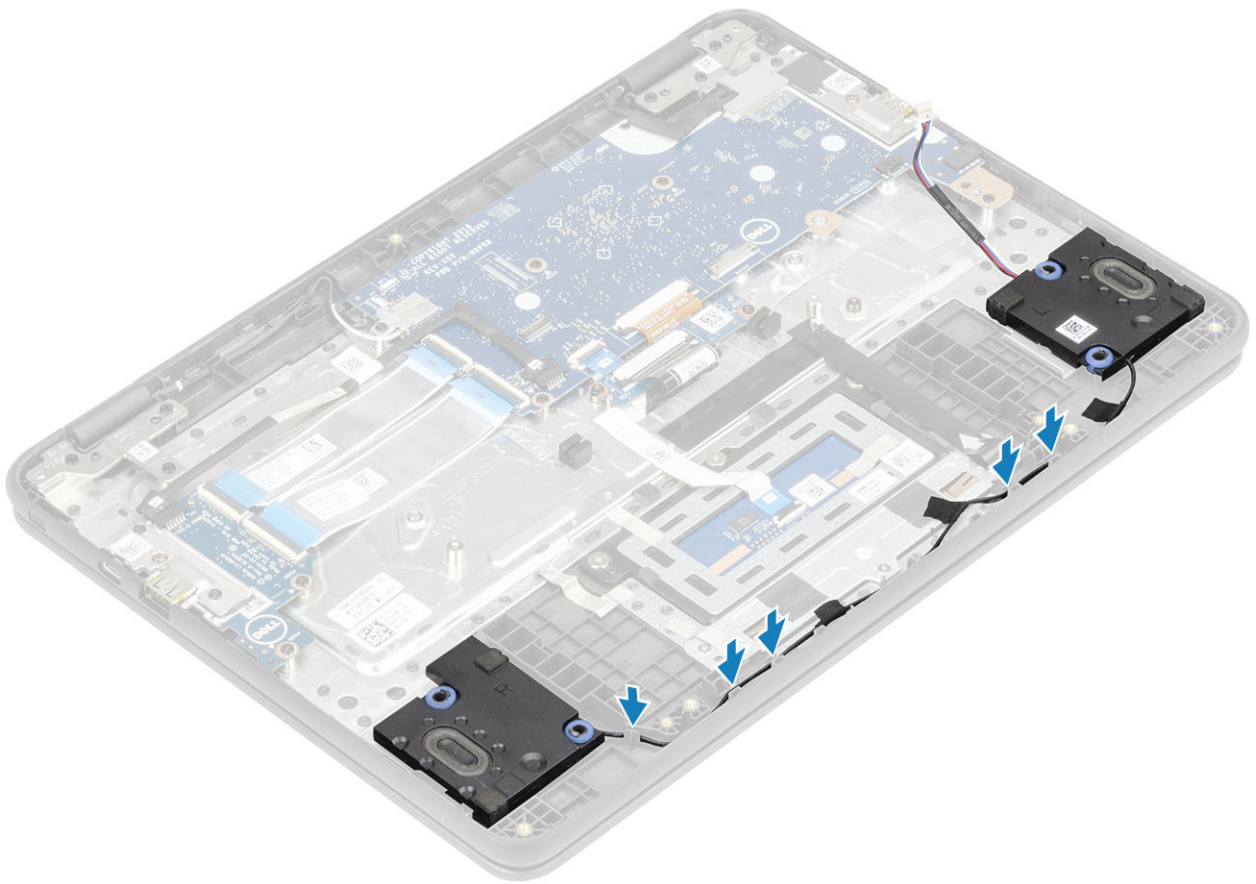
Installing the speakers

Steps

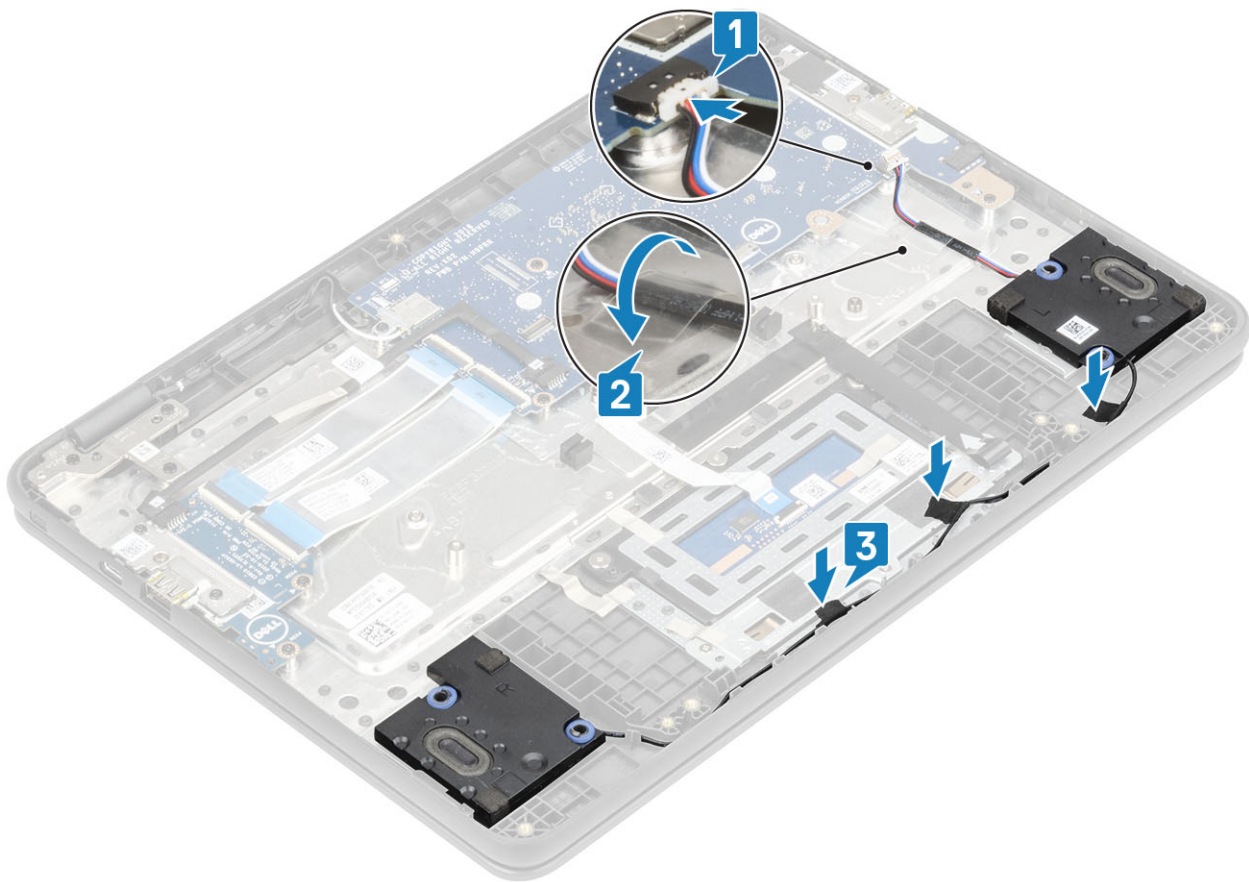
1. Place the speakers into the slots on the computer.



2. Reroute the speaker cable through the retention clips in the routing channel.



3. Connect the speaker cable to the connector on the system board [1].
4. Affix the adhesive tapes to secure the speaker cable to the computer [2, 3].



Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [microSD card](#).
4. Follow the procedure in [after working inside your computer](#).

Input Output board

Removing the Input and output board

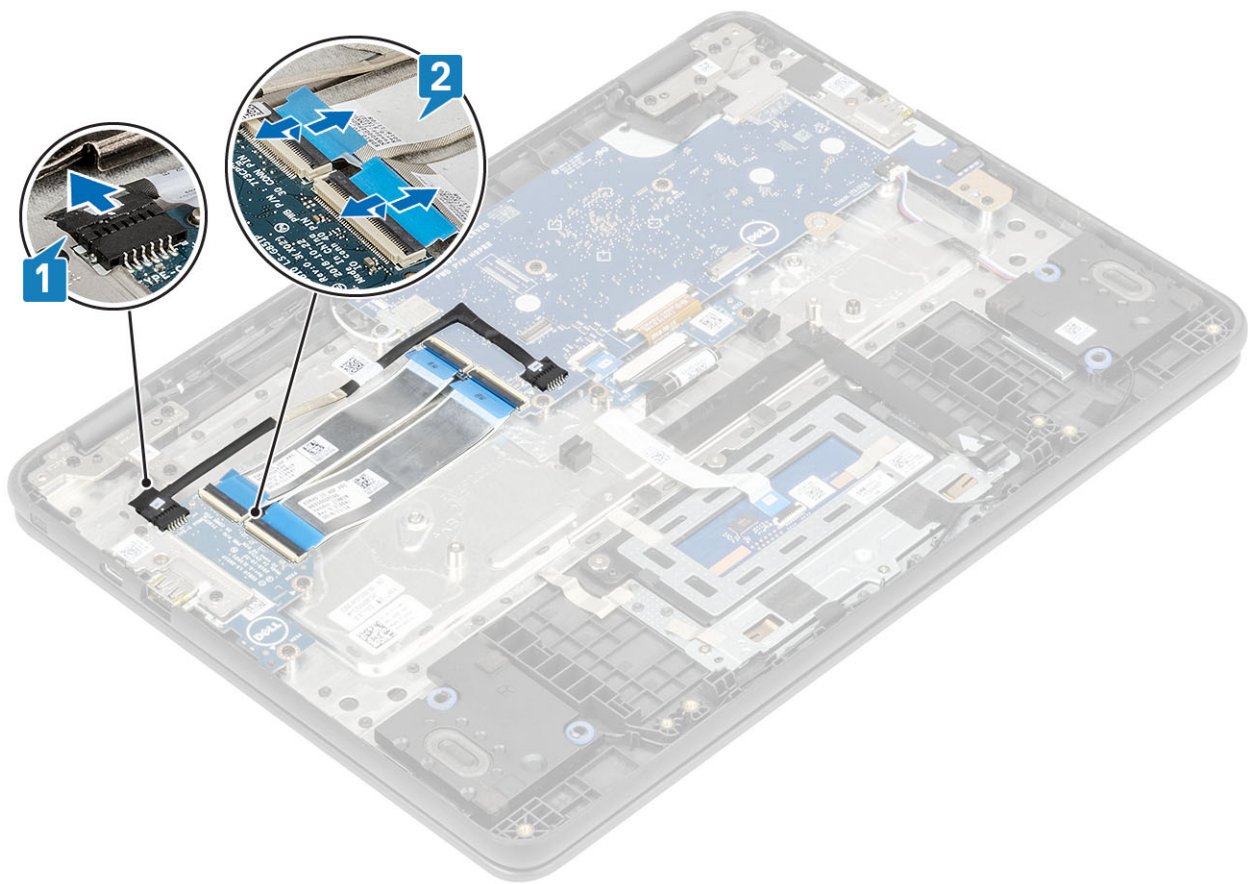
Prerequisites

NOTE: The input and output board depends on the configuration ordered. Not all system configuration come with the input and output board.

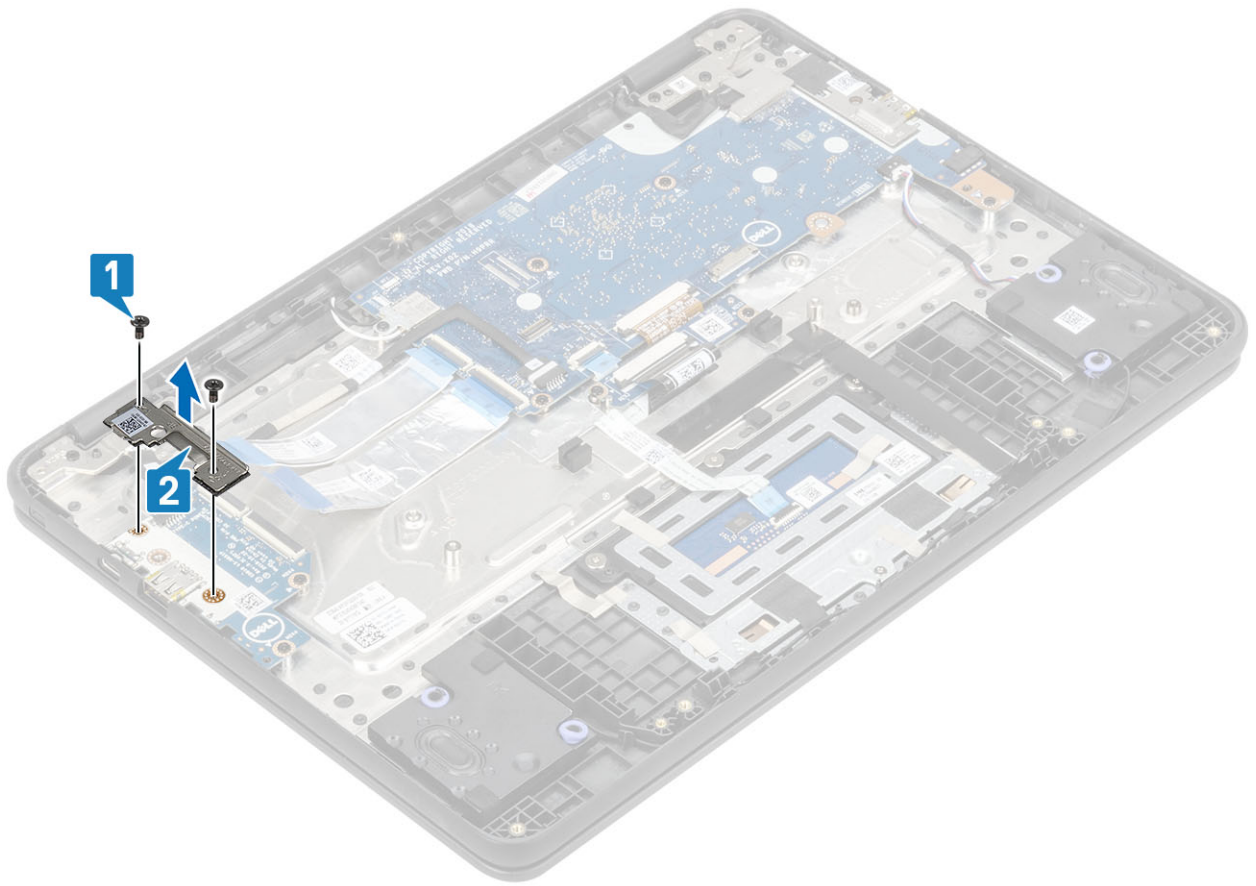
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).

Steps

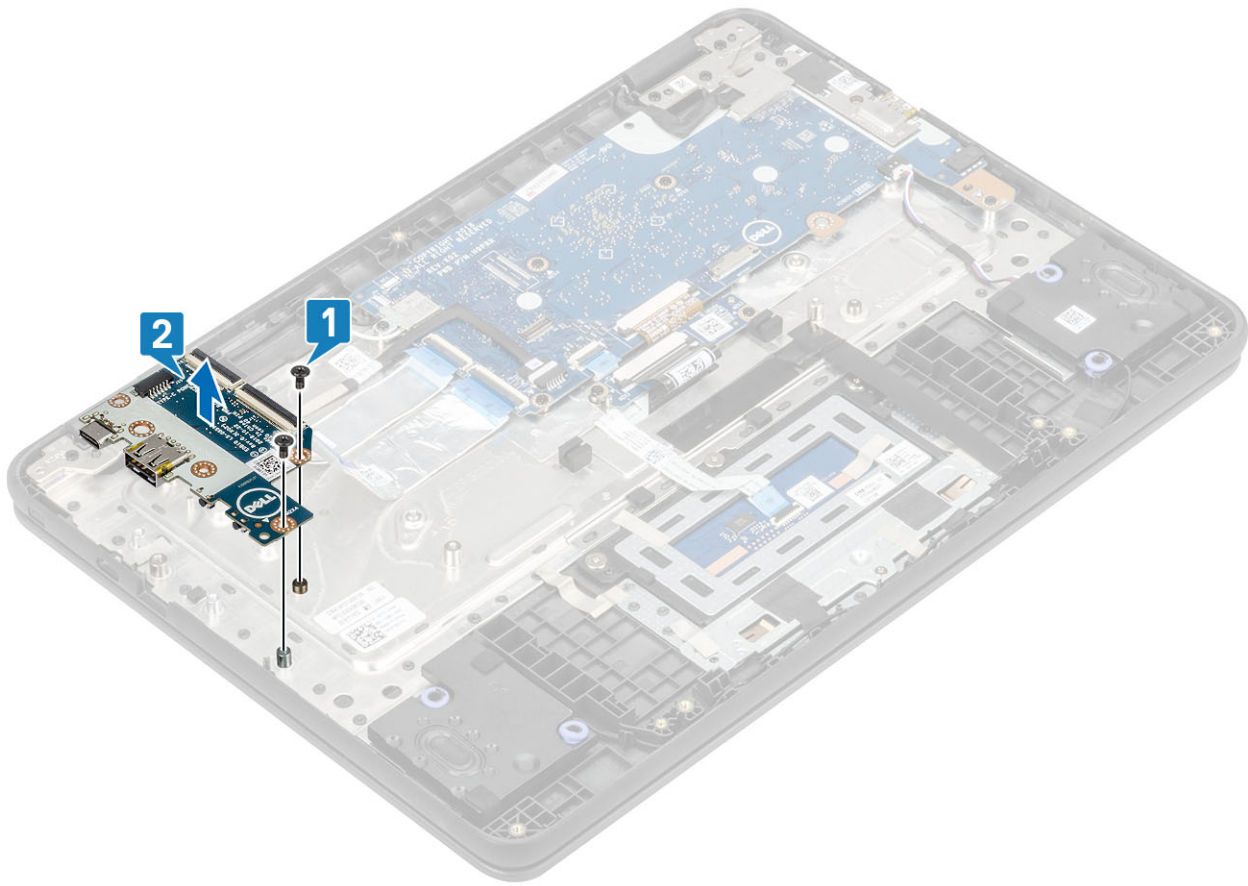
1. Disconnect the Type-C power cable from the connector in the IO board [1].
2. Open the latch and disconnect the 30-pin and 40-pin IO board cable from the connectors in the IO board [2].



3. Remove the two (M2.0x4.0) screws that secure the IO board bracket to the IO board [1].
4. Use a plastic scribe to lift the IO board bracket away from the palmrest [2].



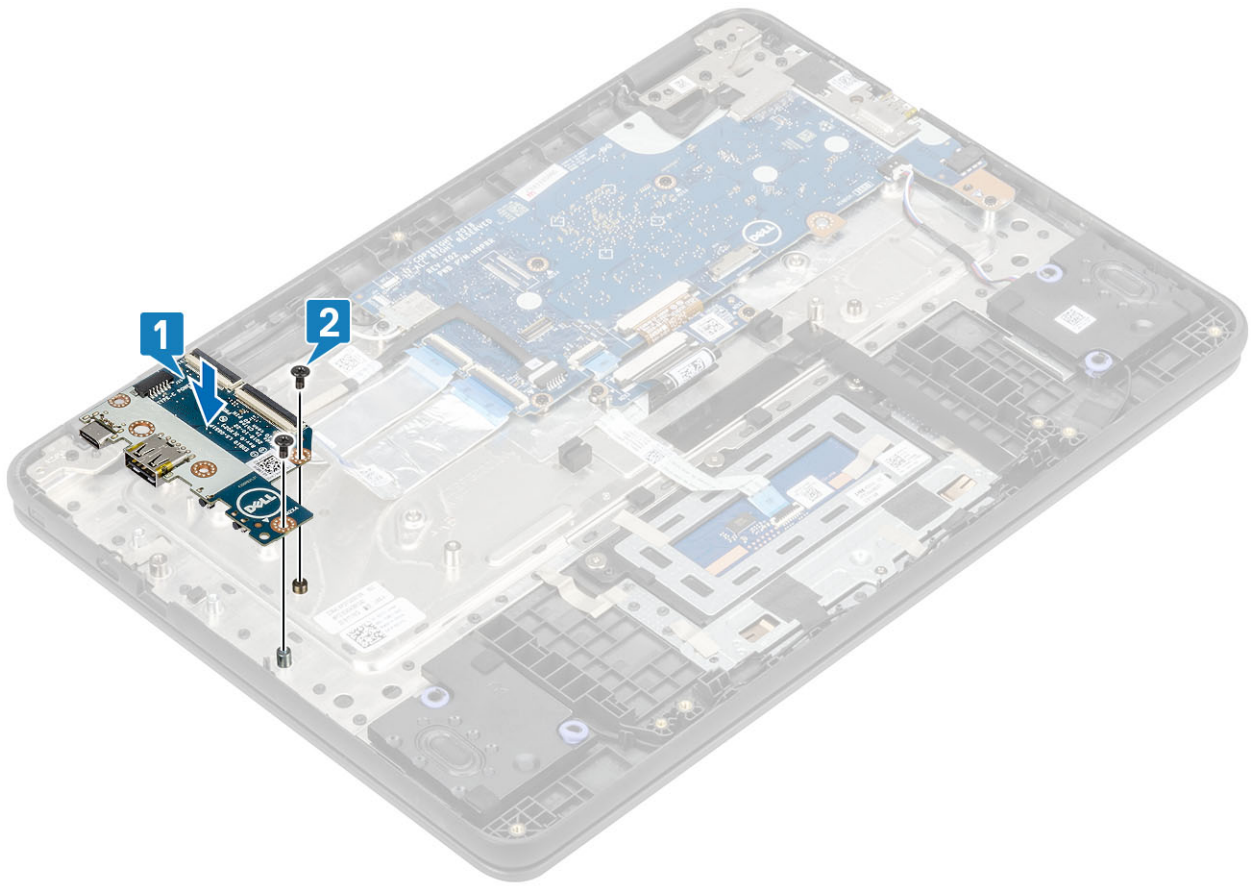
5. Remove the two (M2.0x4.0) screws that secure the IO board to the palmrest [1].
6. Lift the IO board away from the computer [2].



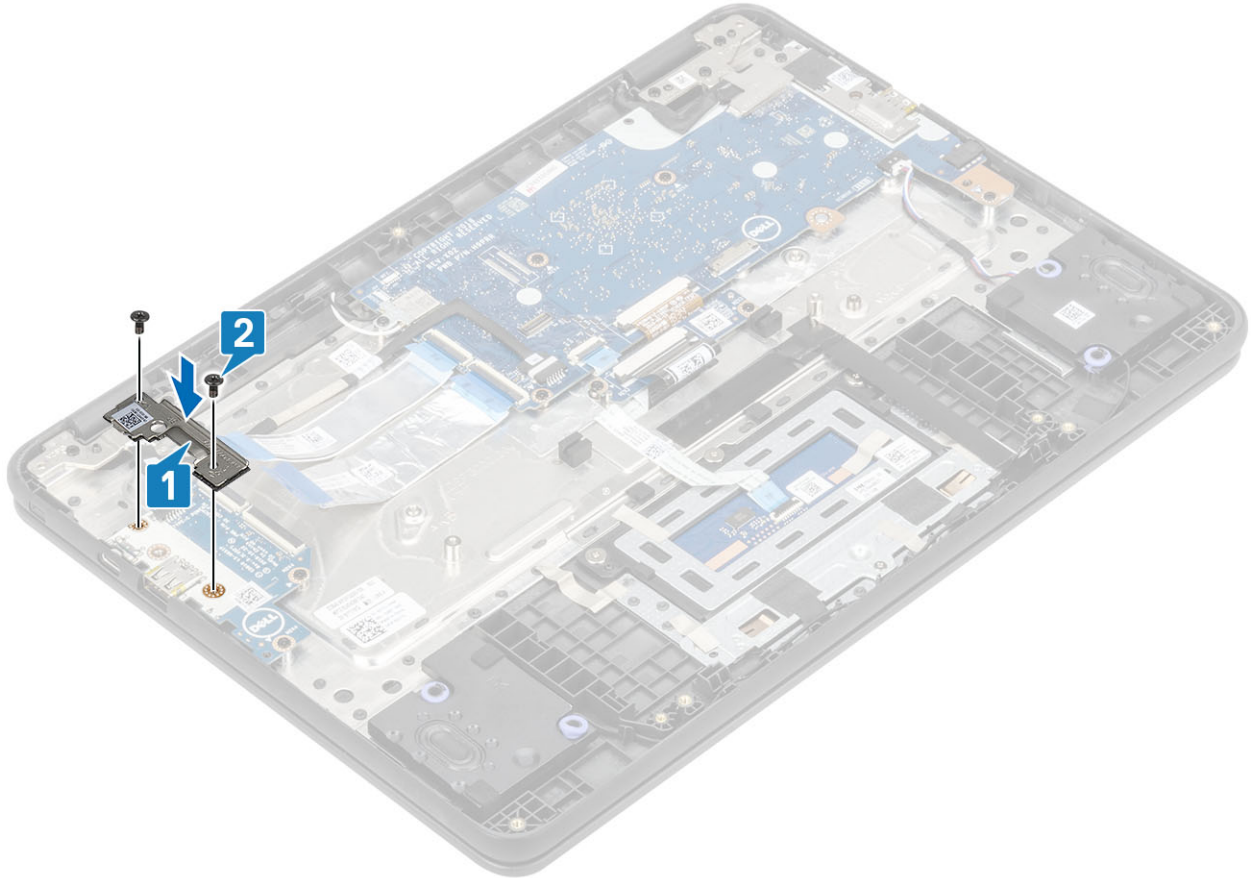
Installing Input output board

Steps

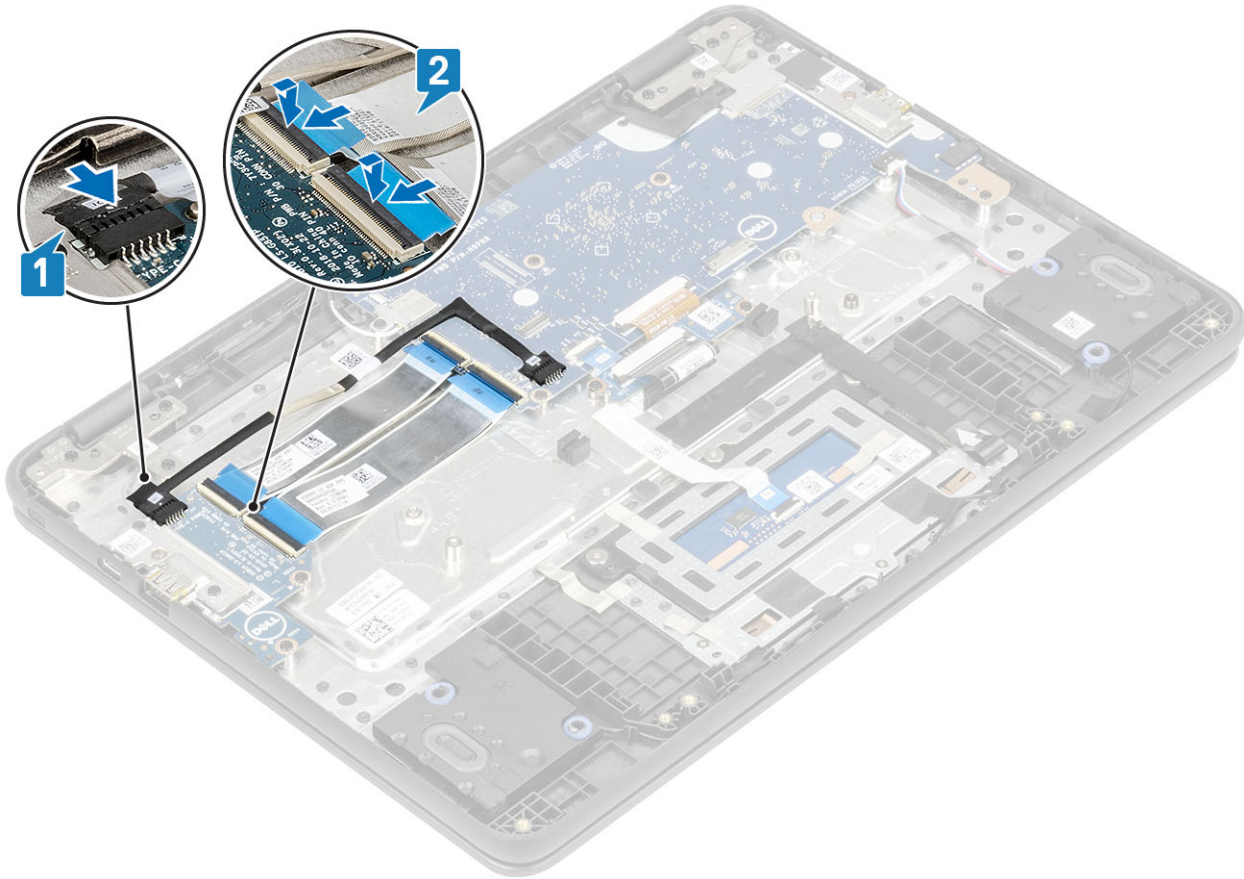
1. Place the IO board to its slot in the computer [1].
2. Replace the two (M2.0x4.0) screws that secure the I/O board to the palmrest [2].



3. Place the IO board bracket to its slot and replace the two (M2.0x4.0) screws that secure the bracket to the IO board [1, 2].



4. Connect the Type-C power cable to the connector on the IO board [1].
5. Connect the 30-pin and 40-pin IO board cables and close the latch to secure it to the IO board [2].



Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [microSD card](#).
4. Follow the procedure in [after working inside your computer](#).

Keyboard interposer board

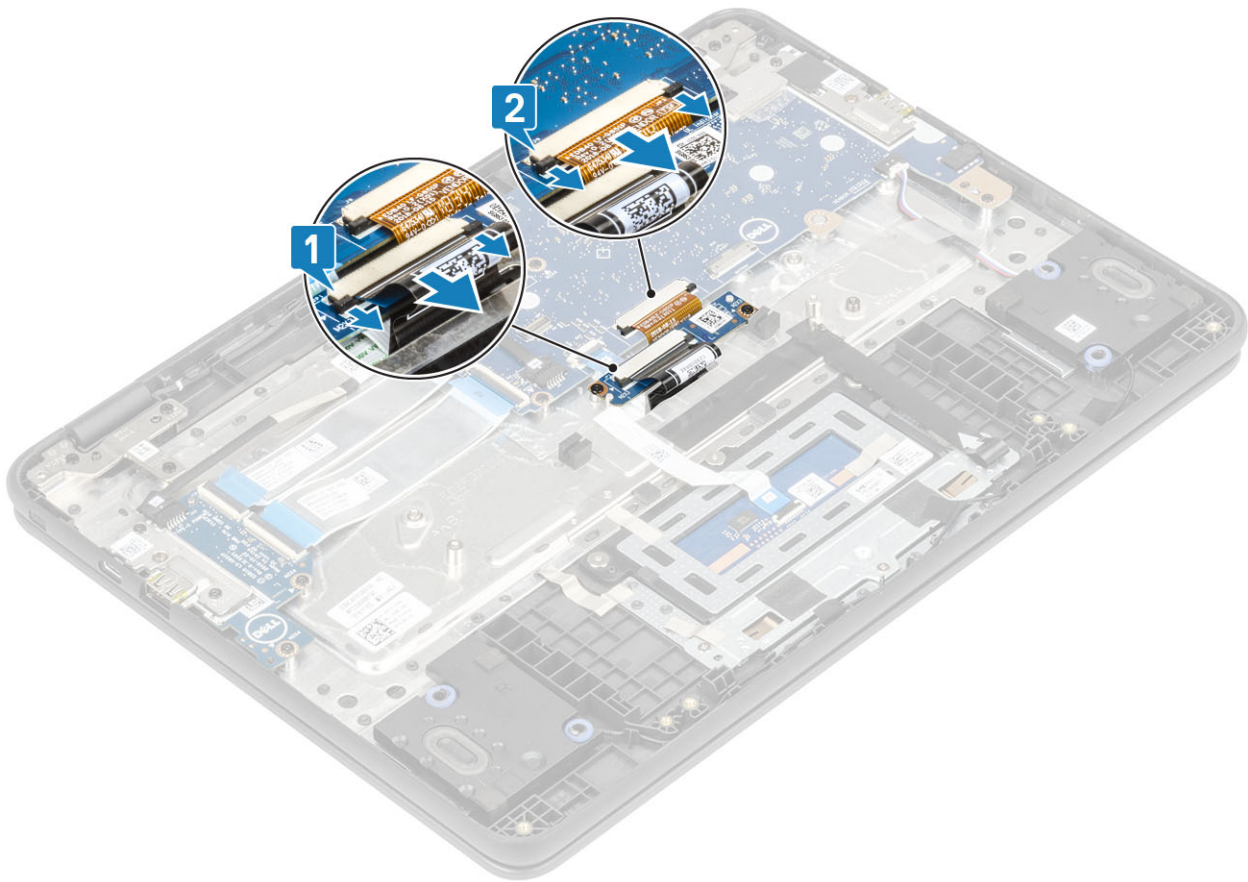
Removing the keyboard interposer board

Prerequisites

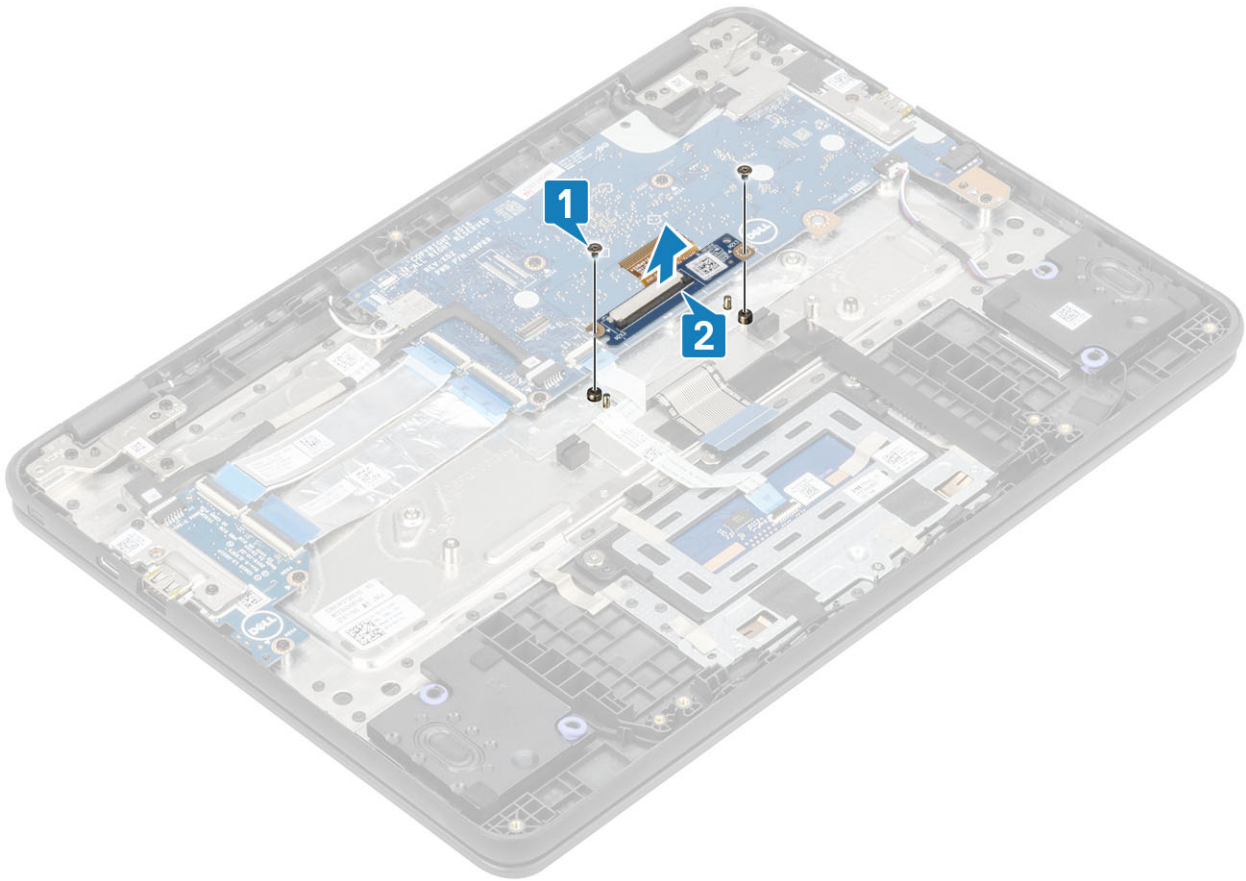
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).

Steps

1. Disconnect the keyboard cable from the connector on the keyboard interposer board [1].
2. Disconnect the keyboard interposer cable from the connector on the system board [2].



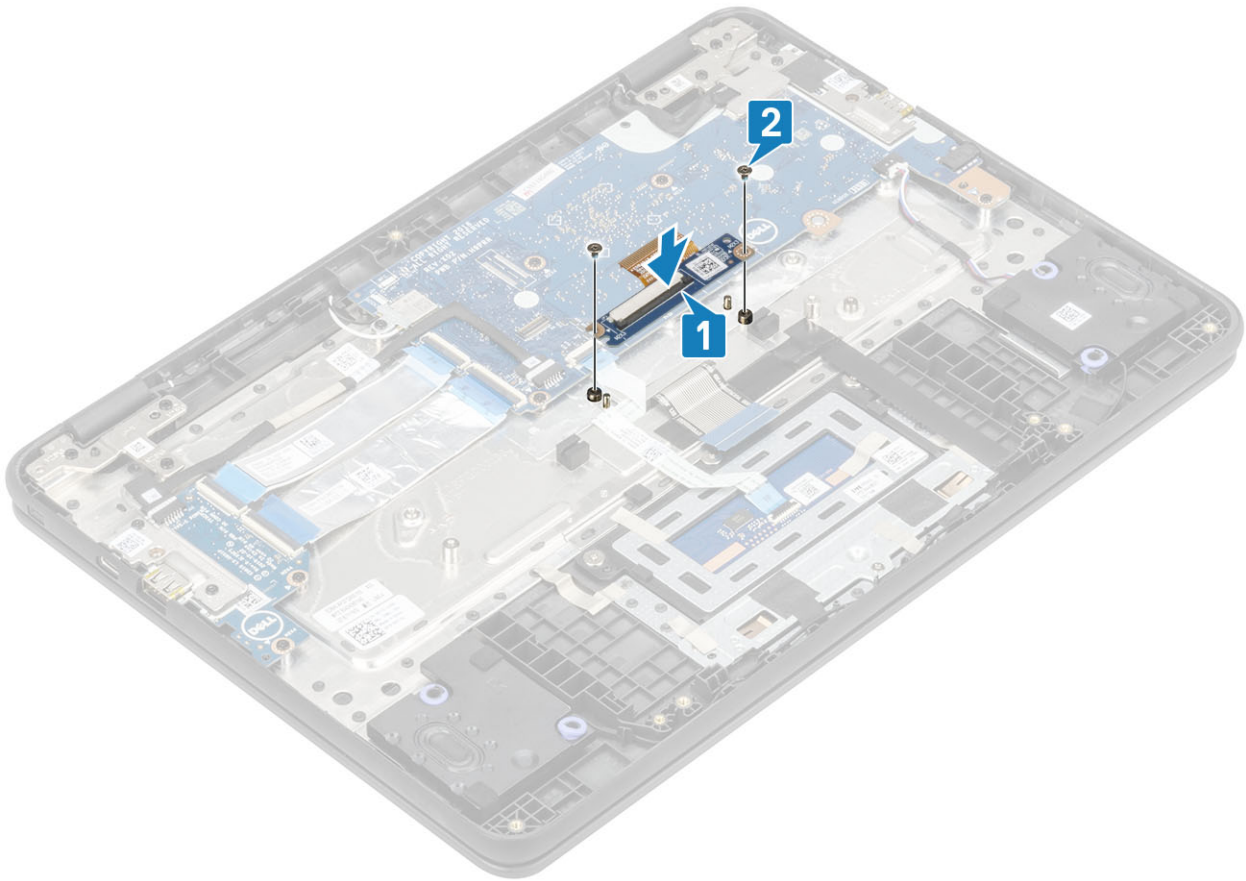
3. Remove the two (M2.0x4.0) screws that secure the keyboard interposer board to the palmrest [1].
4. Lift the keyboard interposer board away from the computer [2].



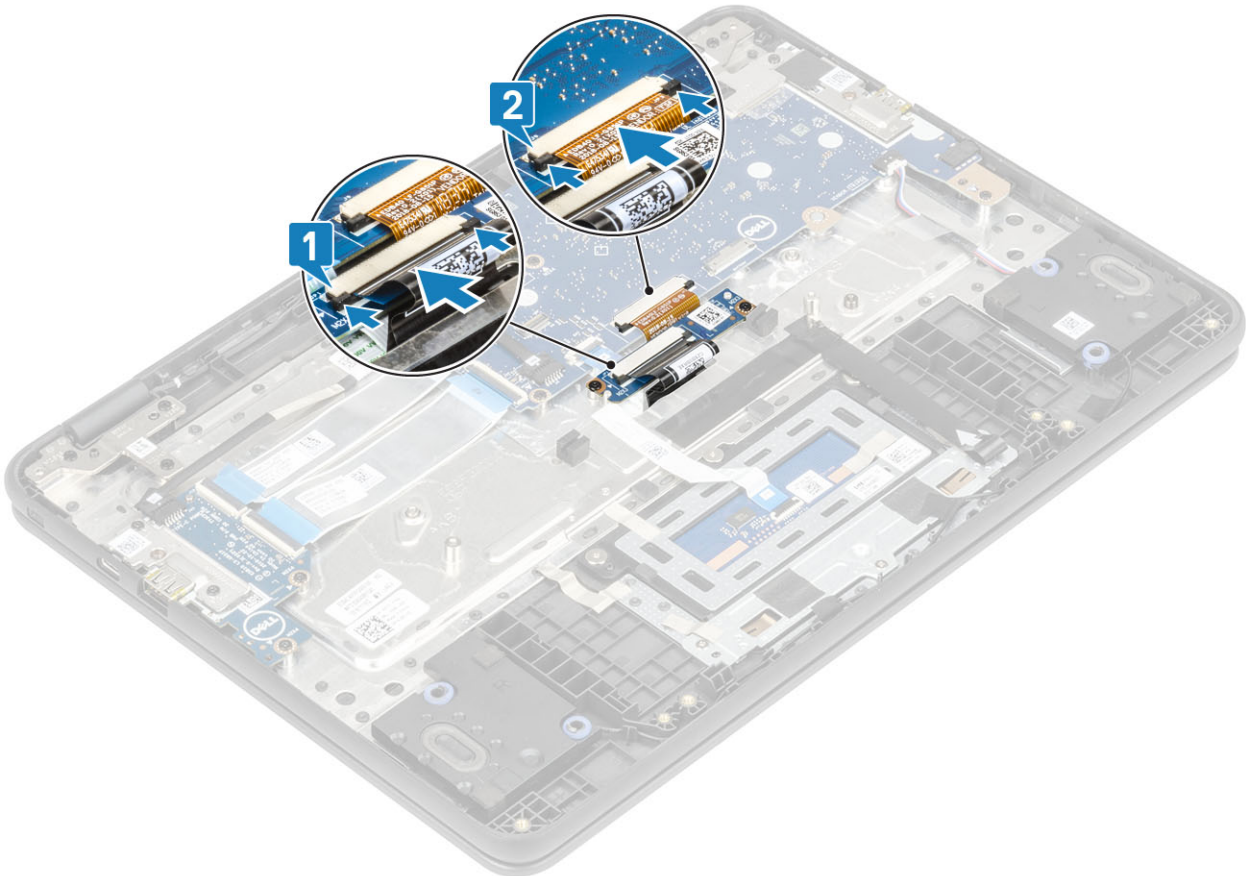
Installing the keyboard interposer board

Steps

1. Carefully insert the keyboard interposer board to its slot [1].
2. Replace the two (M2.0x4.0) screws to secure the keyboard interposer board to the palmrest [2].



3. Connect the keyboard cable and keyboard interposer board cable to the connectors on the interposer board and system board [1, 2].



Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [microSD card](#).
4. Follow the procedure in [after working inside your computer](#).

Keyboard

Removing the keyboard

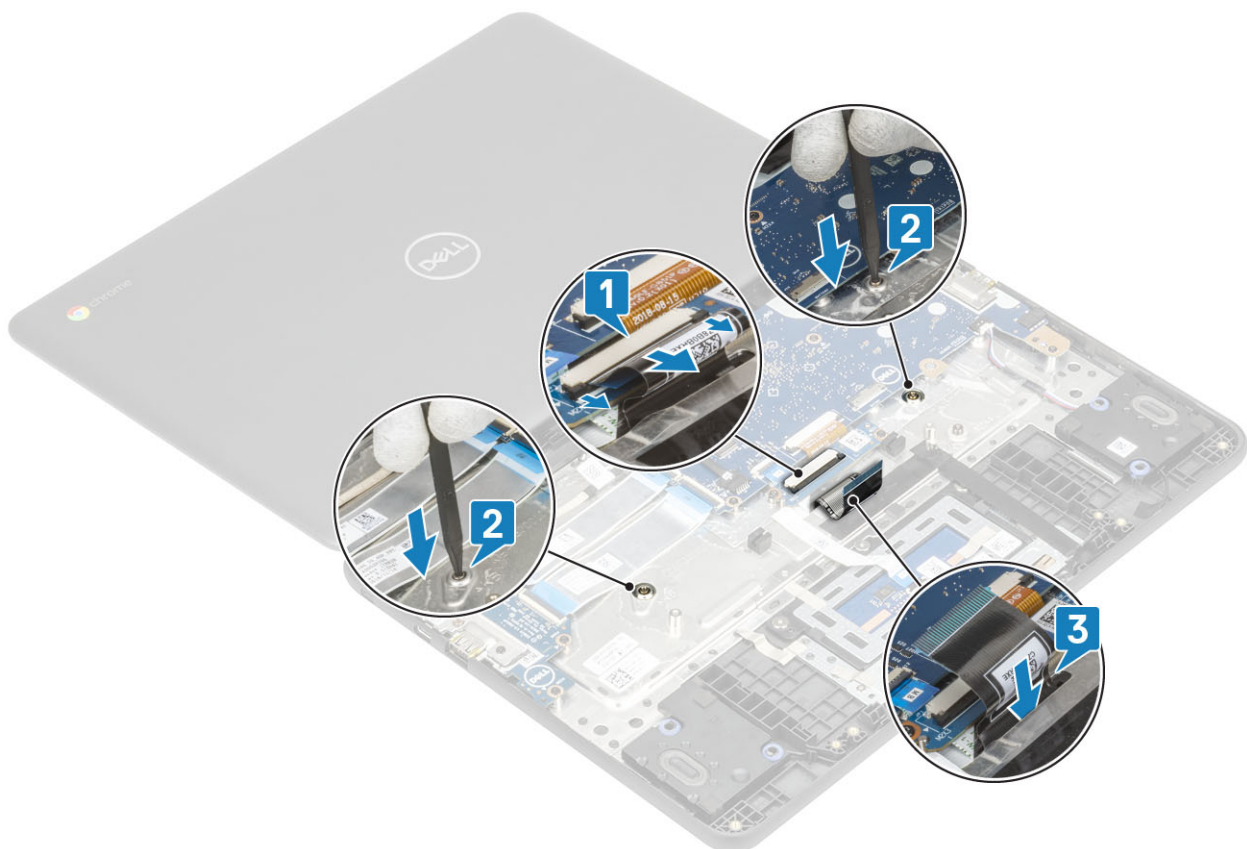
Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).

Steps

1. Disconnect the keyboard cable from the connector on the keyboard interposer board [1].
2. Lift the palmrest and use a plastic scribe to release the keyboard from the two release holes in the system [2].
3. Push the keyboard cable through the gap in the palmrest [3].

 **NOTE:** The two release holes for the keyboard are indicated by the "KB" labeling.



4. Turn the system and carefully pull the keyboard cable through the gap in the palm rest.
5. Lift and pull the keyboard out from the computer [1, 2].



Installing the keyboard

Steps

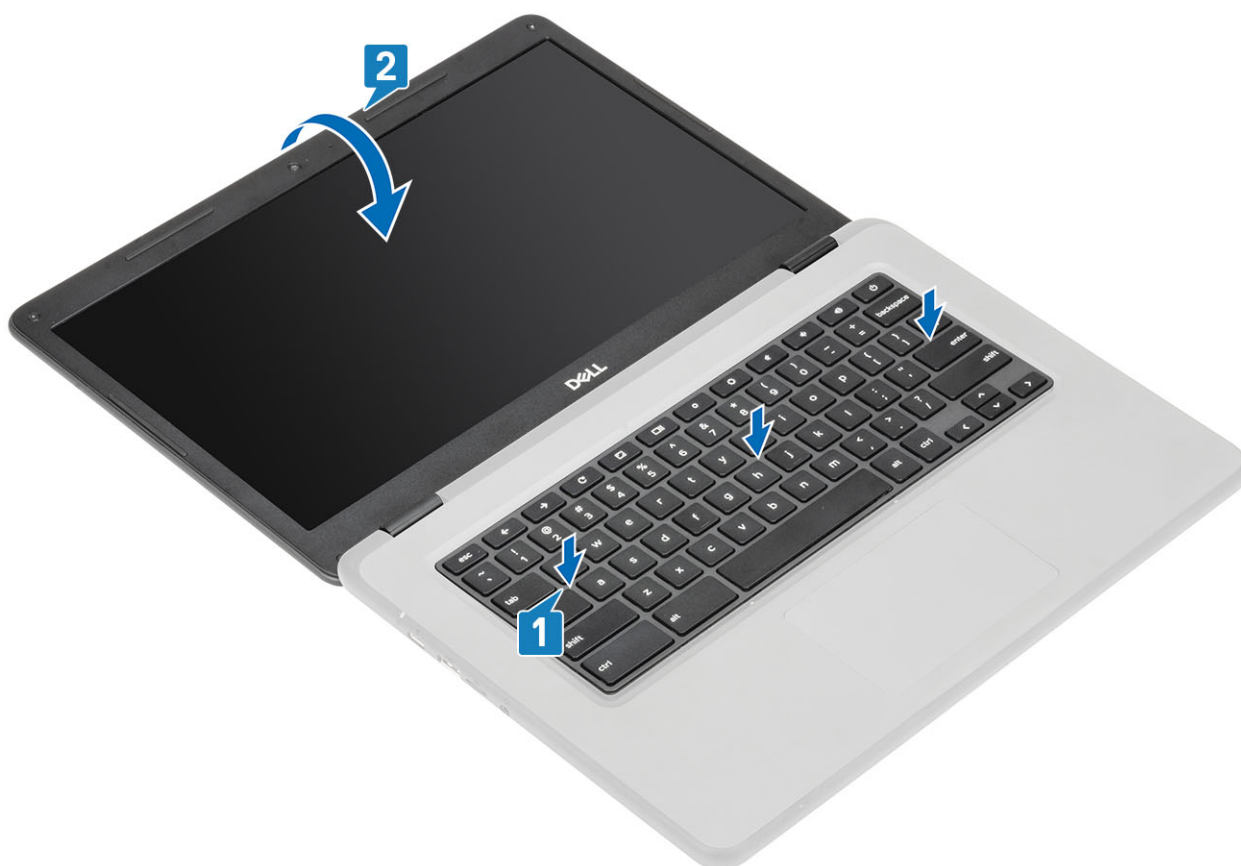
1. Align the keyboard trim with the tabs on the system, and slightly lift it [1, 2].



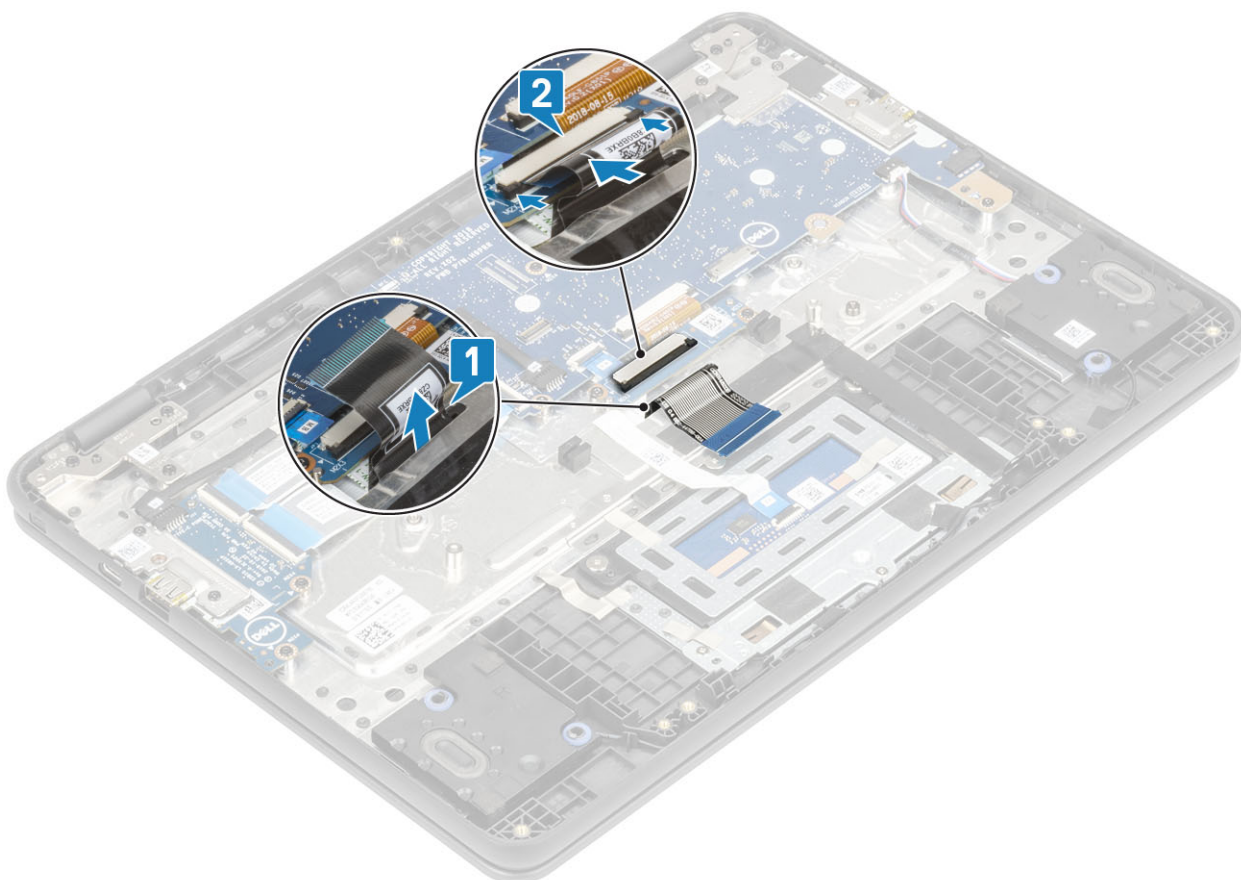
2. Carefully insert the keyboard cable through the gap on the palm rest and place the keyboard trim to its place [1, 2].



3. Press the keyboard until it clicks into place and then turn the system [1, 2].



4. Pull the keyboard cable from the gap in the palmrest and connect to the connector on the keyboard interposer board [1, 2].



Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [microSD card](#).
4. Follow the procedure in [after working inside your computer](#).

System board

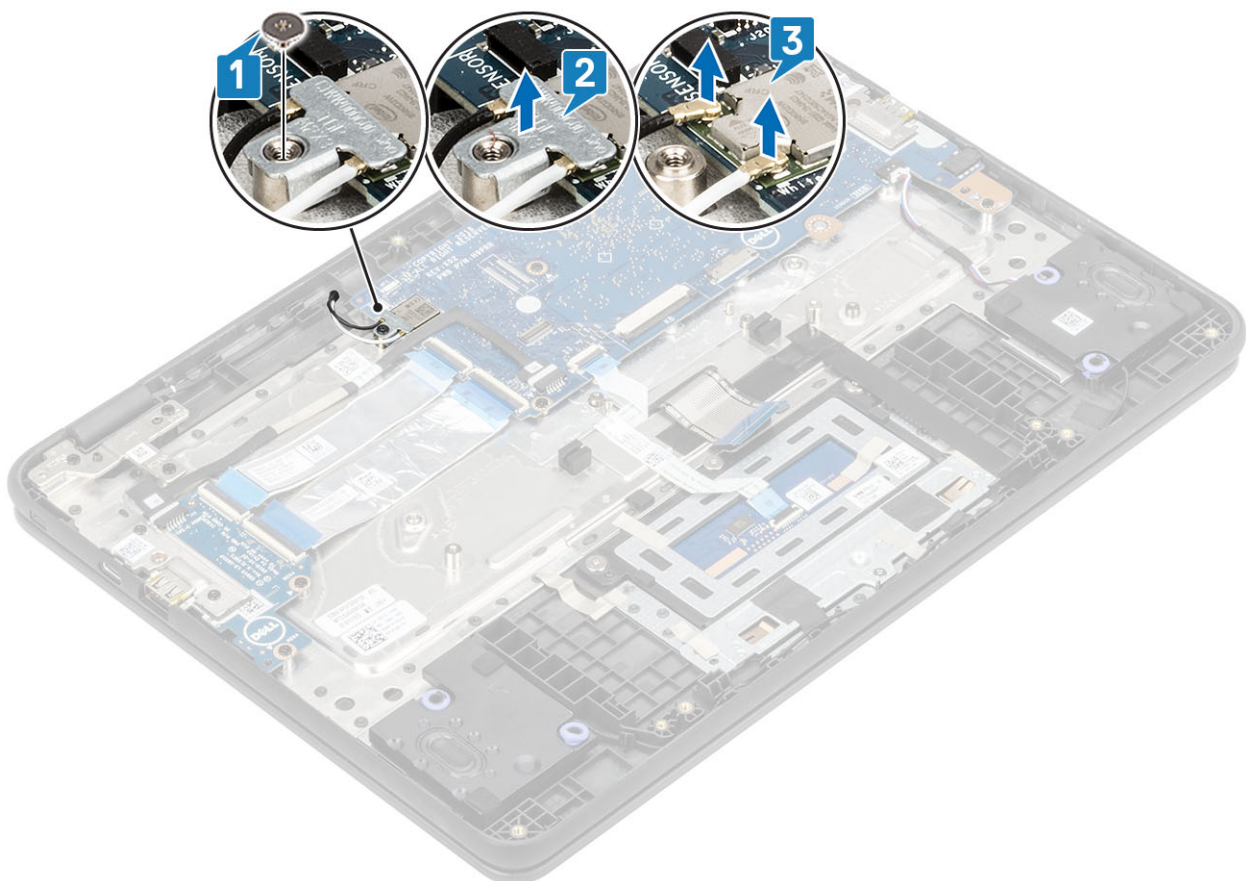
Removing the system board

Prerequisites

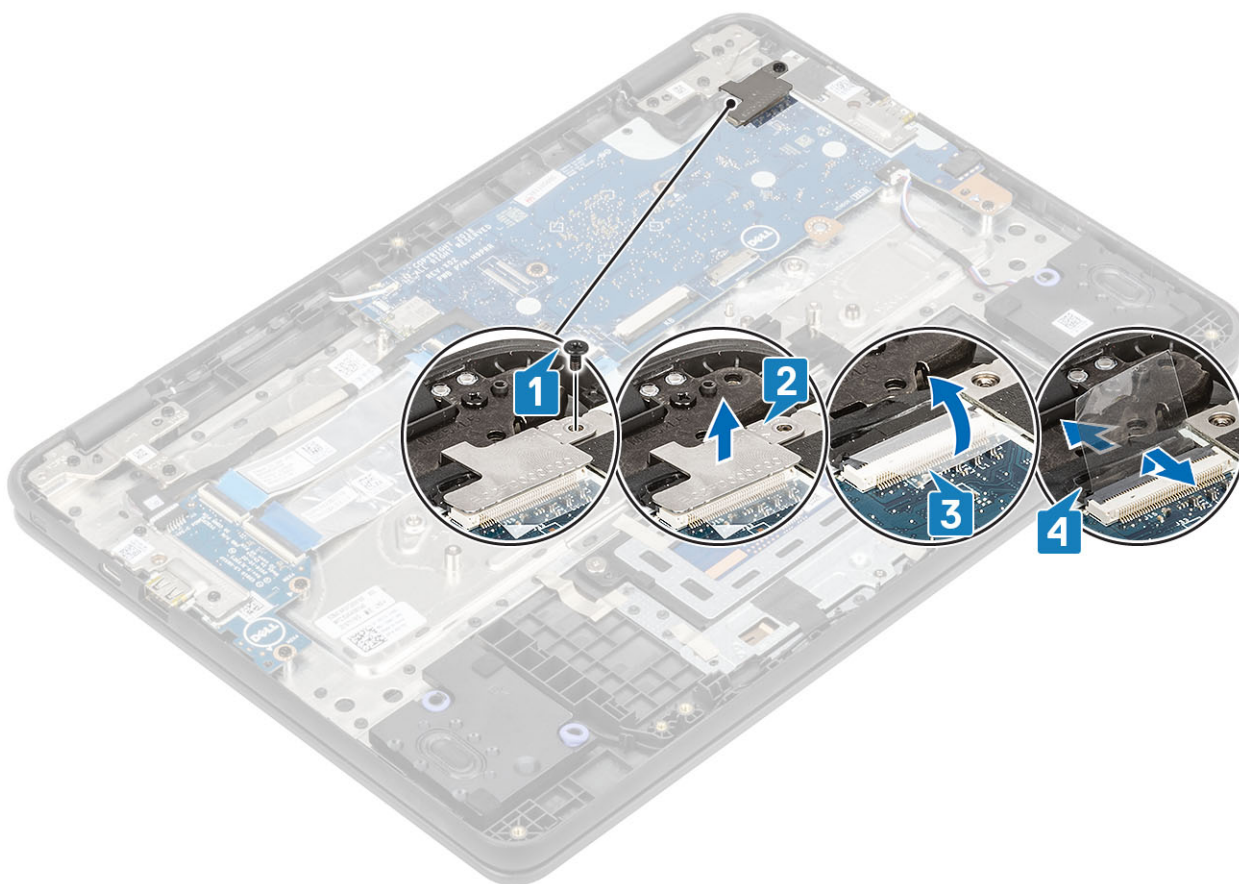
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [keyboard interposer board](#)

Steps

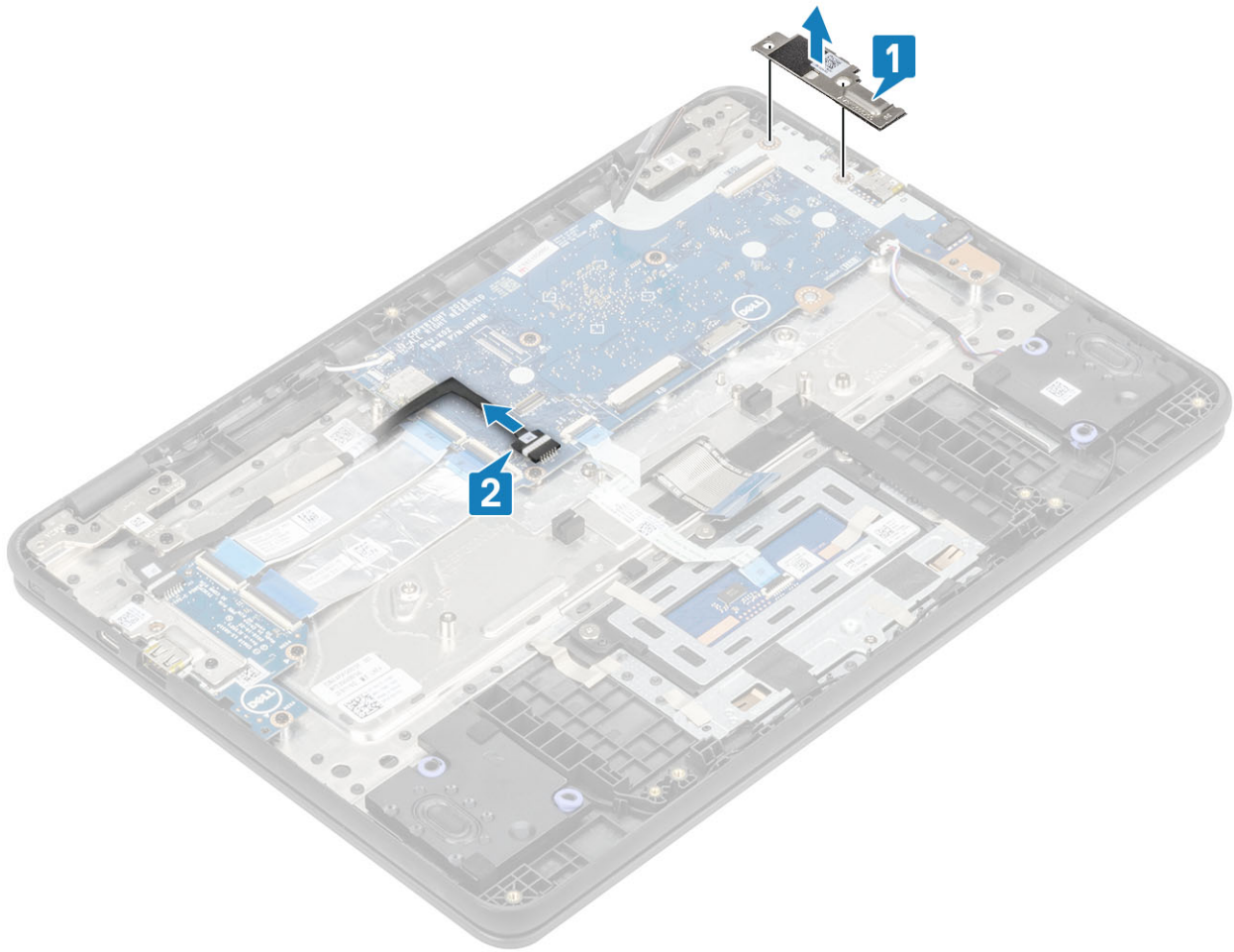
1. Remove the single (M2.0x3.0) screw that secures the wireless bracket to the system board [1].
2. Lift the wireless bracket away from the computer [2].
3. Disconnect the two wireless antennas from the connector on the system board [3].



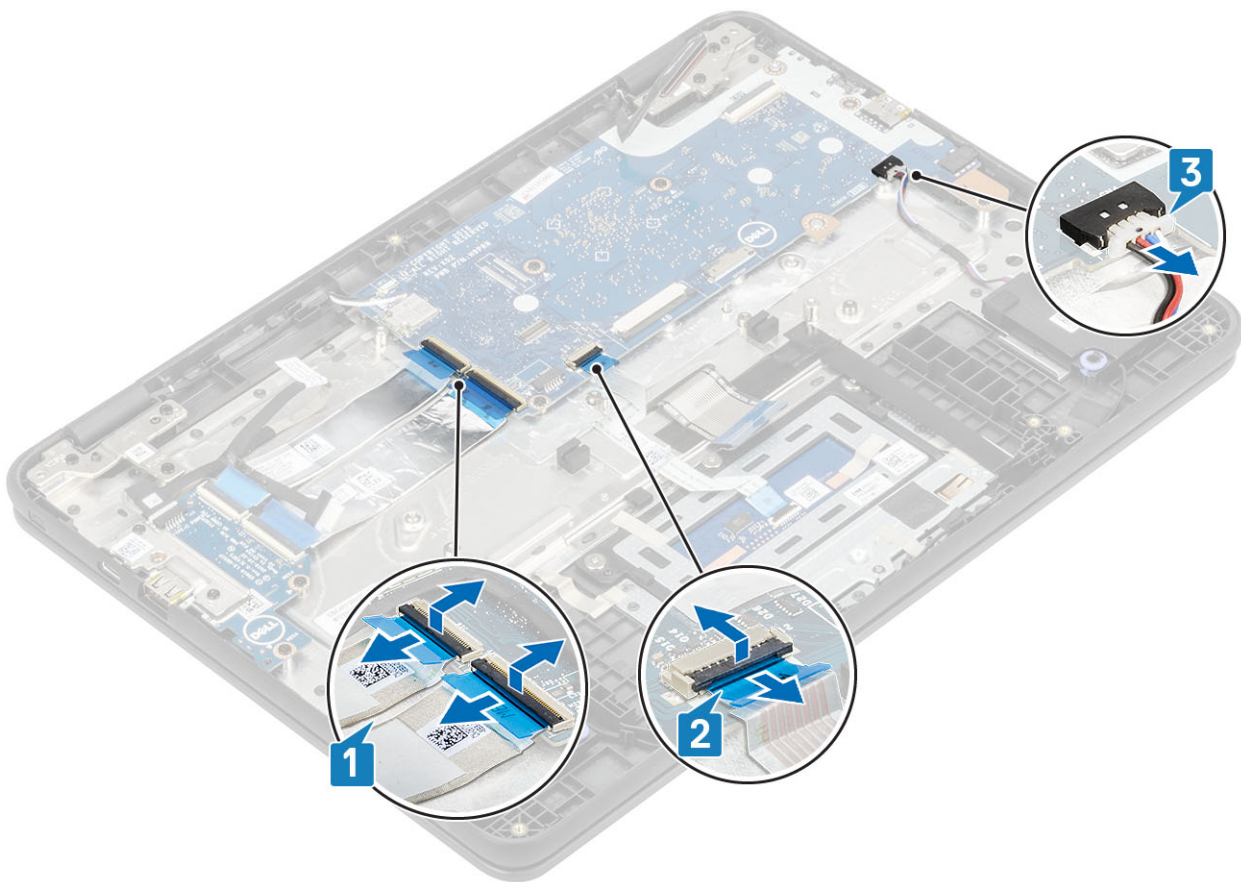
4. Remove the single (M2.0x4.0) screw that secures the display cable bracket to the system board [1].
5. Lift the display cable bracket away from the computer [2].
6. Peel the adhesive tape that secures the display cable [3].
7. Lift the latch and disconnect the display cable from the connector on the system board [4].



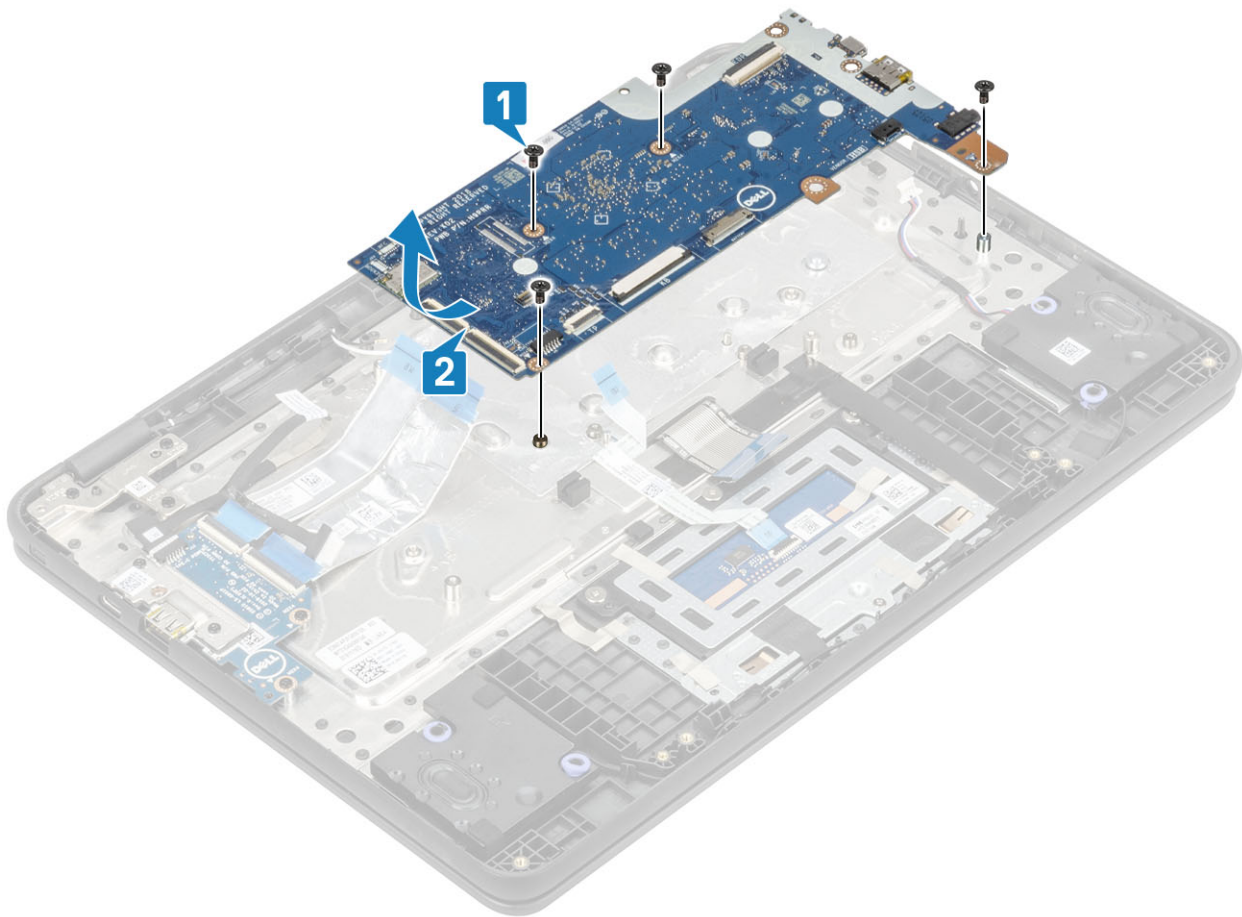
8. Remove the left IO bracket from the system board [1].
9. Disconnect and peel the Type-C power cable from the connector on the system board [2].



10. Lift the latch and disconnect the 30-pin IO board cable, 40-pin IO board cable, and the touchpad cable from the connectors on the system board [1, 2].
11. Disconnect the speaker cable from the connector on the system board [3].



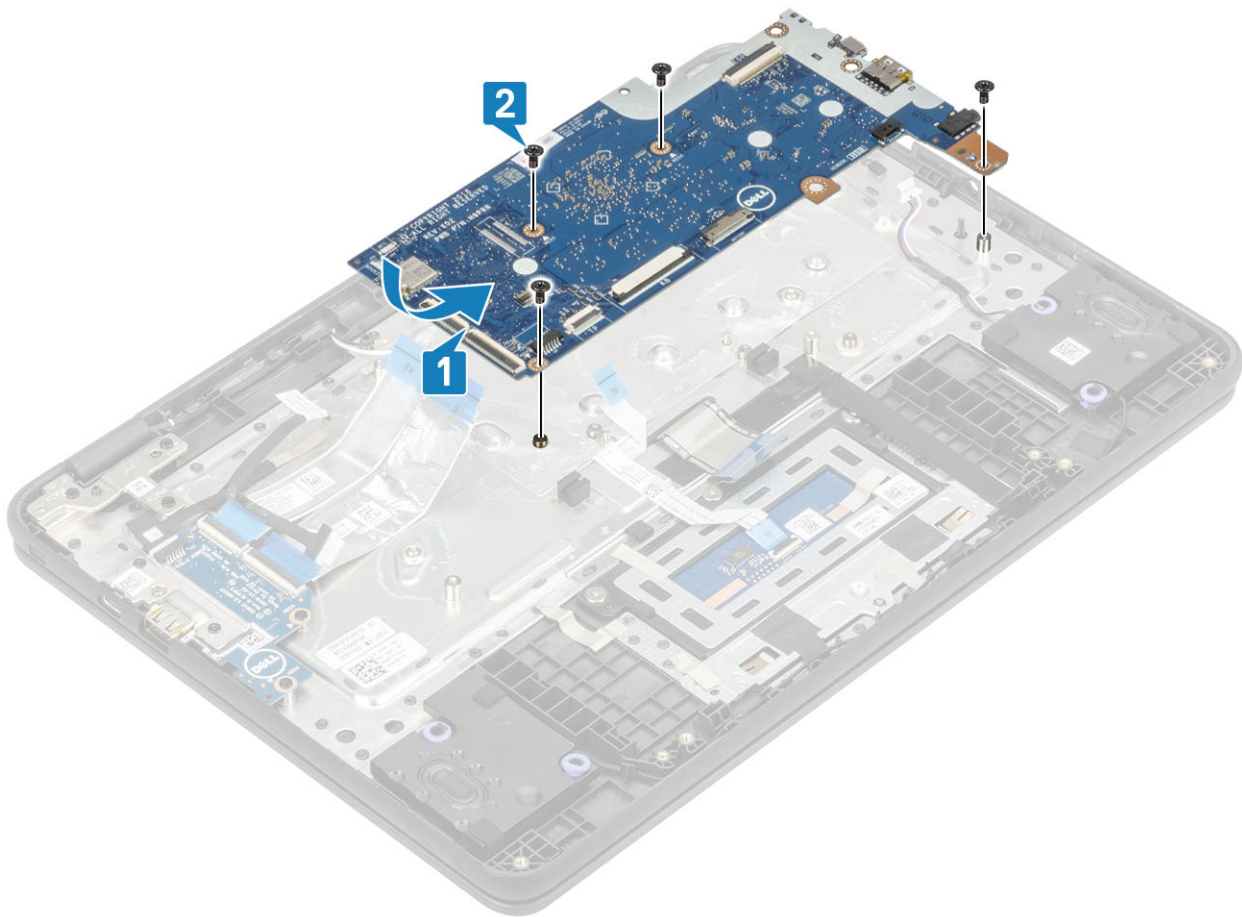
12. Remove the four (M2.0x4.0) screws that secure the system board to the palmrest [1].
13. Carefully slide and lift the system board from the left side and remove the system board from the computer [2].



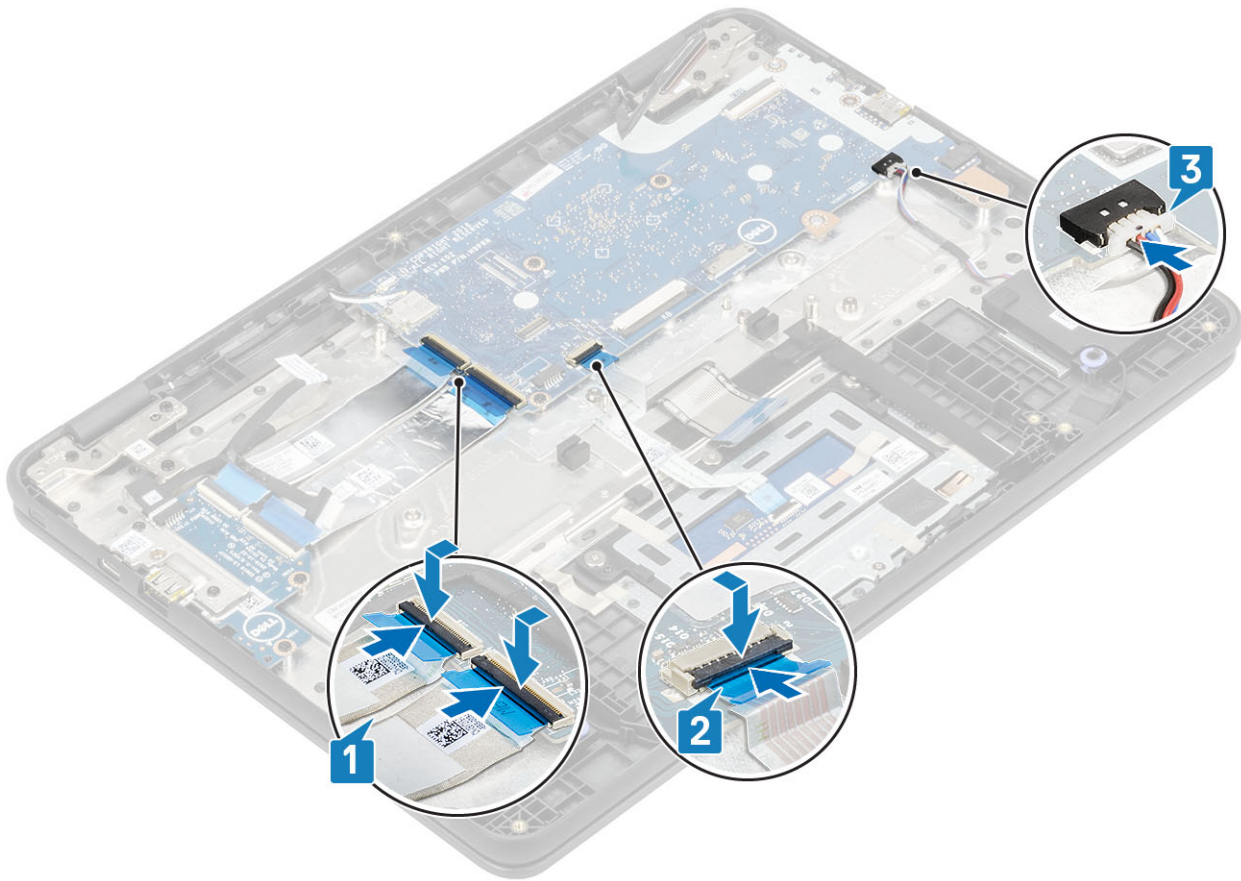
Installing system board

Steps

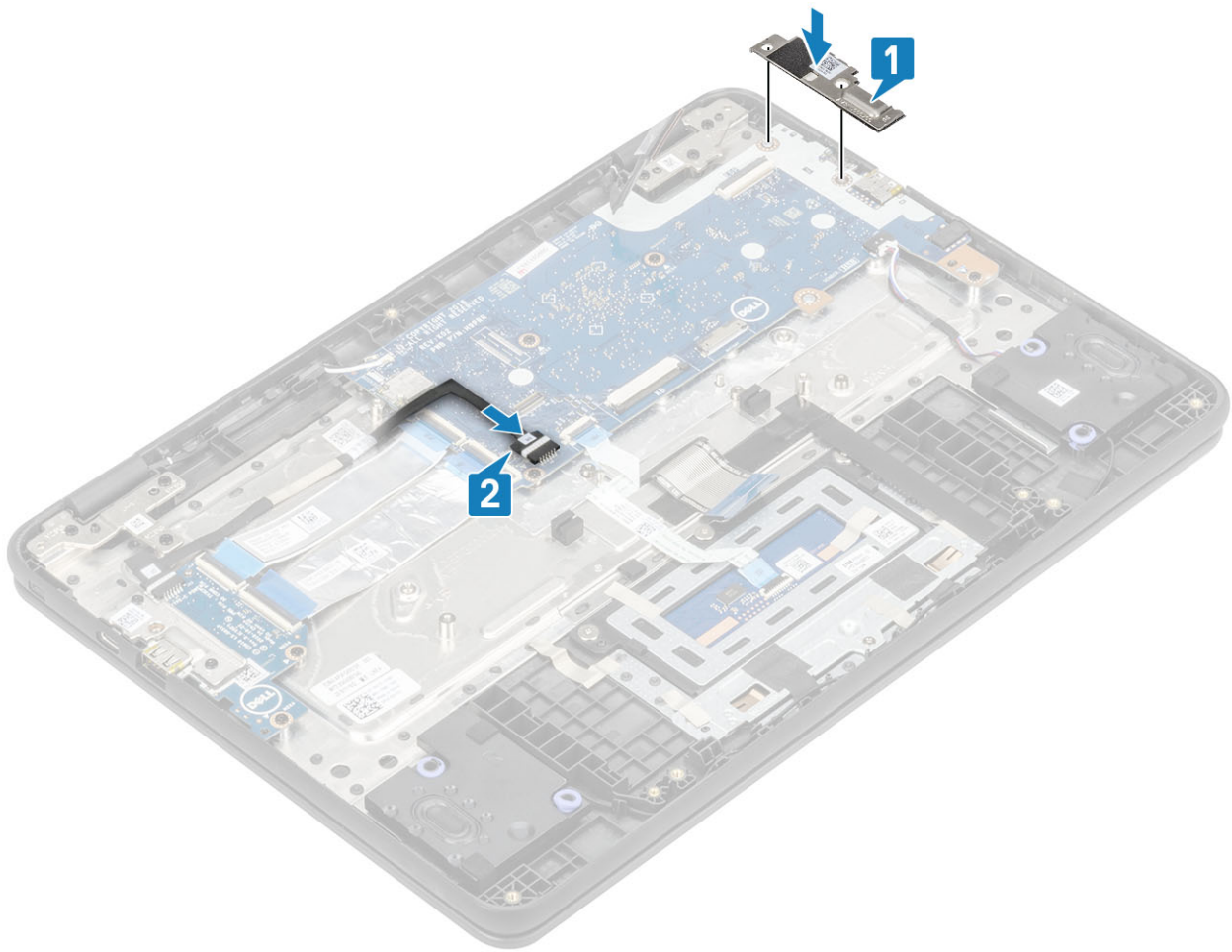
1. Align the screw holes on the system board with the screw holes and slide the system board on the computer.
2. Replace the four (M2.0x4.0) screws to secure the system board to the palmrest.



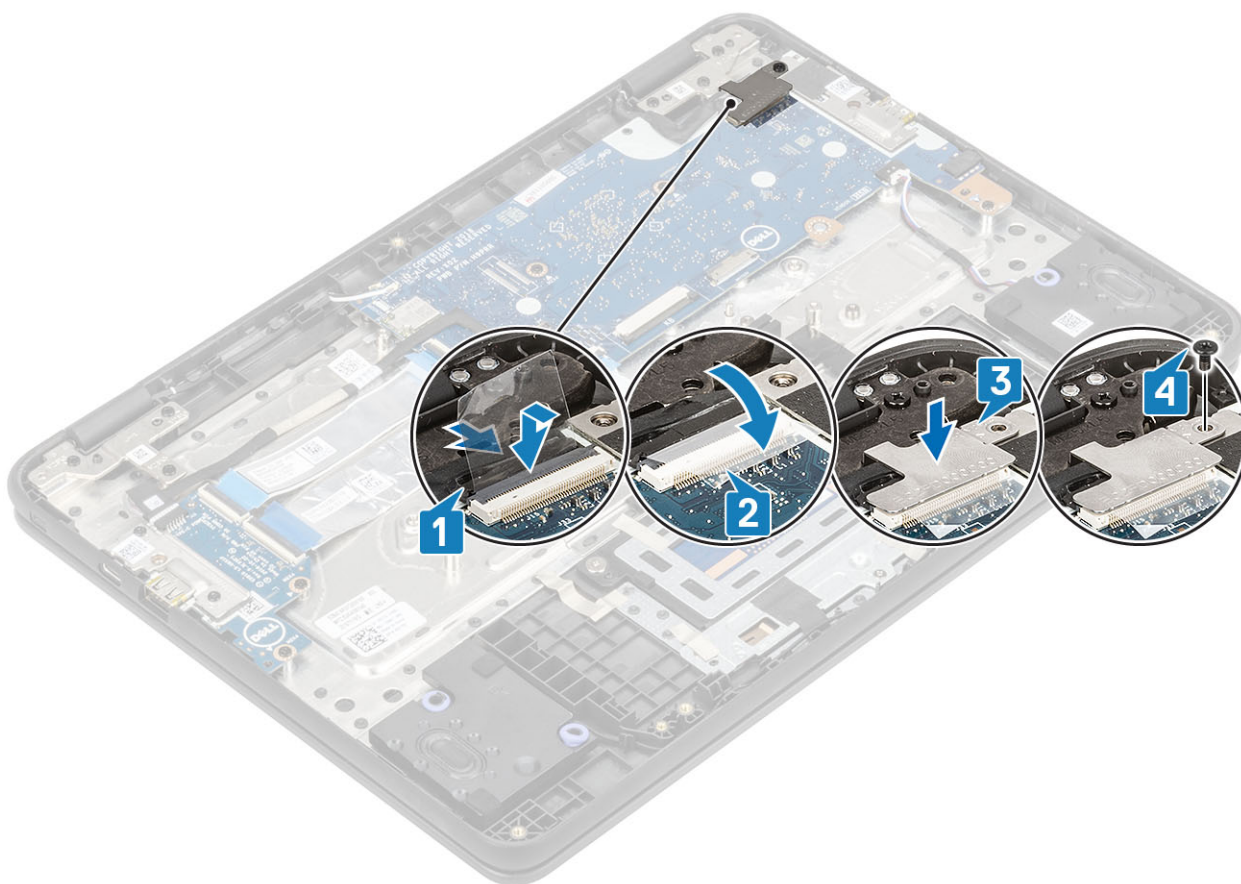
3. Connect the 30-pin IO board cable, 40-pin IO board cable, and the touchpad cable to the connectors on the system board and close the latch [1, 2].
4. Connect the speaker cable to the connector on the system board [3].



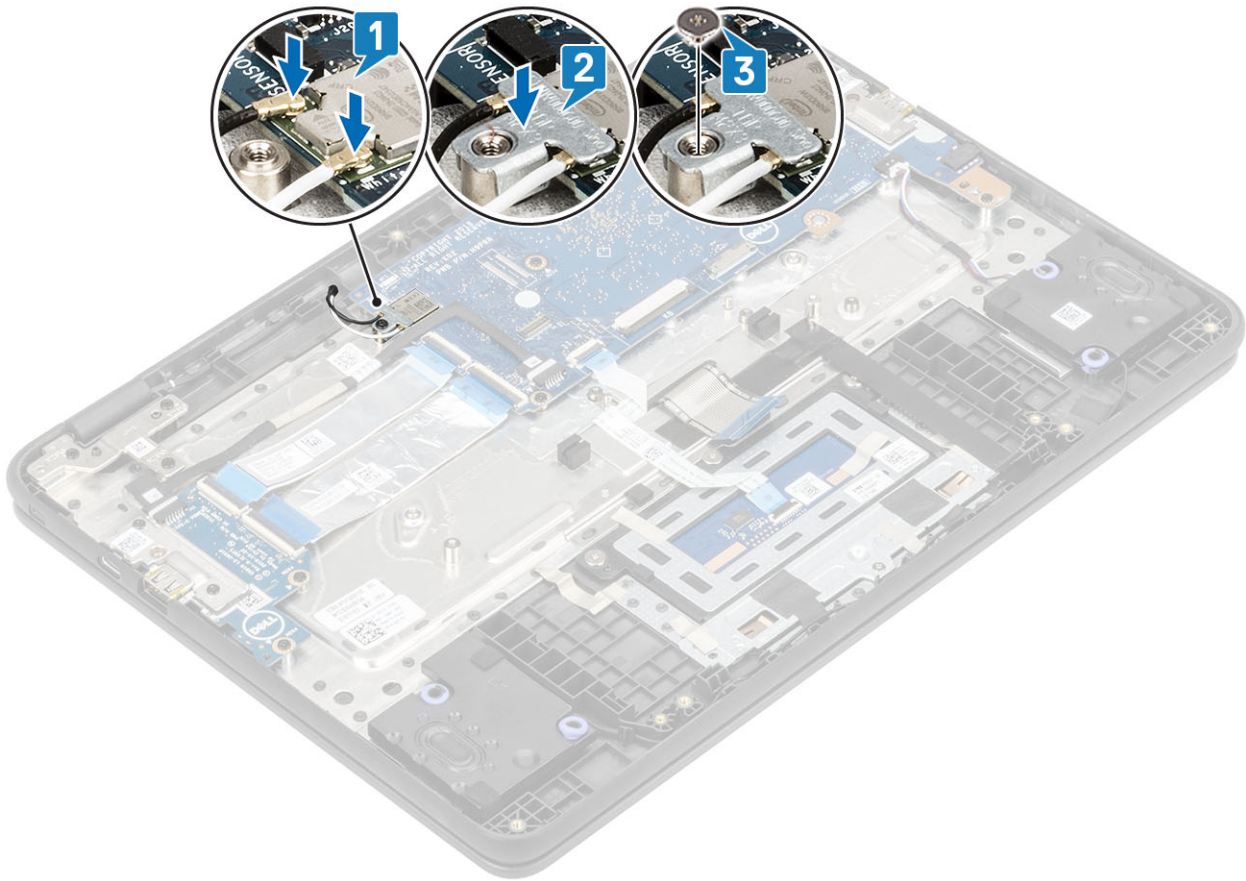
5. Place the left IO bracket to its place on the system board [1].
6. Connect the Type-C power cable to the connector on the system board [2].



7. Connect the display cable to the connector on the system board and close the latch [1].
8. Affix the adhesive tape to secure the display cable to the system board [2].
9. Place the display cable bracket over the connector and replace the single (M2.0x4.0) screw to secure the display cable bracket to the system board [3, 4].



10. Connect the two wireless antennas to the connector on the system board [1].
11. Align and place the wireless bracket to its slot [2].
12. Replace the single (M2.0x3.0) screw to secure the wireless bracket [3].



Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [microSD card](#).
4. Follow the procedure in [after working inside your computer](#).

Display assembly

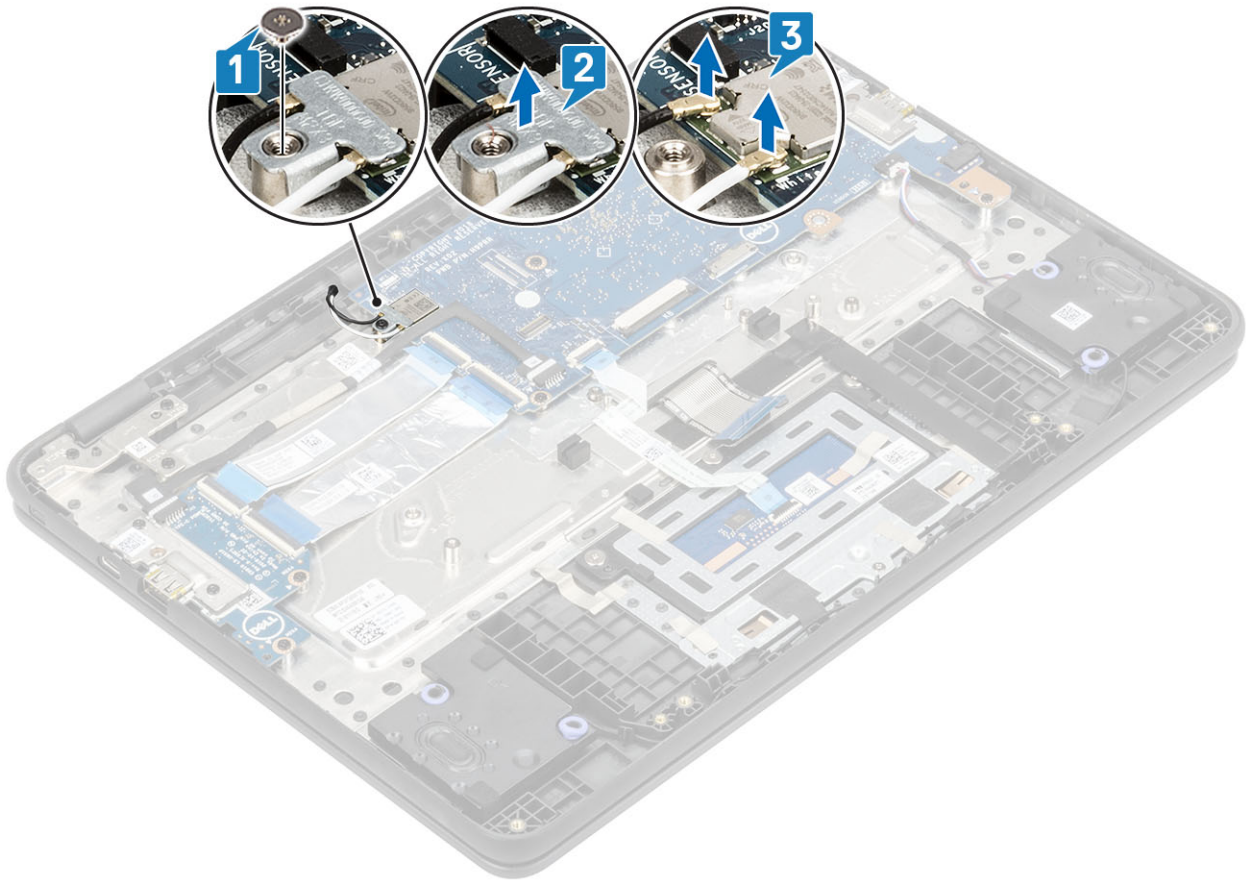
Removing display assembly

Prerequisites

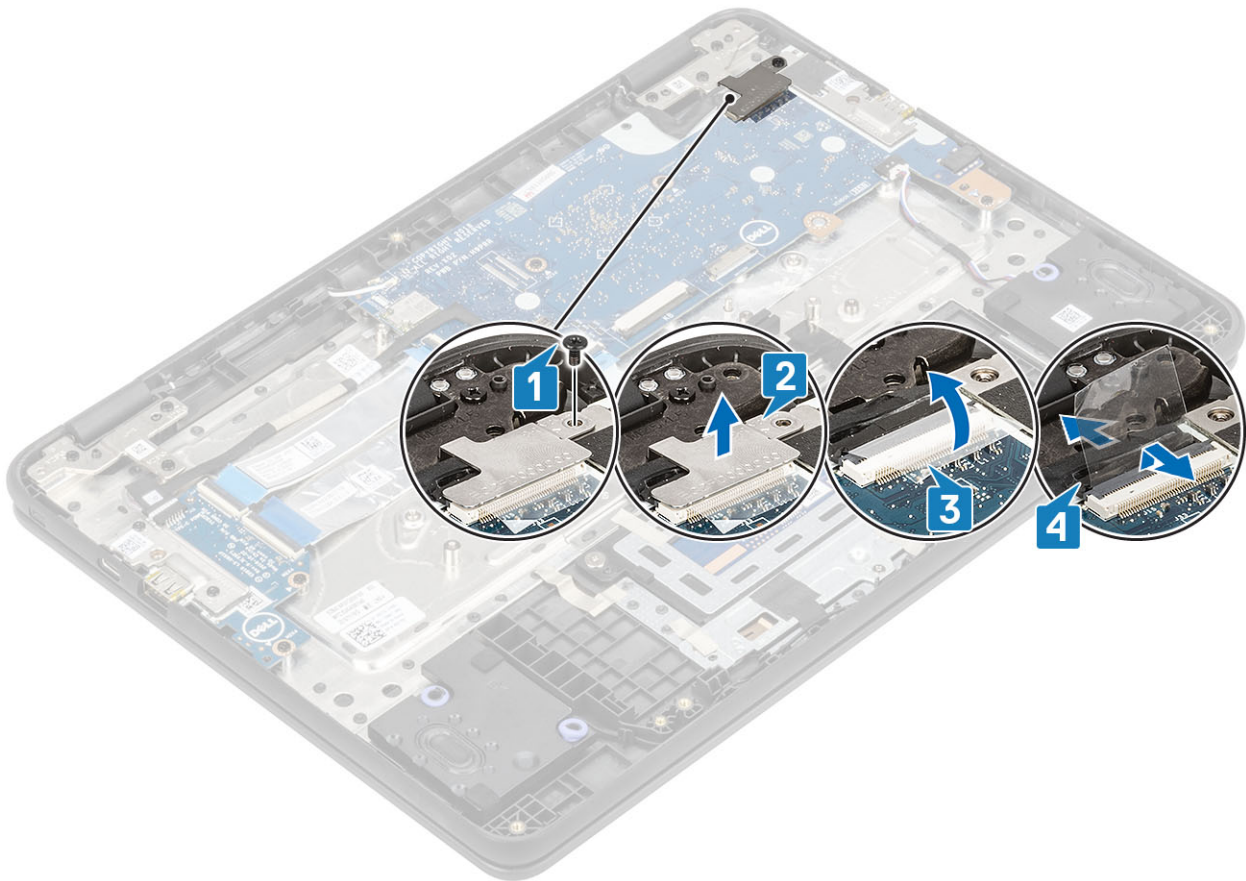
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).

Steps

1. Remove the single (M2.0x3.0) screw that secures the wireless bracket to the system board [1].
2. Lift the wireless bracket away from the computer [2].
3. Disconnect and unroute the two wireless antennas from the connector on the system board [3].

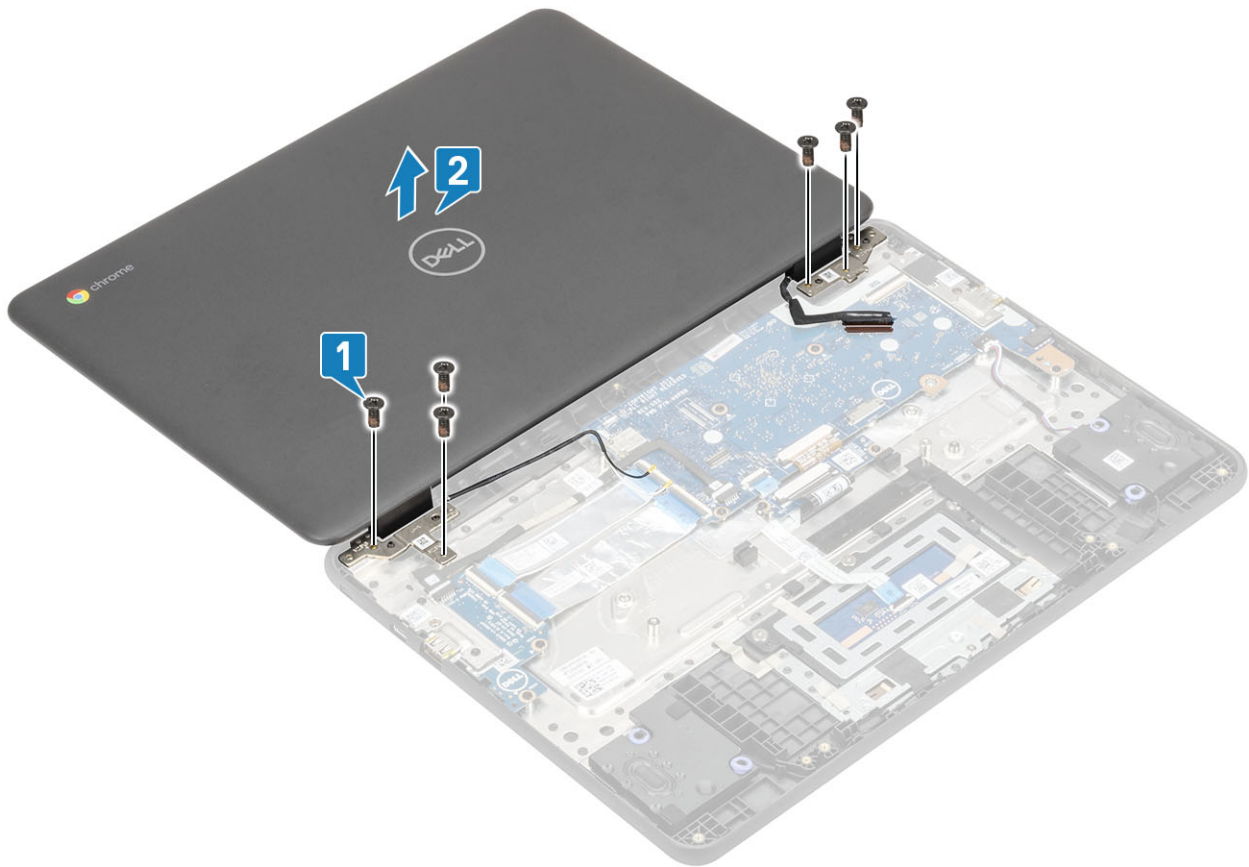


4. Remove the single (M2.0x4.0) screw that secures the display cable bracket to the system board [1].
5. Lift the display cable bracket away from the computer [2].
6. Peel the adhesive tape that secures the display cable [3].
7. Lift the latch and disconnect the display cable from the connector on the system board [4].



NOTE: The screw securing the display cable bracket also secures the left IO bracket to the system board, as a result removal of the display cable bracket leaves the left IO bracket unsecured. Technicians should therefore ensure that the left IO bracket is not moved or lost during any subsequent disassembly processes.

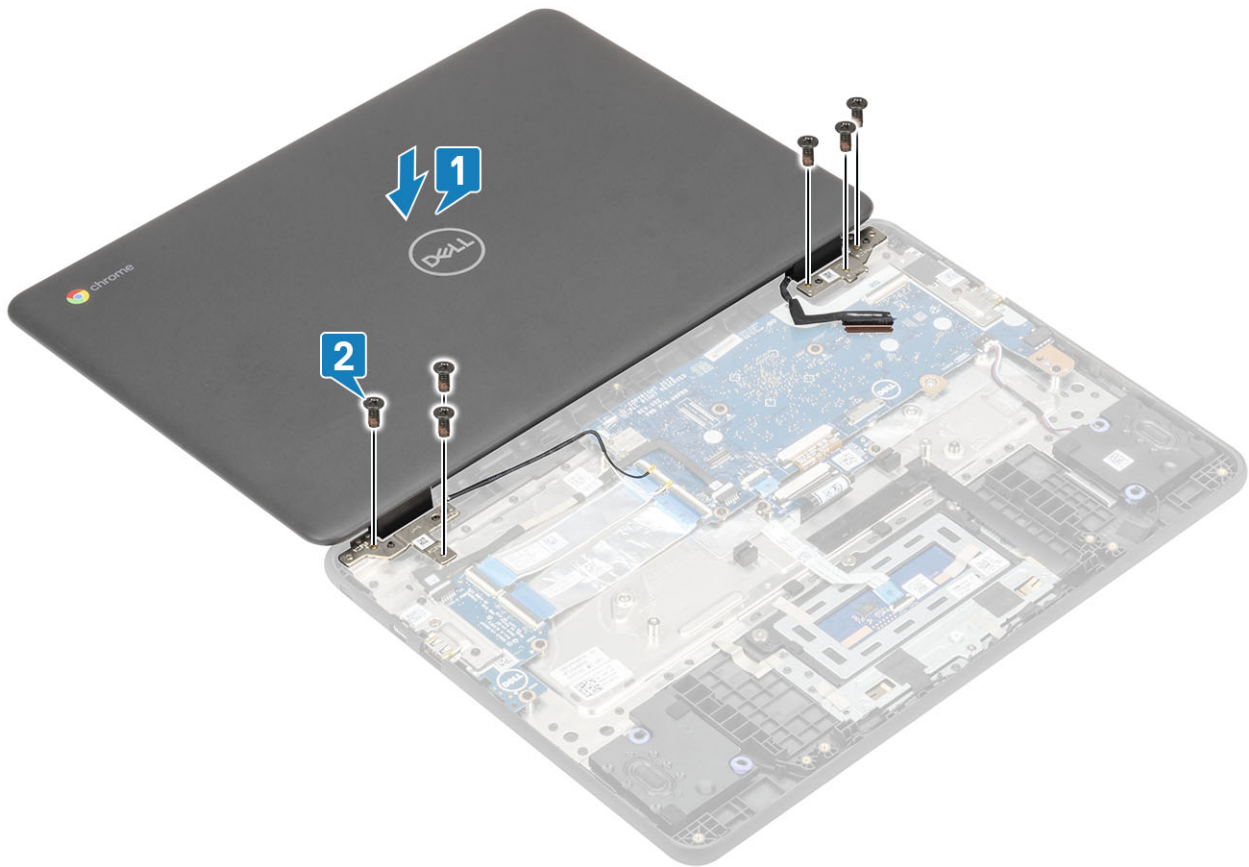
8. Open the system to 180 degrees and place the computer on a flat surface, with the display hinges facing up.
9. Remove the six (M2.5x5.0) screws that secure the display assembly to the palmrest [1].
10. Remove the display assembly from the palmrest [2].



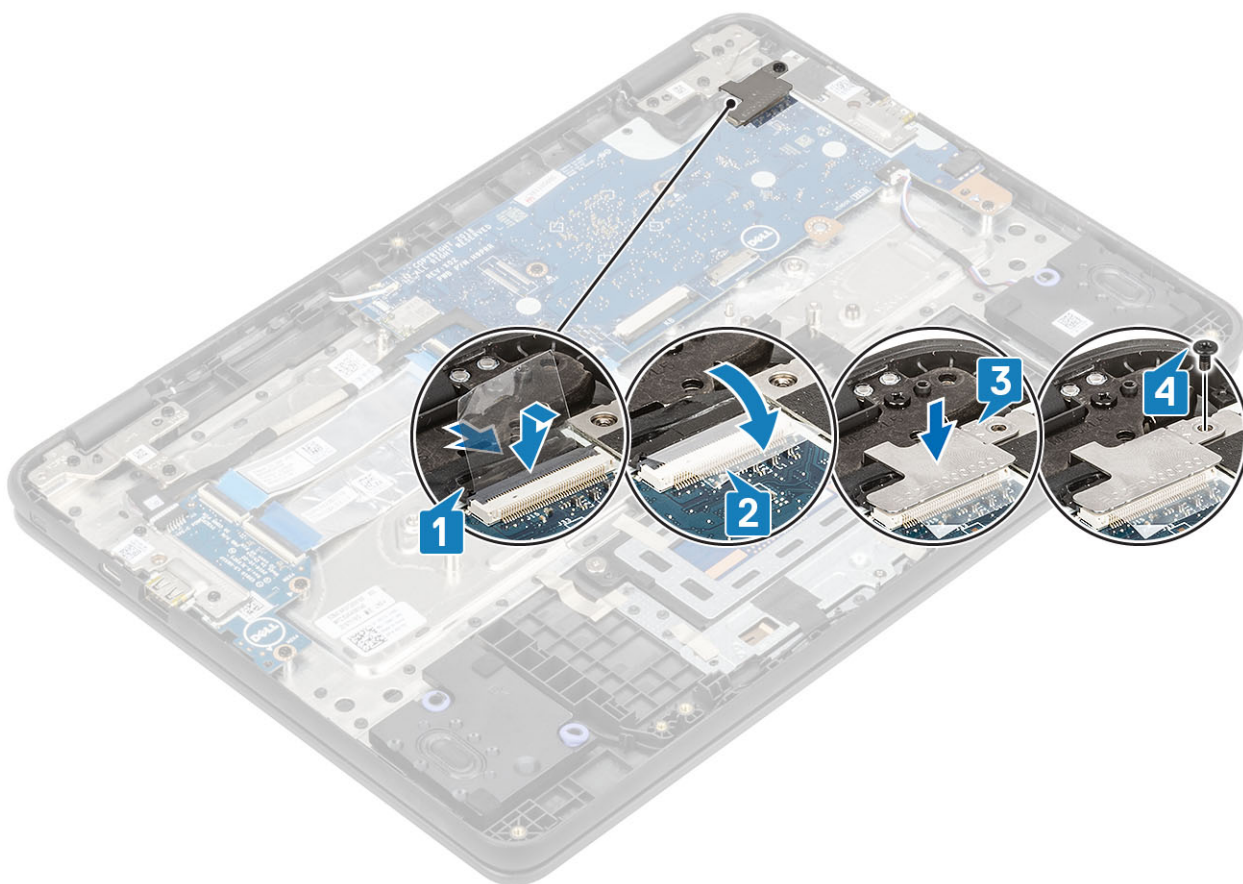
Installing display assembly

Steps

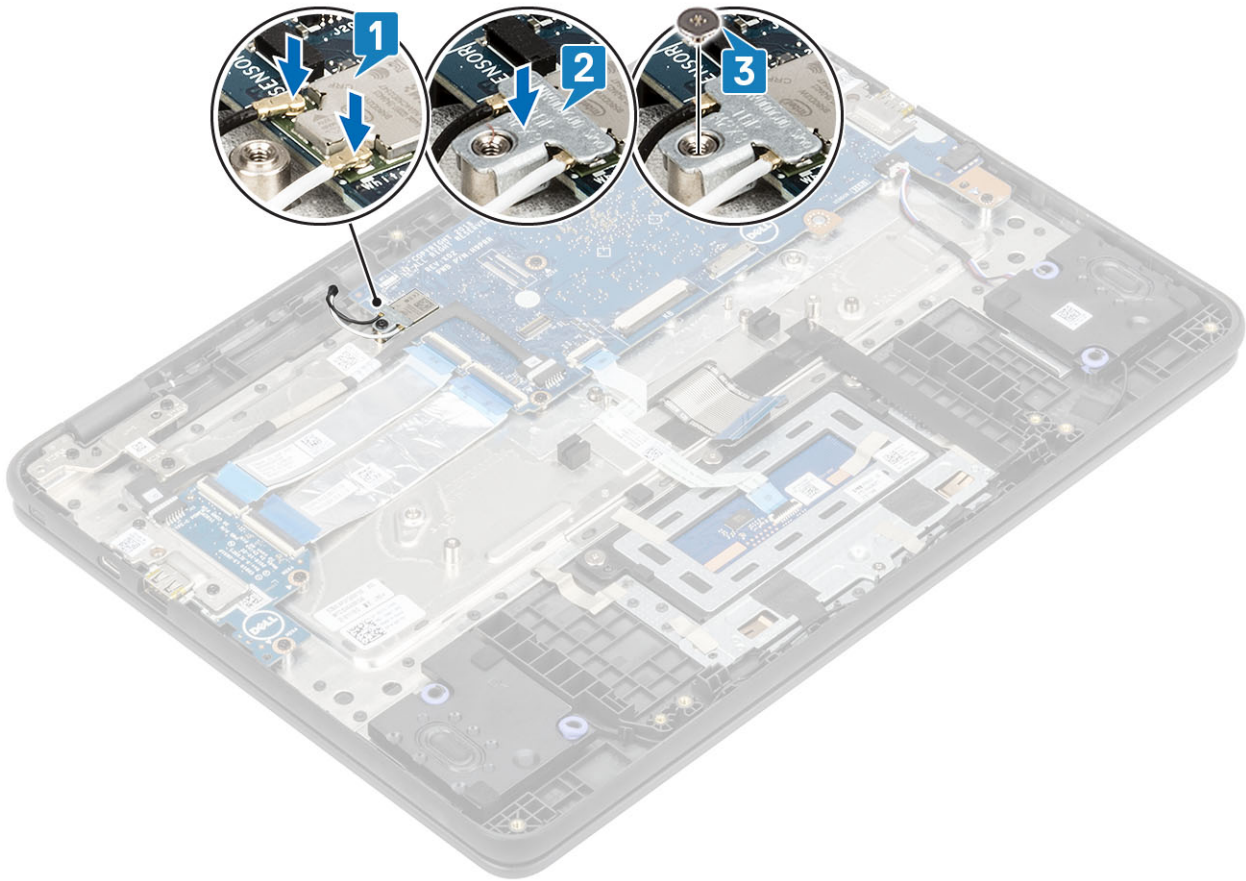
1. Place the chassis on the edge of a plane surface.
2. Align the display assembly with the screw holders on the computer [1].
3. Replace the six (M2.5x5.0) display hinge bracket screws to secure the display assembly to the palmrest [2].



4. Lift the system and close the display.
5. Connect the display cable to the connector on the system board and close the latch [1].
6. Affix the adhesive tape to secure the display cable to the system board [2].
7. Place the display cable bracket over the connector and replace the single (M2.0x4.0) screw to secure the display cable bracket to the system board [3, 4].



8. Connect the two wireless antennas to the connector on the system board [1].
9. Align and place the wireless bracket to its slot [2].
10. Replace the single (M2.0x3.0) screw to secure the wireless bracket [3].



Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [microSD card](#).
4. Follow the procedure in [after working inside your computer](#).

Display bezel

Removing display bezel

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [display assembly](#)

Steps

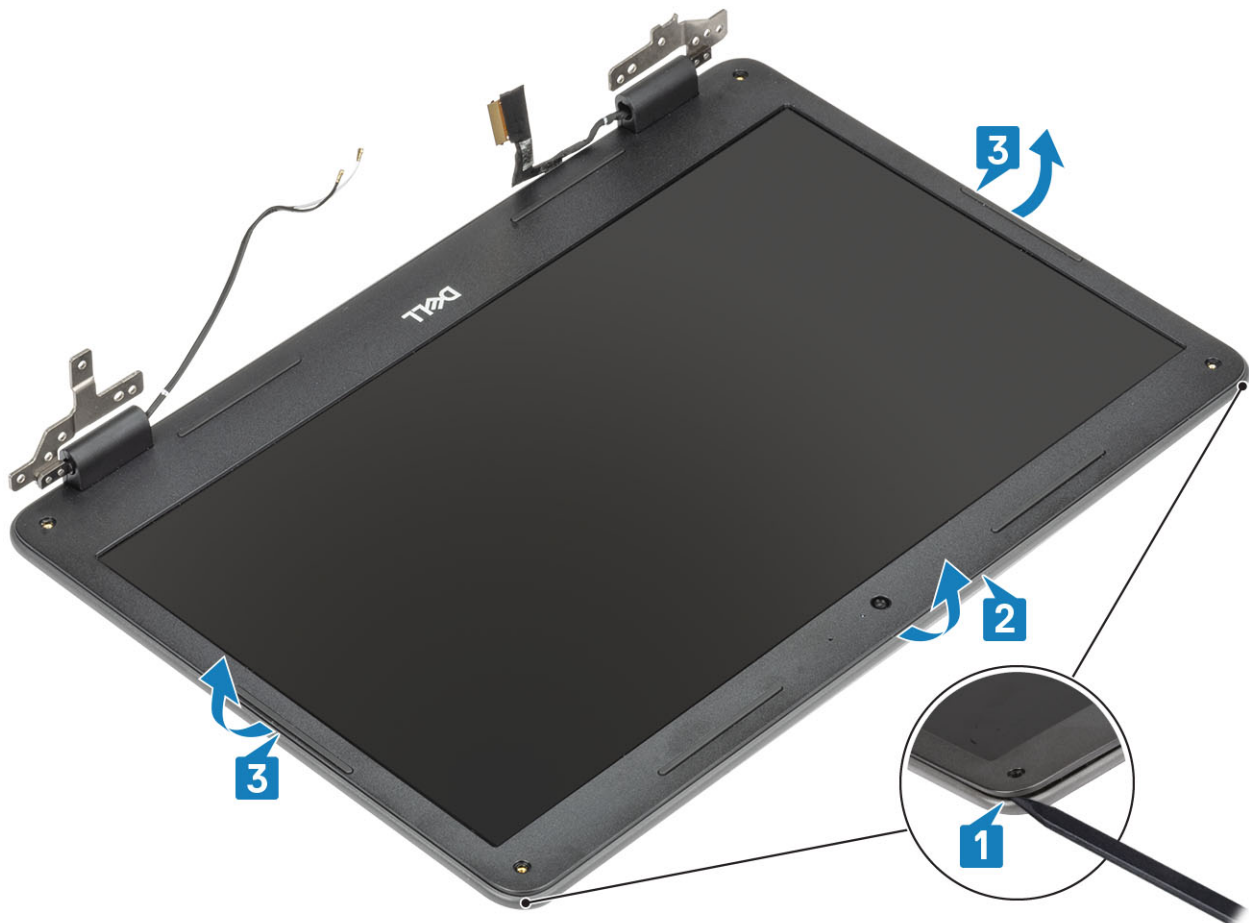
1. Remove the four (M2.5x3.5) screws that secure the display bezel to the panel.

i **NOTE:** The stickers covering the display bezel screws can be removed along with the screws and do not need to be peeled off first. When removing, apply pressure with a screwdriver on top of the sticker and rotate to remove both the sticker and the display bezel screw together.

i **NOTE:** This process destroys the screw cover and cannot be reused

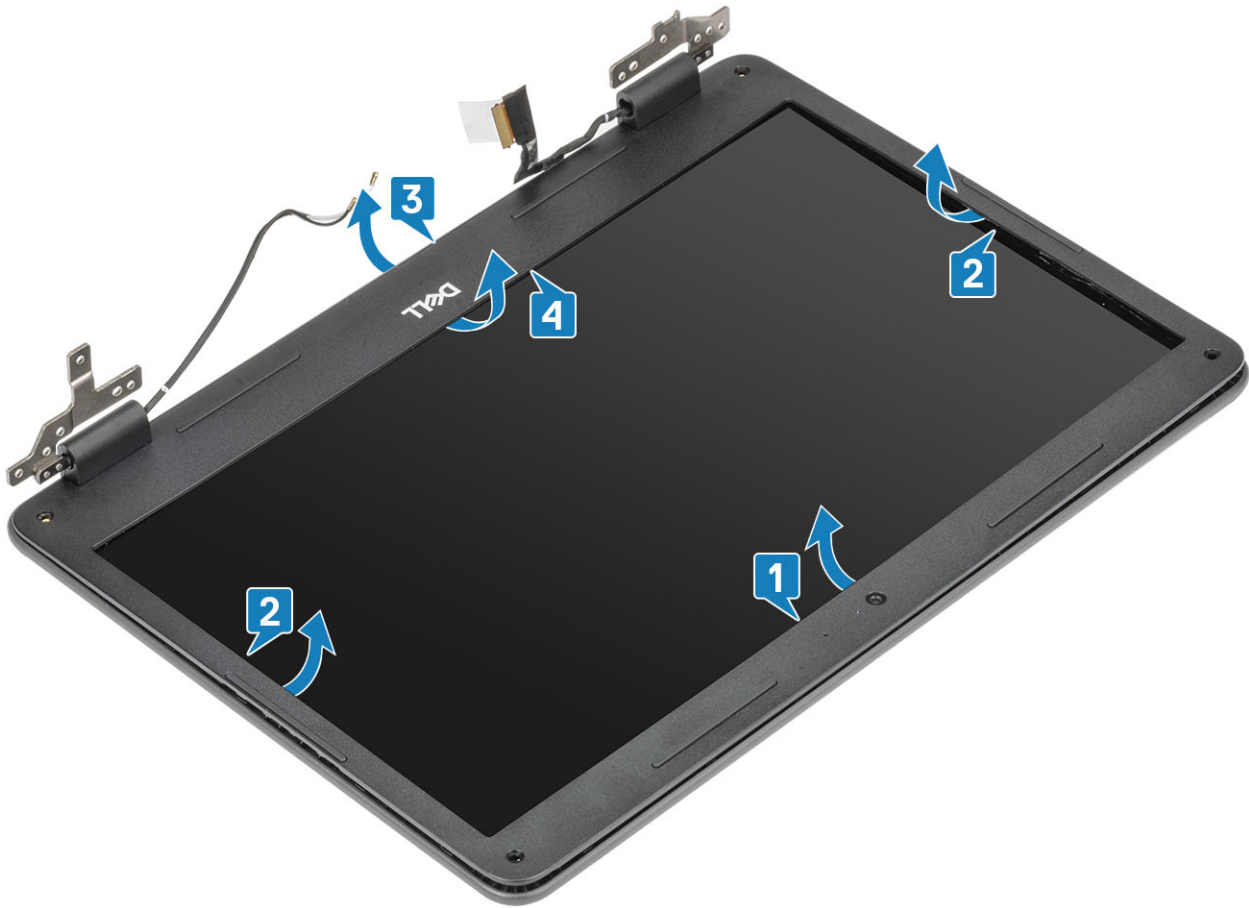


2. Use a plastic scribe to carefully pry open the upper right or upper left corner of the outside edge of the display bezel and continue to pry open the outside edge of the top side of the display bezel and then pry open the outside edge of the left and right sides of the display bezel [1, 2, 3].



3. Carefully pry open the inside edge of the top side of the display bezel and then pry open the inside edge of the left and right sides of the display bezel [1, 2].
4. Continue to pry open the bottom outside edge of the display bezel and carefully pry open the bottom inside edge of the display bezel [3,4].

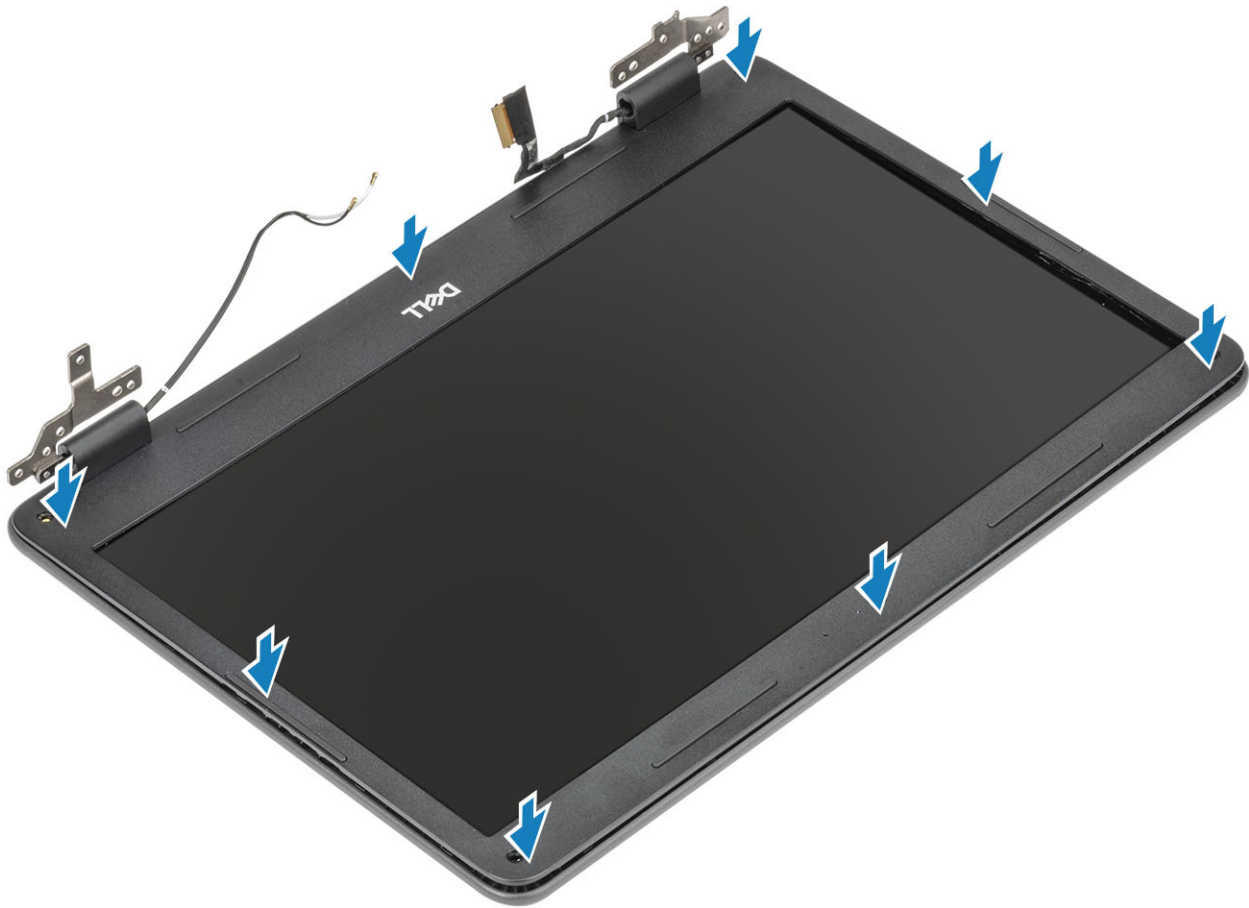
NOTE: Be careful when prying the display bezel as peeling the adhesive on display bezel may damage the display panel.



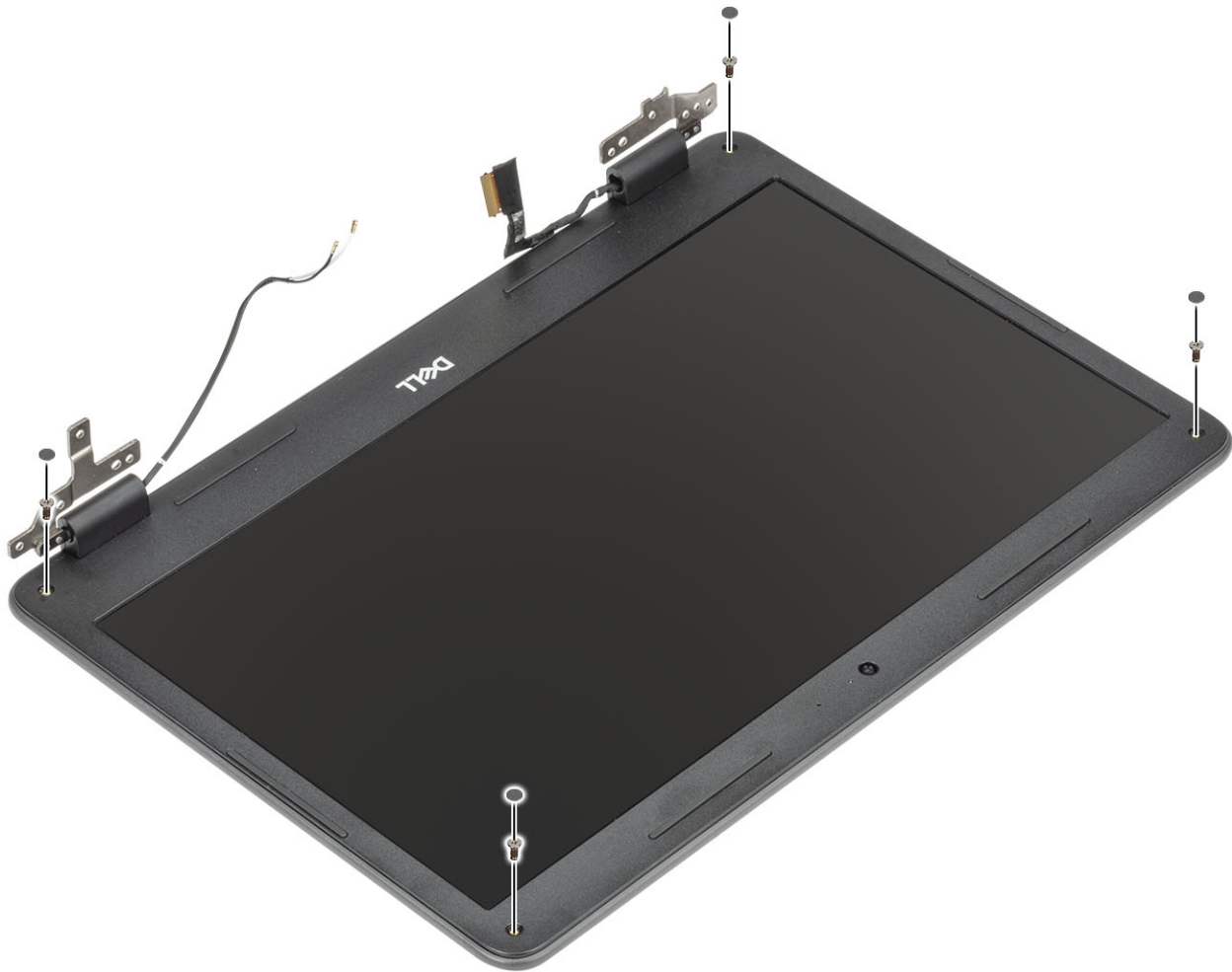
Installing display bezel

Steps

1. Place the display bezel on the display assembly.
2. Starting from the top corner, press on the display bezel and work around the entire bezel until it clicks on to the display assembly.



3. Replace the four (M2.5x3.5) screws to secure the display bezel to the display assembly.
4. Adhere the four bezel stickers over the screws once the screws have been secured.



Next steps

1. Install the [display assembly](#).
2. Install the [battery](#).
3. Install the [base cover](#).
4. Install the [microSD card](#).
5. Follow the procedure in [after working inside your computer](#).

Display panel

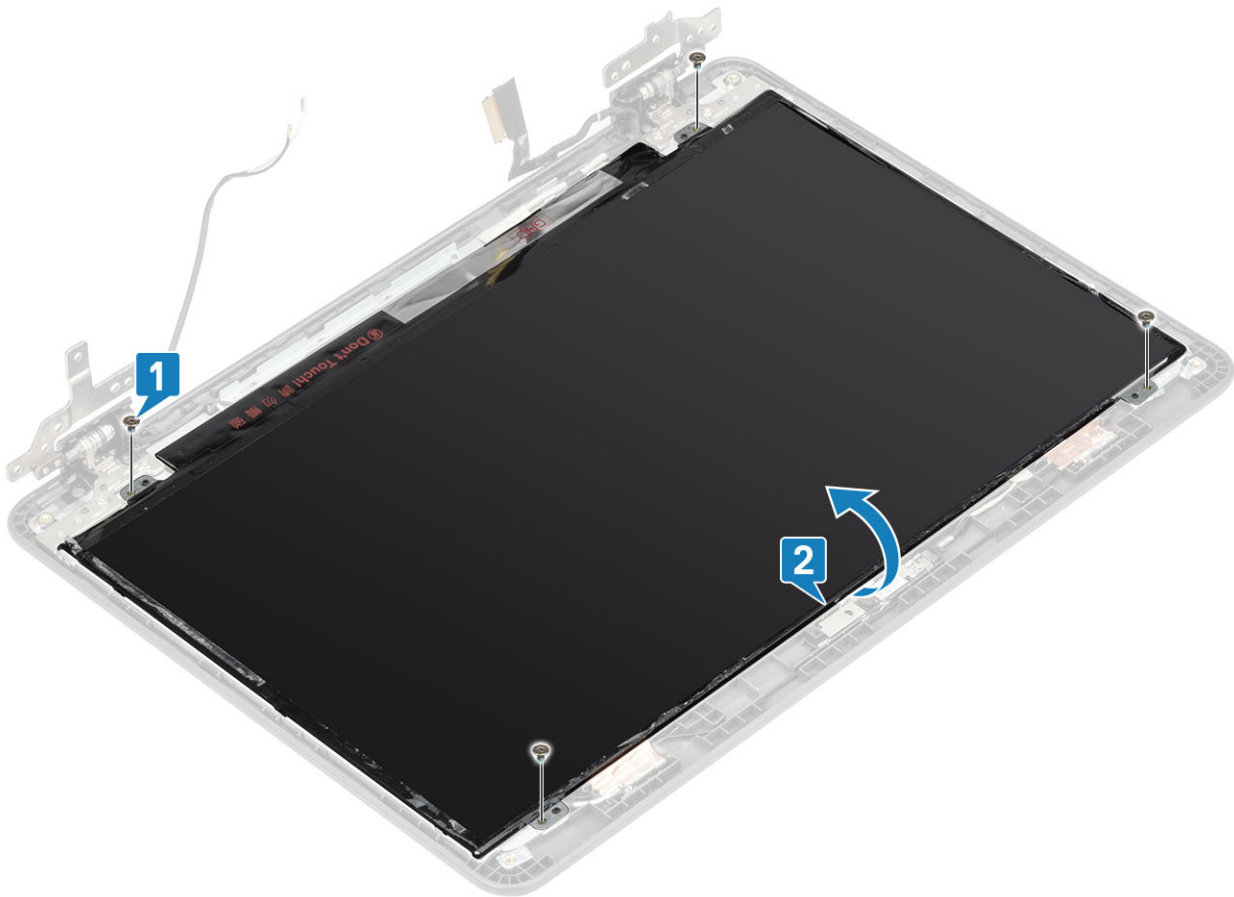
Removing display panel

Prerequisites

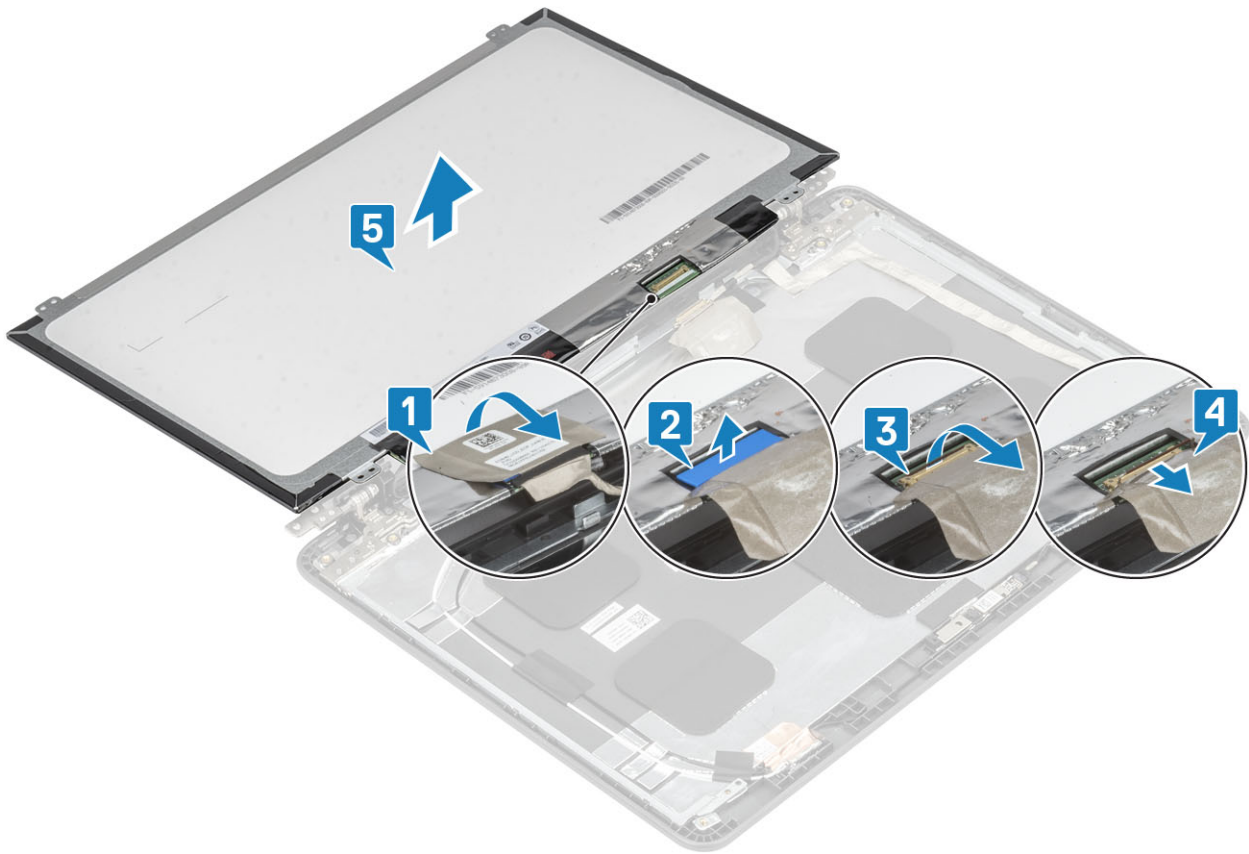
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [display assembly](#).
6. Remove the [display bezel](#).

Steps

1. Remove the four (M2.0x3.0) screws that secure the display panel to the display assembly [1] and lift to turn the display panel to access the display cable [2].



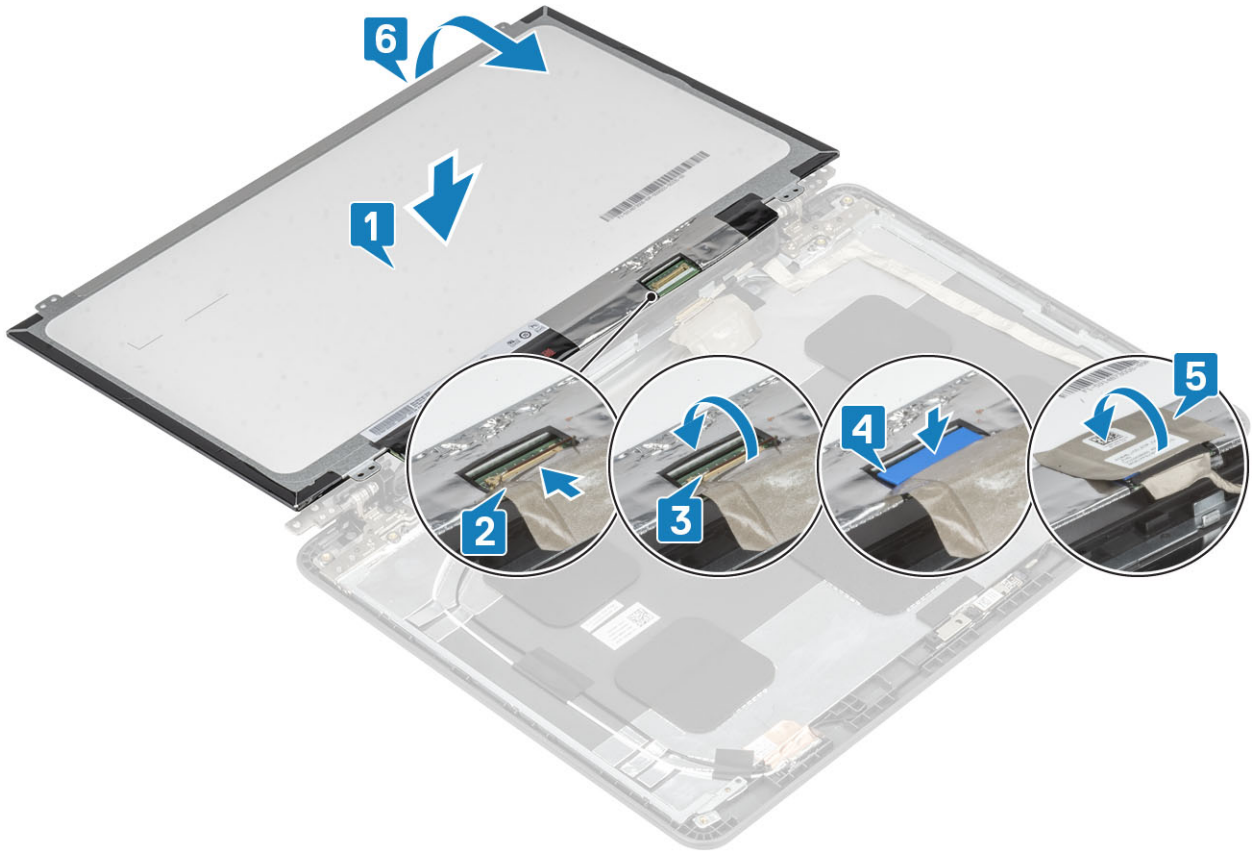
2. Peel the conductive tape securing the display cable on the back of the display panel [1].
3. Peel and remove the rubber spacer covering the display cable [2].
4. Lift the latch and disconnect the display cable from the connector on the display panel [3, 4].
5. Remove the display panel away from the display assembly [5].



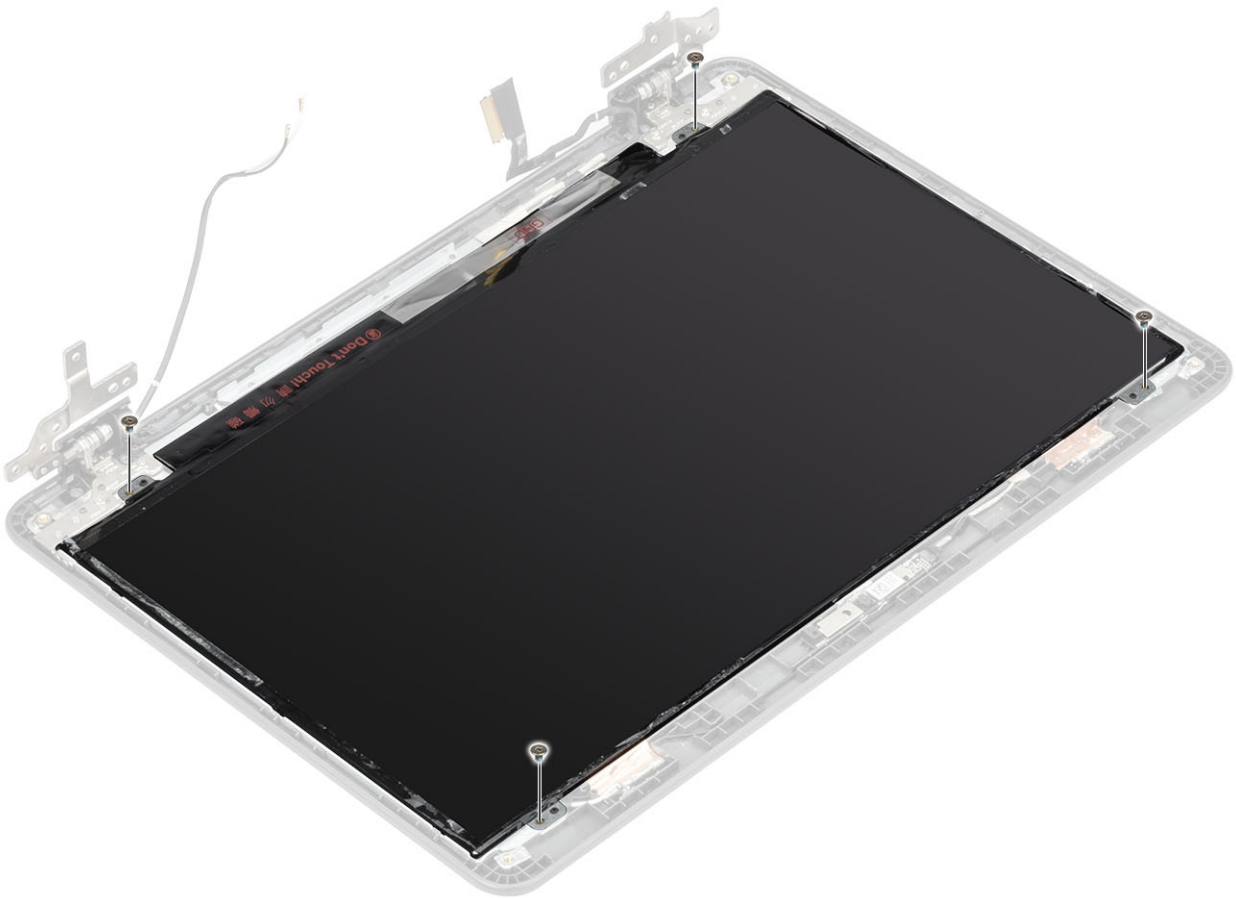
Installing display panel

Steps

1. Align and place the display panel [1].
2. Connect the display cable to the connector on the display panel and close the latch [2, 3].
3. Affix the rubber spacer [4] and then the conductive tape to secure the display cable on the back of the display panel [5].
4. Flip the display panel to align with the screw holders on the display assembly [6].



5. Replace the four (M2.0x3.0) screws to secure the display panel to the display assembly.



Next steps

1. Install the [display bezel](#).
2. Install the [display assembly](#).
3. Install the [battery](#).
4. Install the [base cover](#).
5. Install the [microSD card](#).
6. Follow the procedure in [after working inside your computer](#).

Display hinges

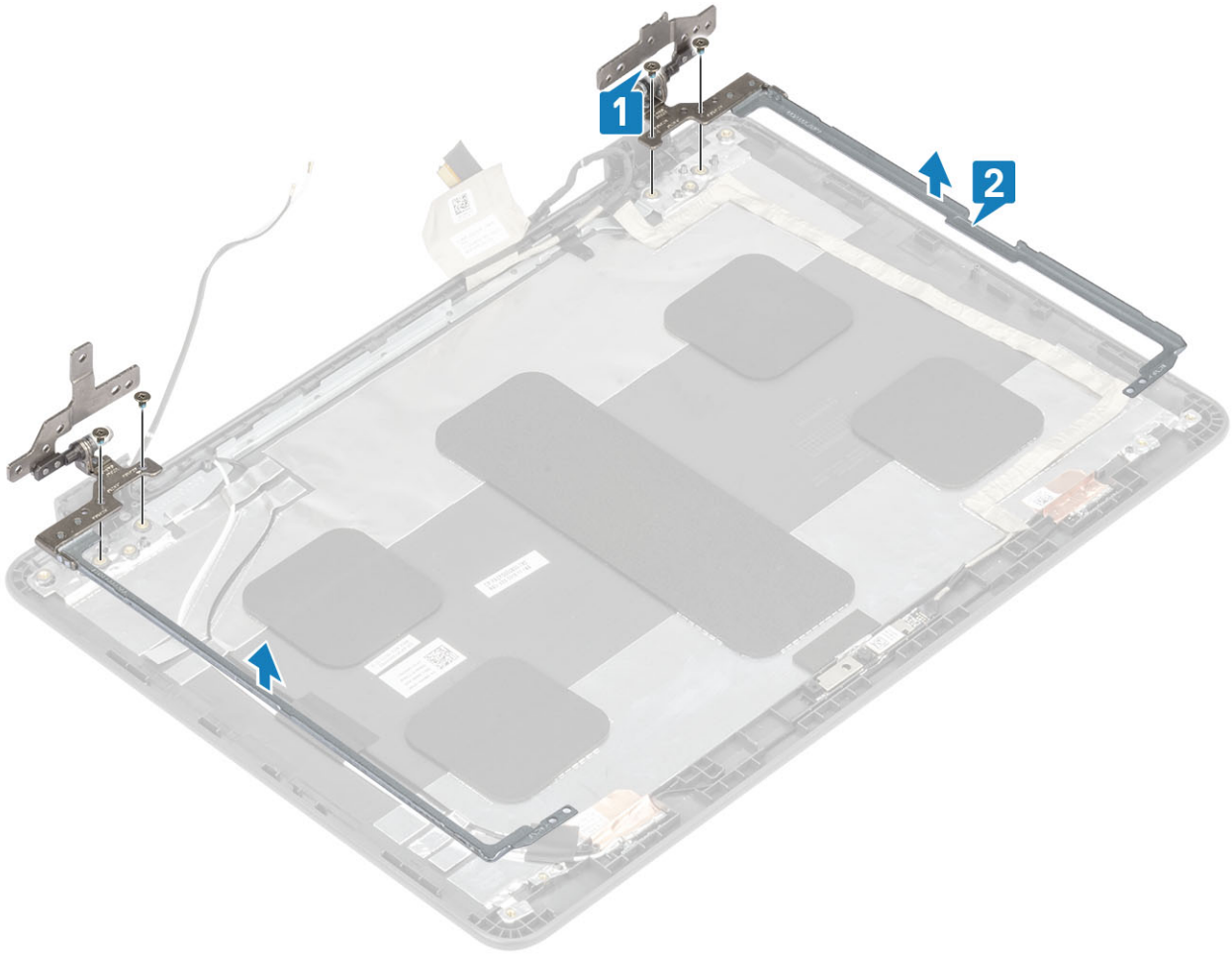
Removing display hinge

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#).

Steps

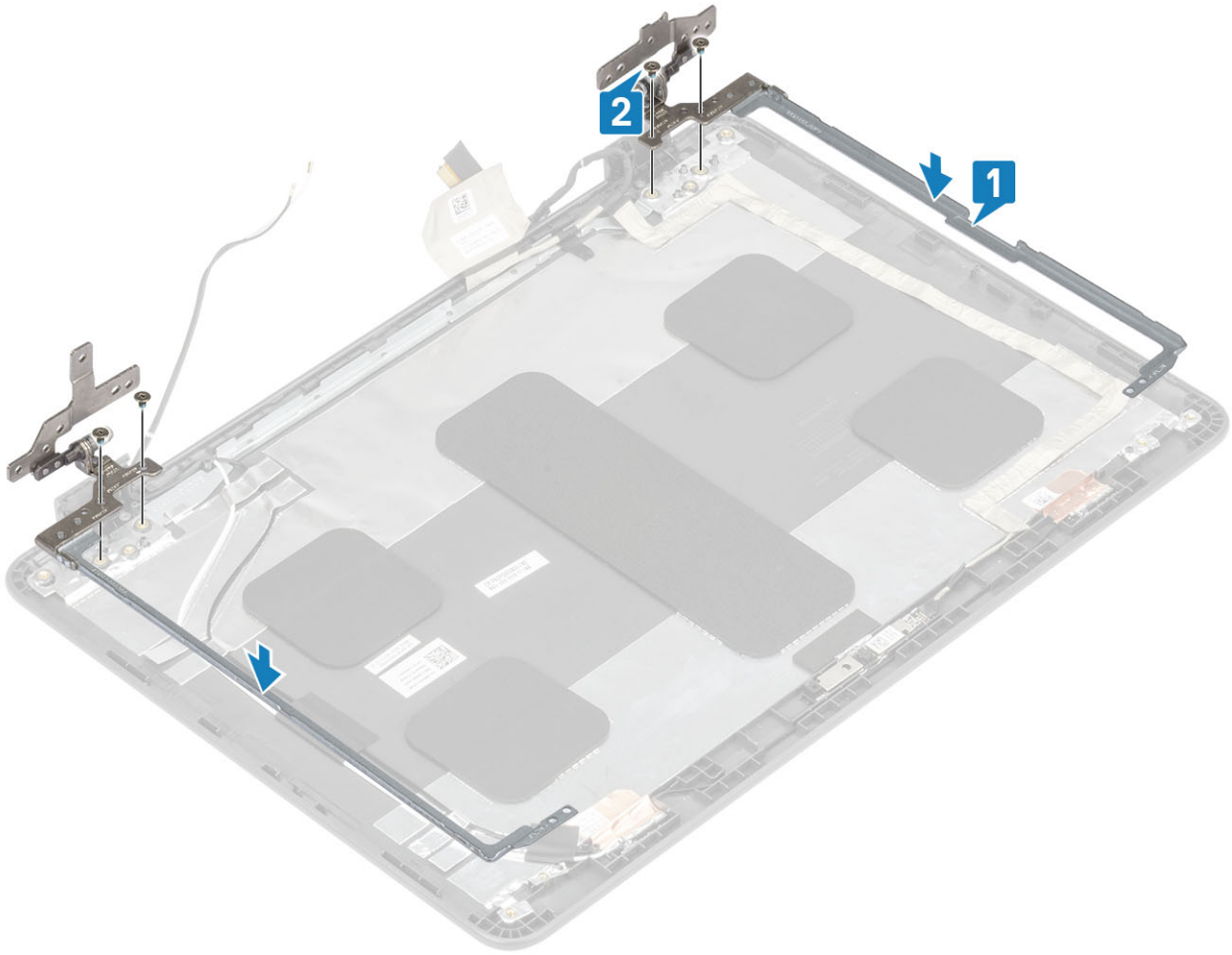
1. Remove the four (M2.5x3.5) screws that secure the display hinges to the display back cover [1].
2. Lift the display hinges away from the display back cover [2].



Installing display hinge

Steps

1. Place the display hinges onto its slot and align the screw holes on the hinges with the screws holes on the display back cover [1].
2. Replace the four (M2.5x3.5) screws to secure the display hinges to the display back cover [2].



Next steps

1. Install the [display panel](#).
2. Install the [display bezel](#).
3. Install the [display assembly](#).
4. Install the [battery](#).
5. Install the [base cover](#).
6. Install the [microSD card](#).
7. Follow the procedure in [after working inside your computer](#).

Display cable

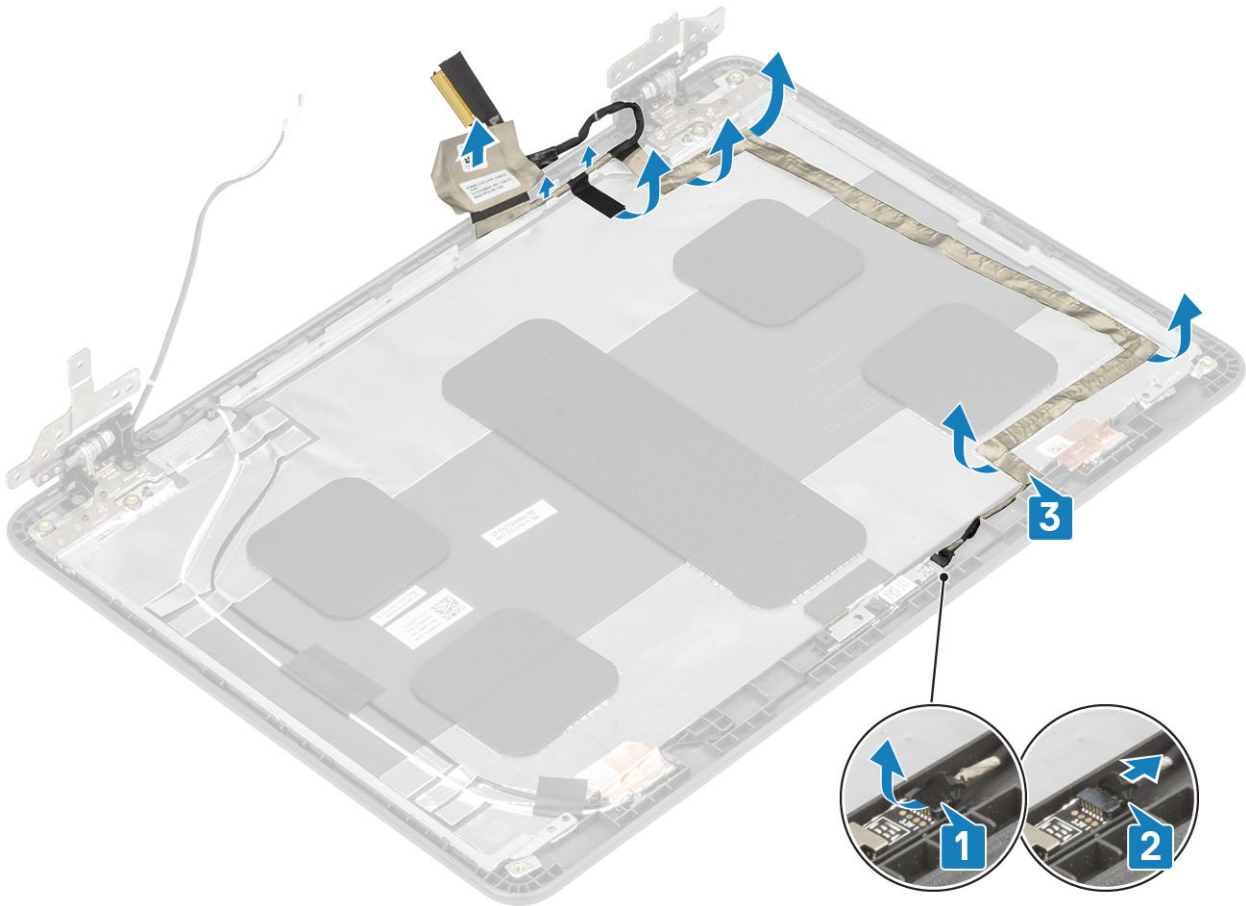
Removing display cable

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#).

Steps

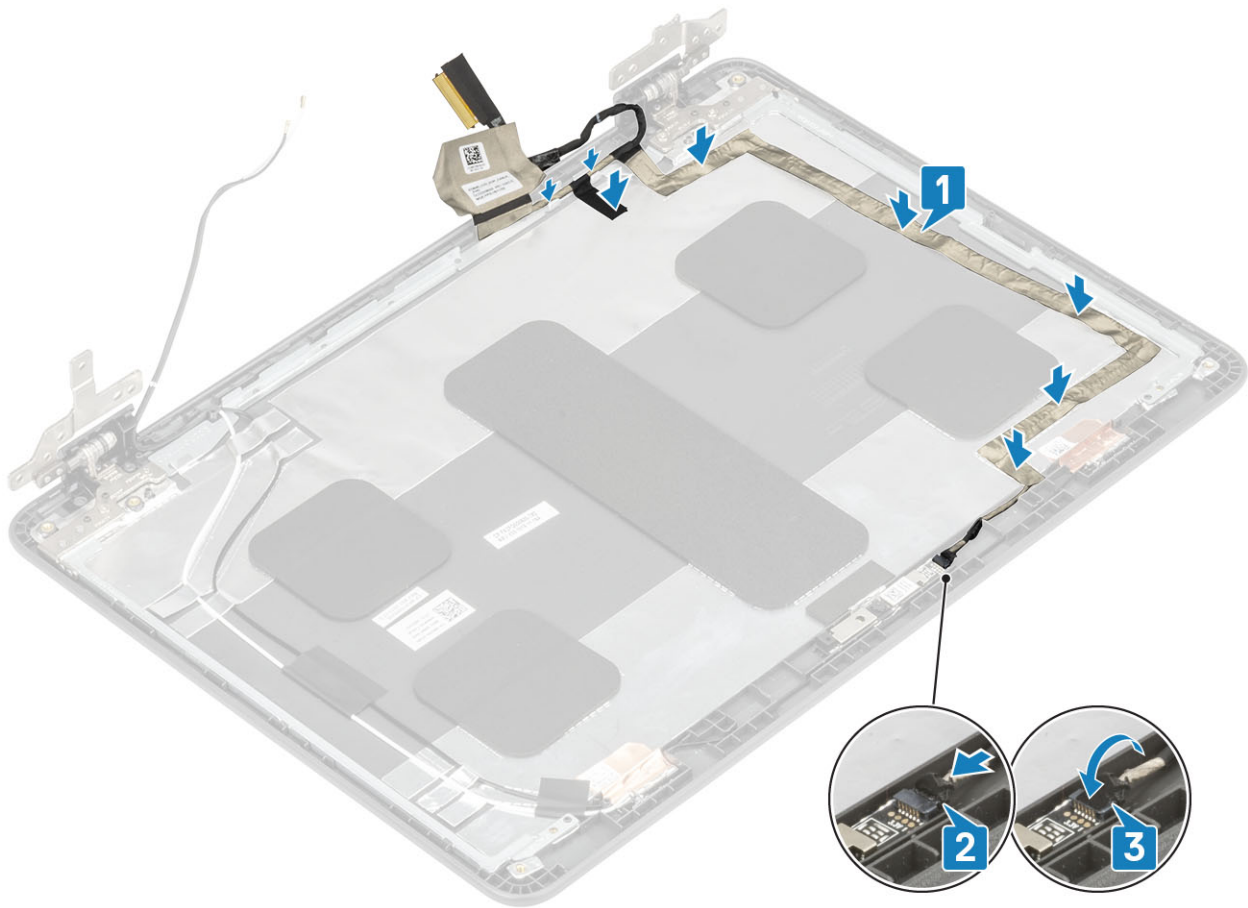
1. Peel the adhesive tape that covers the camera cable connector [1].
2. Disconnect the camera cable from the camera module and unrout the cable [2, 3].
3. Peel the adhesive tape that secures the display cable and lift the display cable away from the display back cover and antenna assembly.



Installing display cable

Steps

1. Affix the adhesive tape to secure the display cable to the display back cover and route the cable [1].
2. Connect the camera cable connector to the camera module [2].
3. Affix the adhesive tape to secure the camera cable connector [3].



Next steps

1. Install the [display panel](#).
2. Install the [display bezel](#).
3. Install the [display assembly](#).
4. Install the [battery](#).
5. Install the [base cover](#).
6. Install the [microSD card](#).
7. Follow the procedure in [after working inside your computer](#).

Camera

Removing camera

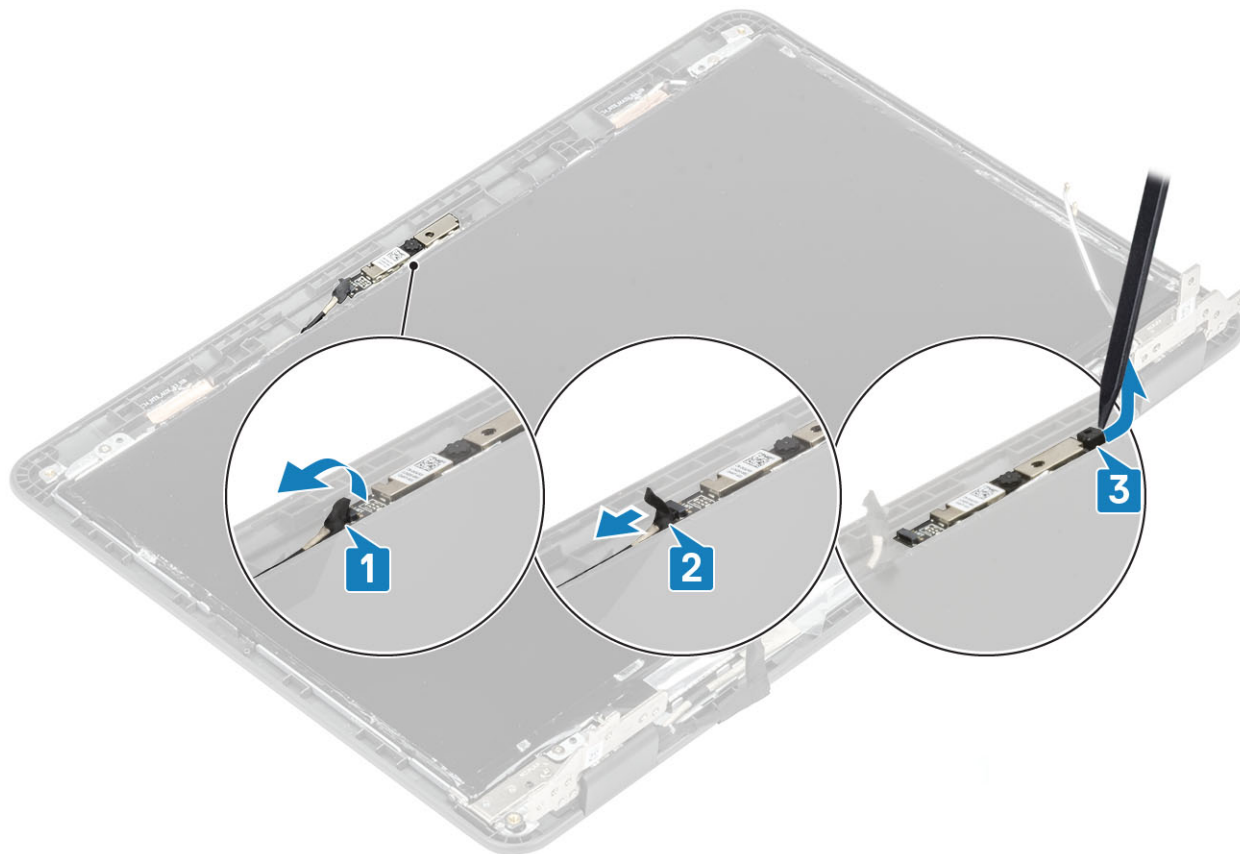
Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [display assembly](#).
6. Remove the [display bezel](#).

Steps

1. Peel the adhesive tape that covers the camera cable connector [1].
2. Disconnect the camera cable from the connector [2].

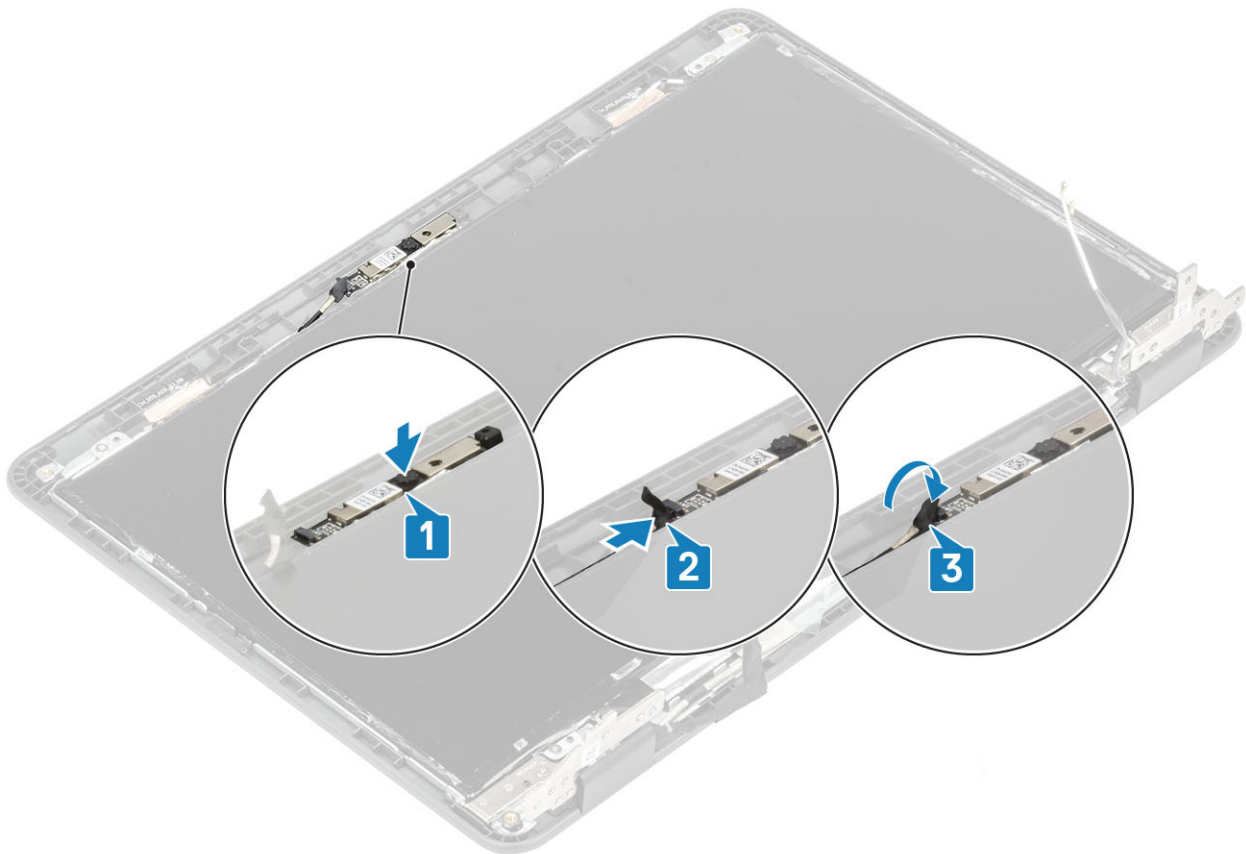
3. Use a plastic scribe to pull the camera module out from the chassis [3].



Installing camera

Steps

1. Align and place the camera to its slot in the display assembly [1].
2. Connect the camera cable to the connector on the display assembly [2].
3. Affix the adhesive tape to secure the camera cable connector [3].



Next steps

1. Install the [display bezel](#).
2. Install the [display assembly](#).
3. Install the [battery](#).
4. Install the [base cover](#).
5. Install the [microSD card](#).
6. Follow the procedure in [after working inside your computer](#).

Display back cover

Replacing display back cover and antenna assembly

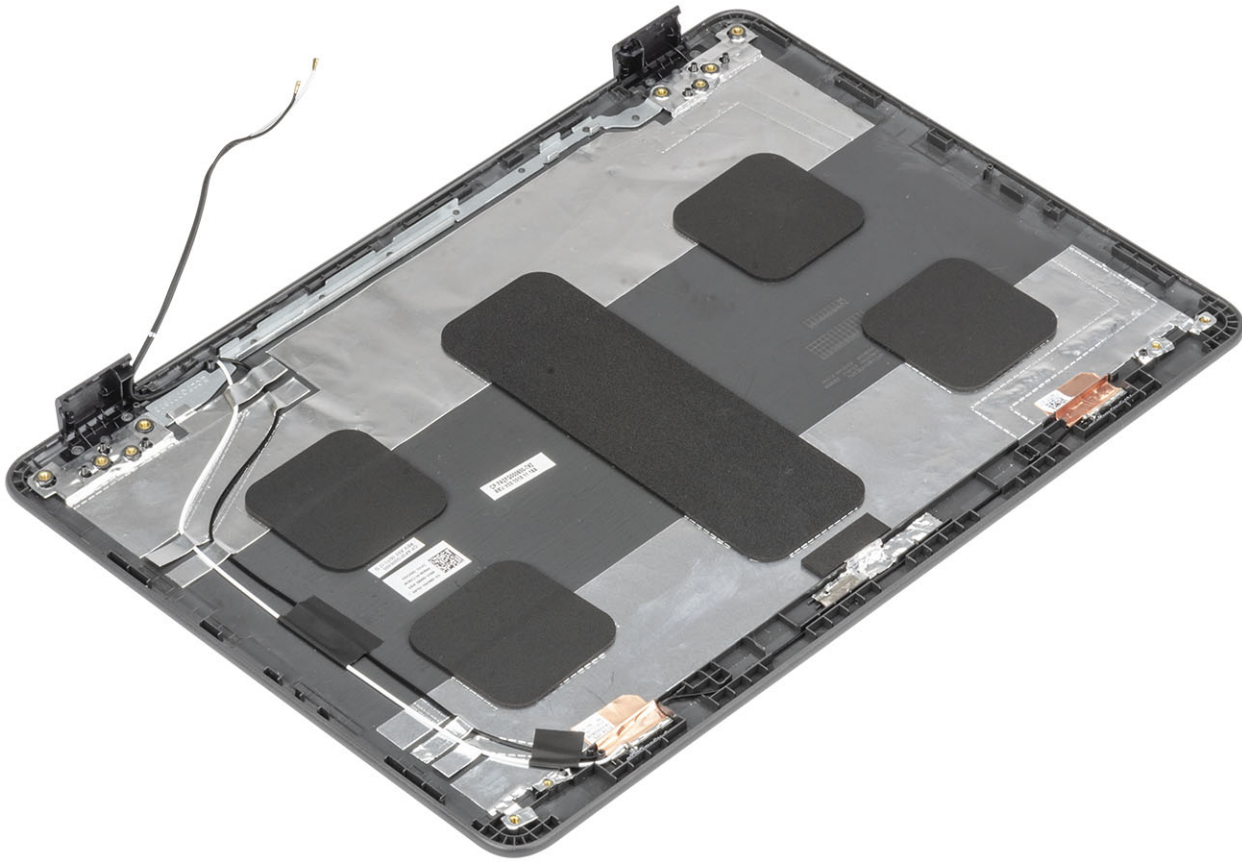
Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#).
8. Remove the [display hinges](#).
9. Remove the [display cable](#).
10. Remove the [camera](#).

Steps

The component you are left with is the display back-cover and antenna assembly after performing the pre-removal parts procedures.

NOTE: The display back-cover and antenna assembly cannot be further disassembled once all the pre-removal parts procedures are completed. If the wireless antennas are malfunctioning and need to be replaced, replace the entire display back-cover and antenna assembly.



Next steps

1. Install the [display cable](#).
2. Install the [camera](#).
3. Install the [display hinges](#).
4. Install the [display panel](#)
5. Install the [display bezel](#).
6. Install the [display assembly](#).
7. Install the [battery](#).
8. Install the [base cover](#).
9. Install the [microSD card](#).
10. Follow the procedure in [after working inside your computer](#).

Palm rest

Replacing palmrest assembly

Prerequisites

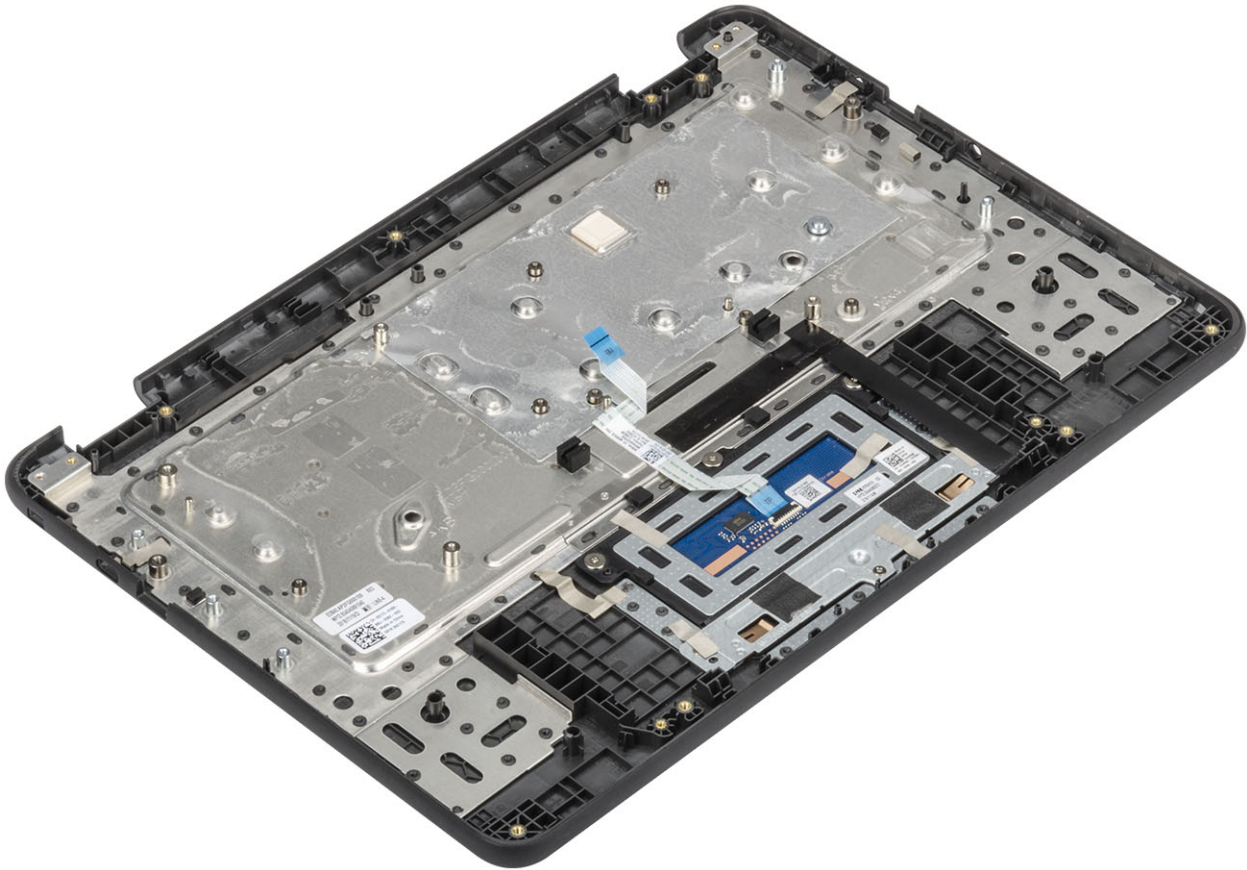
1. Follow the procedure in [before working inside your computer](#).
2. Remove the [microSD card](#).
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [speakers](#).

6. Remove the [keyboard interposer board](#).
7. Remove the [keyboard](#).
8. Remove the [IO board](#).
9. Remove the [display assembly](#).
10. Remove the [system board](#).

Steps

The component you are left with is the palmrest.

- i NOTE:** The palmrest assembly cannot be further disassembled once all of the pre-removal parts procedures are completed. If the touchpad frame, touchpad support bracket, touchpad mylar, touchpad module, touchpad cable, conductive tape or thermal pad are malfunctioning and need to be replaced, replace the entire palm-rest assembly.



Next steps

1. Install the [system board](#).
2. Install the [display assembly](#).
3. Install the [IO board](#).
4. Install the [keyboard](#).
5. Install the [keyboard interposer board](#).
6. Install the [speakers](#).
7. Install the [battery](#).
8. Install the [base cover](#).
9. Install the [microSD card](#).
10. Follow the procedure in [after working inside your computer](#).

Troubleshooting

Basic troubleshooting

This page contains all the information for Dell basic troubleshooting

NOTE: Refer to [Google Help Center](#) for the online troubleshooter.

NOTE: [Resetting](#) the Chromebook, also known as Powerwash, can be attempted before [Recovering](#) the Chromebook. Recovering the Chromebook is the last resort.

Power issues

Table 5. Power issue

Power issues	
Issue	Possible solutions
Chromebook would not Power On	If the Chromebook will not turn on, follow these steps: - Remove all external devices. - If the Chromebook starts, reconnect devices one at a time while restarting the computer to figure out which device is causing the problem. You are done. - If the Chromebook still does not start or exhibits the same problem, do not reconnect anything, and continue troubleshooting. - The battery life might be too low. Plug the Chromebook into the AC adapter and let it charge for at least an hour and try turning it on again. NOTE: When a new Chromebook is used for the first time, the battery is still in shipping mode. To resolve this issue, turn off the Chromebook and plug in the AC adapter and turn on the Chromebook again. - Depending on the Chromebook you have, you may see a power indicator light close to the charging port. If you have let the Chromebook charge and the light is not coming on, perform a hard reset. NOTE: You can perform a hard reset by pressing Refresh + Power. - Use a different AC adapter with the same power voltage. - Remove the AC adapter, and turn on with the battery power only.

Display issue

Table 6. Display issue

Display issue	
Issue	Possible solutions
Screen is Blank	If the Chromebook's screen is blank, try the following troubleshooting steps to resolve the issue, checking to see if the screen turns on after each step:

Display issue	
	1. Make sure the Chromebook is on. If you are using the battery, plug the Chromebook in and press the power button. 2. Restart the Chromebook by holding the power button down until the device turns off, then turn it back on again. 3. Reset or Recover the Chromebook.

Audio, screen, and camera issues

Table 7. Audio, screen, and camera issues

Audio, screen, and camera issues	
Issues	Possible solutions
Audio issues	If you hear static, or the volume from the speakers is low when attempting to listen to audio: 1. Make sure the device is not muted. Try adjusting the volume. 2. Try rebooting the Chromebook. 3. Try playing audio from various sources, including YouTube and audio files stored locally on the Chromebook. If the speakers are not responding when attempting to listen to audio: 1. Unplug the device from all cables (USB, headphones, and displays). 2. Try playing audio from various sources, including YouTube and audio files stored locally on the Chromebook. 3. Try rebooting the Chromebook. 4. If audio still does not respond, try to Reset or Recover the Chromebook.
Screen issues	If the screen is not operating properly (images are too dark or no image is appearing): 1. Try adjusting the brightness with the brightness keys at the top of the keyboard. 2. In the status area in the bottom-right of the screen, check the display and make sure there are no issues with a mirrored or extended display. 3. Try rebooting the Chromebook 4. If the screen issues persist, try to Reset or Recover the Chromebook.
Camera issues	If the camera is not operating properly (blurry images or poor performance): 1. Check that the camera is not being blocked or covered by a privacy screen or other obstruction. 2. Try using different apps that use the camera. Try a Google+ Hangout or the onboard camera app 3. Try rebooting the Chromebook 4. If the camera issues persist, try to Reset or Recover the Chromebook.

Bluetooth issue

Table 8. Bluetooth issue

Bluetooth issue	
Issue	Possible solutions

Bluetooth issue	
Bluetooth issues	If you run into issues while attempting to pair or use a Bluetooth device with the Chromebook, try the following steps to resolve the issue: 1. First, make sure that the Bluetooth device you are trying to pair is supported by the Chromebook. 2. Try disabling and re-enabling Bluetooth connectivity from the status area in the lower-right corner. 3. Try restarting the Chromebook. 4. If you are still encountering issue with bluetooth, try to Reset or Recover the Chromebook.

Touchpad and Hotkeys issues

Table 9. Touchpad and hotkeys issues

Touchpad / Hotkeys issues	
Issue	Possible solutions
Touchpad not responding	If the touch pad has stopped responding, try the following steps to resolve the issue: Try moving the cursor after each step: 1. Tap the Esc key several times. 2. Drumroll the fingers across the touch pad for a few seconds. 3. Restart the Chrome OS by holding down the power button until the device turns off, and then turn it back on again. 4. If the cursor still does not move when using the touch pad, try logging in from the Guest account using the tab key to navigate. 5. If users experience touch pad issues with the account that is not the owner (primary) account, delete the user account and re-create it. Again, use the tab key to navigate. 6. If none of the above steps work, try to Reset or Recover the Chromebook.
Top row of keys (Hotkeys) not responding	If a hotkey (like the volume or brightness keys) are not responding, try the following troubleshooting steps, making sure to test the keys after each one: 1. If the affected key is volume or brightness, check to make sure you are not at the upper or lower limit for that setting. 2. If the backward or forward buttons do not work, check that the same icons in a web browser are not grayed out. For example, if the back button on a web page is grayed, this is because the browser is not aware of a page to move backward to. 3. Restart the Chrome OS by holding down the power button until the device turns off, and then turn it back on again. 4. Try using the keys in the Guest account. 5. If users experience hotkey issues with the account that is not the owner (primary) account, delete the user account and re-create it. 6. If none of the above steps work, try to Reset or Recover the Chromebook.

Chrome OS issue

Table 10. Chrome OS issue

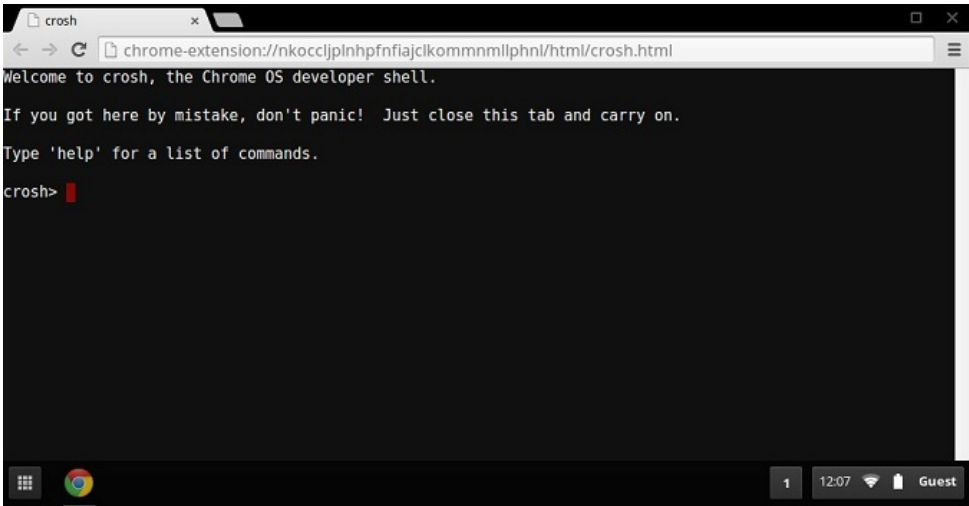
Chrome OS issues	
He's Dead, Jim! error message	If the Chromebook becomes slow or unresponsive, and the He's Dead, Jim! error message appears, the system could be running low on memory. NOTE: If you terminated the process using Google Chrome's Task Manager, the system's task manager, or with a command line tool, this message will appear as well. 1. If the page was not ended intentionally, reload the page to continue. If the message continues to appear, try closing inactive tabs or other programs to free up more memory. 2. If issue persists, please see He's Dead, Jim! from Google knowledge base.
Chrome OS is missing or damaged	If the Chromebook does not start and displays the message, Chrome OS is missing or damaged. Please insert a recovery USB stick into the USB ports on the device: Perform a system recovery. See performing Recover Chromebook for more information.
Chrome OS stops responding and nothing moves on the computer display	If the Chrome OS stops responding and nothing moves on the computer display: 1. Turn off the computer. 2. Disconnect all peripheral devices, and remove all USB devices and media cards. 3. Disconnect the AC adapter. 4. Press and hold the power button for 10 seconds. 5. Reconnect the AC adapter, and turn on the system. 6. If issue persists, please perform a Reset or Recover the Chromebook.
Lost / Forget Sign in password (Chrome OS)	If you lost/forget the sign-in password to the Chromebook: 1. Check if this is a managed device (Enterprise enrolled device). a. If this is a managed device, please contact the administrator to have them reset the password via Google Admin Console. b. If this is not a managed device, please proceed with the following steps: 2. Sign in as guest or use a different PC. 3. Open an internet browser, and navigate to https://www.google.com/accounts/recovery/ 4. Select I do not know my password, and then enter the email address that you use to sign in to Google. 5. Click Continue and follow the on-screen instructions to reset the password.
Other Chromebook lock up or freeze symptoms that are not listed here	If none of the above symptoms match the Chromebook's issue, refer to Google Help Center for the online troubleshooter and more help.

CROSH

This topic covers the information that you need to know for the Chrome Shell (CROSH). CROSH and the Google Chrome URL commands provide some troubleshooting tools, information, and advanced settings.

The Chrome OS does not support ePSA, Dell BIOS, the F12 boot menu, or DellConnect. There are no preboot diagnostics. All troubleshooting must be done inside the OS. Chrome Shell (CROSH) and the Chrome URL commands provide some troubleshooting tools, information, and advanced settings. CROSH is a command line interface similar to the Linux BASH or Windows command (cmd.exe) terminals. Chrome OS is based on Linux, but CROSH does not recognize most Linux commands. The most useful commands for troubleshooting are memory test, storage_test_1, storage_test_2, ping, and tracepath. Ping works differently than it does in Windows. By default, it repeats until you press **<Ctrl> + <C>**, and it does not show any statistics. The tracepath command is similar to the Windows traceroute command. A detailed explanation of the commands can be viewed below, by typing help, or help_advanced in CROSH.

- 1. Open the Chrome browser.
- 2. Press **<Ctrl> + <Alt> + <T>** The interface appears as shown in the screenshot below:



- 3. Type in the CROSH command for diagnostics. Type **'help'** for a list of available commands. Type **help_advanced** to display a complete list of commands for debugging purposes

Alternately, refer to CROSH Commands for the list of the CROSH commands available for diagnostics.

CROSH commands

The table below lists the available commands in Chrome Shell (CROSH).

Table 11. Help commands

Command	Purpose
exit	Exits the CROSH Shell.
help	Displays this help.
help_advanced	Displays the help for more advanced commands, which are used for debugging.
ping	[-c count] [-i interval] [-n] [-s packetsize] [-W waittime] — Sends ICMP ECHO_REQUEST packets to a network host. If it is "gw", then the next hop gateway for the default route is used. It works like the ping command on other operating systems. Press <Ctrl> + <C> to stop the ping process or halt any other command in CROSH.
ssh	[optional args...] — Starts the ssh subsystem if invoked without any arguments. "ssh <user> <host>", "ssh <user> <host> <port>", "ssh< user>@<host>". or "ssh <user>@<host> <port>" connect without entering the subsystem

Command	Purpose
ssh_forget_host	Removes a host from the list of known ssh hosts. This command displays a menu of known hosts and prompts for the host to forget.
top	Sets the chaps debug logging level. No arguments start verbose logging

Table 12. Advanced help command

Command	Purpose
battery_test[<test length>]	Tests the battery discharge rate for a given number of seconds. No argument defaults to a 300 s test.
bt_console [<agent capability>]	Enters a Bluetooth debugging console. The Optional argument specifies the capability of a pairing agent the console provides; see the Bluetooth Core specification for valid options.
chaps_debug [start stop <log_level>]	Sets the chaps debug logging level. No arguments will start verbose logging.
connectivity	Shows connectivity status.
experimental_storage<status enable disable>	Enables or disables experimental storage features.
ff_debug [<tag_expr>] [--help] [--list_valid_tags] [--reset]	Adds and removes flimflam debugging tags.
memory_test	Performs extensive memory testing on the available free memory.
modem <command> [args...]	Interacts with the 3G modem. Run modem help for detailed help.
modem_set_carrier carrier-name	Configures the modem for the specified carrier.
network_diag[--date] [--link] [--show-macs] [--wifi] [--help] [--wifi-mon] <host>	Performs a suite of network diagnostics and saves a copy of the output to your download directory
network_logging <wifi cellular ethernet>	Enables a predefined set of tags useful for debugging the specified device.
p2p_update [enable disable]	Enables or disables the peer-to-peer (P2P) sharing of updates over the local network. This will both attempt to get updates from other peers in the network and shares the downloaded updates with them. Run this command without arguments to see the current state.
rlz < status enable disable>	Enables or disables RLZ.
rollback	Attempts to roll back to the previous update cached on your system. Only available on non-stable channels and non-enterprise enrolled devices. Please note that this will power wash your device.
route [-n] [-6]	Displays the routing tables.
set_apn [-n <network-id>] [-u <username>] [-p <password>] <apn>	Sets the APN to use when connecting to the network specified by <network-id>. If <network-id> is not specified, use the network-id of the currently registered network.
set_apn - c	Clears the APN to be used, so that the default APN is used instead.
set_arpgw <true false>	Turns on the extra network state checking to make sure the default gateway is reachable.
set_cellular_ppp [-u <username>] [-p <password>]	Sets the PPP username and/or password for an existing cellular connection. If neither -u nor -p is provided, this shows the existing PPP username for the cellular connection.
set_cellular_ppp -c	Clears any existing PPP username and PPP password for an existing cellular connection.
sound <command> <argument>	Low level sound configuration. Can be used to play/record audio samples and enable beam forming on Pixel. sound beamforming <on off > will enable/disable the feature. sound record

Command	Purpose
	[duration] will start recording. sound play <filename> plays the recorded audio samples
storage_status	Reads storage device SMART health status, vendor attributes, and error logs.
storage_test_1	Performs a short offline SMART test.
storage_test_2	Performs an extensive readability test.
syslog <message>	Logs a message to system log.
tpcontrol{status taptoclick [on off] sensitivity [1-5] set <property>< value>} tpcontrol {syntp [on off]}	Allows the user to manually adjust advanced touchpad settings.
tracepath [-n] <destination>[/port]	Traces the path/route to a network host.
update_over_cellular [enable disable]	Enables or disables the auto updates over cellular networks. Run without arguments to see the current state.
upload_crashes	Uploads available crash reports to the crash server.
wpa_debug [<debug_level>] [--help] [--list_valid_level] [--reset]	Sets the wpa_supplicant debugging level.
xset m [acc_mult[/acc_div] [thr]] xset m default	Tweaks the mouse acceleration rate.
xset r rate [delay [rate]]	Tweaks the autorepeat rates. The delay is the number of milliseconds before autorepeat starts. The rate is the number of repeats per second.
xset r [keycode] < on off >	Turns autorepeat on/off. If a keycode is specified, it affects only that key. If not specified, it affects global behavior.

Chrome commands

Chrome:// pages contain experimental features, diagnostic tools, and detailed statistics. They are hidden in Chrome's user interface.

Chrome://about page lists all Chrome's internal pages. To view all the commands, type **chrome://about** in the Chrome browser URL as shown below:



List of Chrome URLs

- [chrome://accessibility](#)
- [chrome://appcache-internals](#)
- [chrome://blob-internals](#)
- [chrome://bookmarks](#)
- [chrome://cache](#)
- [chrome://choose-mobile-network](#)
- [chrome://chrome-urls](#)
- [chrome://components](#)
- [chrome://crashes](#)
- [chrome://credits](#)
- [chrome://cryptohome](#)
- [chrome://diagnostics](#)
- [chrome://discards](#)
- [chrome://dns](#)
- [chrome://downloads](#)
- [chrome://drive-internals](#)
- [chrome://extensions](#)
- [chrome://first-run](#)
- [chrome://flags](#)
- [chrome://flash](#)
- [chrome://gpu](#)
- [chrome://histograms](#)
- [chrome://history](#)

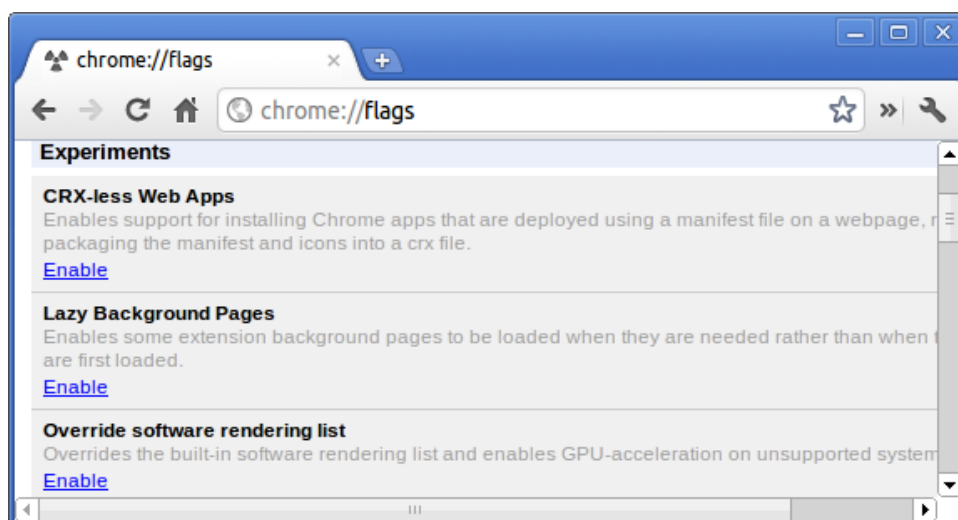
Table 13. Chrome browser shortcuts

Purpose	Browser Shortcut	Explanation
System Information	chrome://system/	"Who am I".. BIOS version, and so on
Basic Connectivity Diags	chrome://diagnostics/	Test for NIC and Internet connection
Chrome Information	chrome://version	More "Who am I" type of stuff

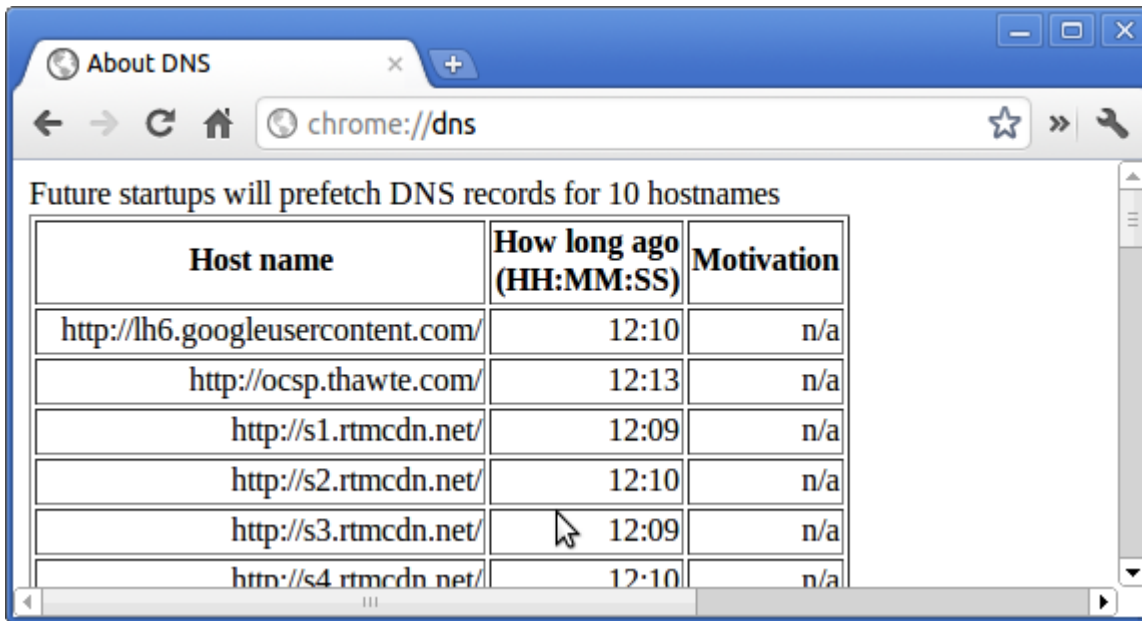
Purpose	Browser Shortcut	Explanation
Create Recovery USB Stick	chrome://imageburner/	Google's version of DBAR/DBRM
Chrome Flags	chrome://flags	Experimental features beyond the scope of what Dell supports
Memory Troubleshooting	chrome://memory	View running processes and memory utilization
Module Load	chrome://conflicts	Shows conflicts of all modules loaded by Chrome
Chrome Sync Status	chrome://syncchrome://sync-internals	Allows troubleshooting of connected accounts
Connectivity Troubleshooting	chrome://net-internals	Comprehensive network/connectivity diagnostics, including DNS analysis, Waterfall and Bandwidth diagnostics, and so on
Histogram	chrome://histograms	Actual work and I/O audit
Credits	chrome://credits	References to all module/libs contributions and their respective wiki/license URLs
Crash Reporting	chrome://crashes	Shows detailed crash report, if the feature was enabled
Apps RAM Utilization	chrome://appcache-internals	Detailed memory usage for apps/extensions, especially handy for 2 GB Chromebooks

Following are the 12 most helpful chrome:// commands that you should know:

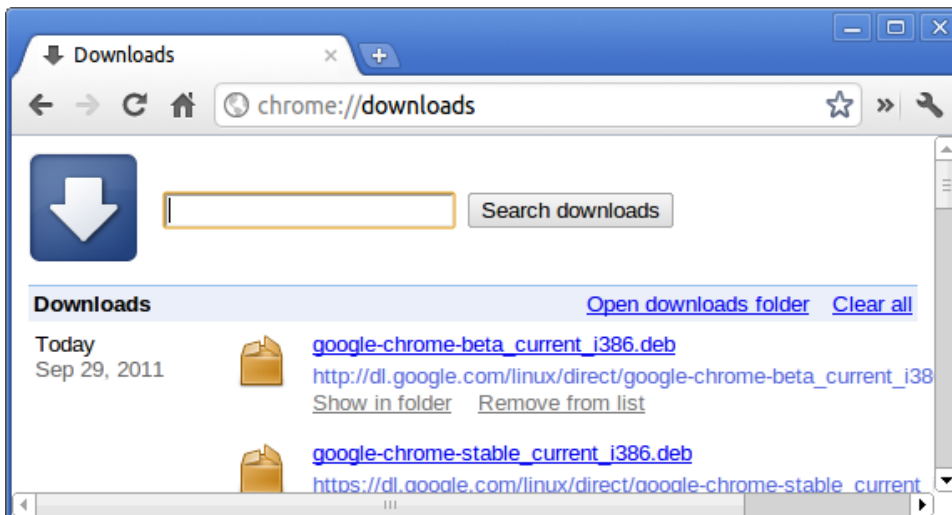
1. **chrome://flags** : From here you can enable some of the experimental features that are hidden in the Google Chrome browser. Please note that as mentioned on this page, since these are experimental, these might not work as expected and might cause issues. Enable these features, and use it at your own risk.



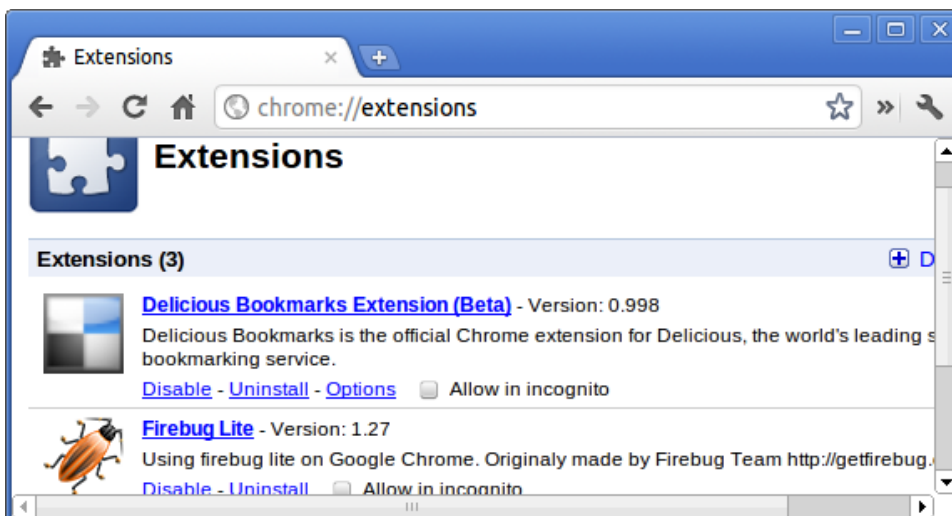
2. **chrome://dns**: This displays the list of host names for which the browser will pre-fetch the DNS records.



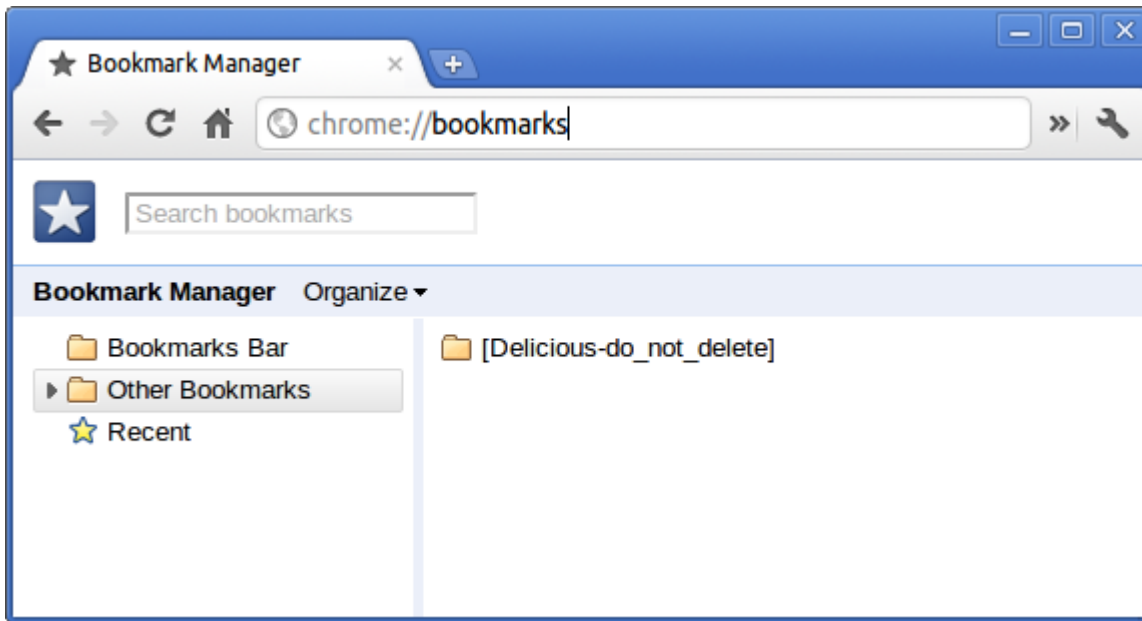
3. **chrome://downloads:** This is also available from the Menu > Downloads. Shortcut key is Ctrl+J.



4. **chrome://extensions:** This is also available from the Menu > Tools > Extensions.



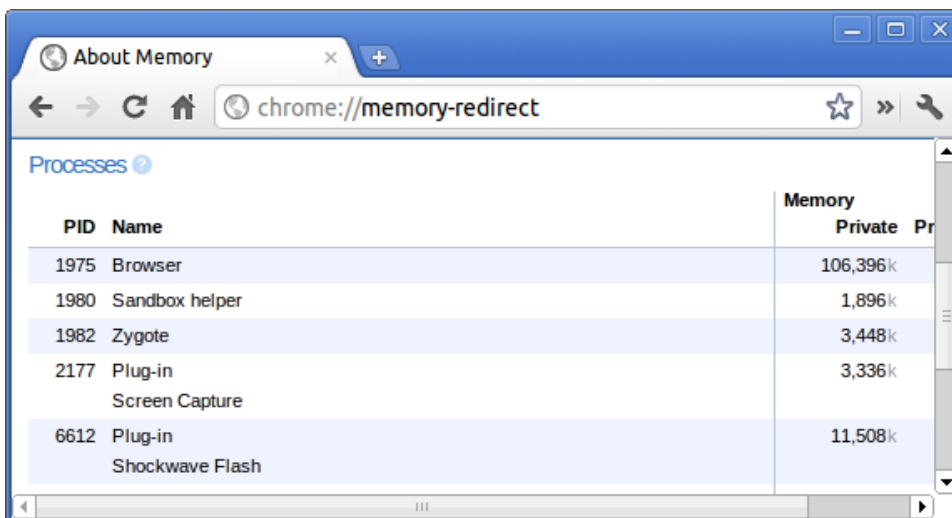
5. **chrome://bookmarks:** This is also available from the Menu > Bookmarks > Bookmark Manager. Short cut key is Ctrl+Shift+O.



6. **chrome://history**: This is also available from the Menu > History. Short cut key is Ctrl+H.

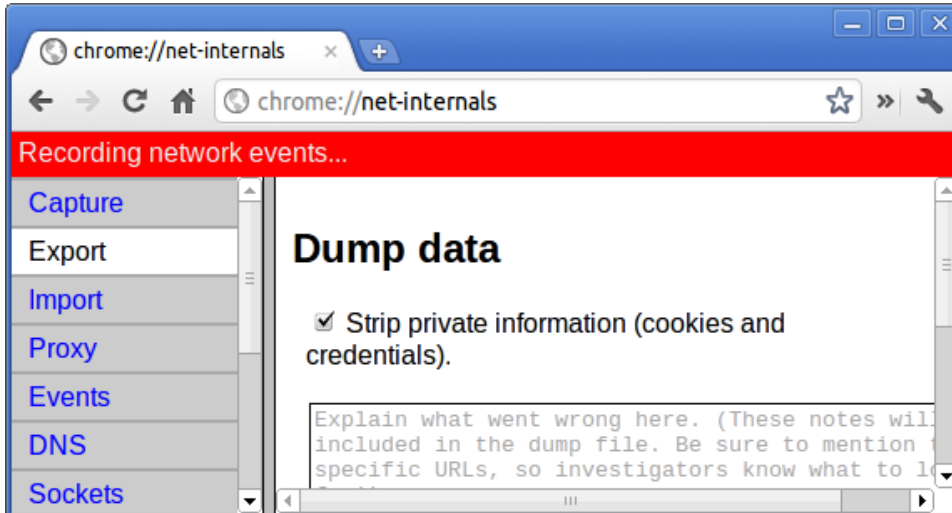


7. **chrome://memory**: This will redirect to "chrome://memory-redirect/". This will display the memory used by the Google Chrome browser. This also displays all the process related to browser with their PID, process name, and the memory it takes.

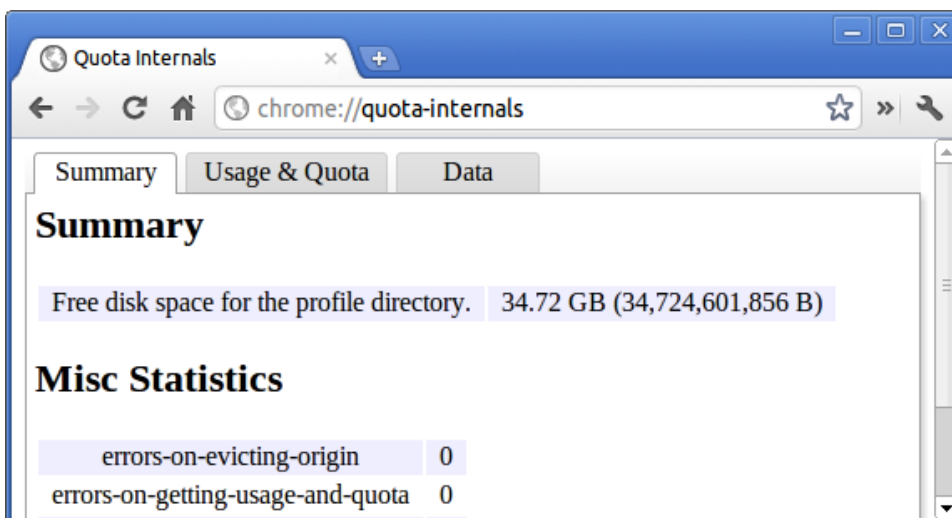


8.  **NOTE:** Net-internals events viewer and related functionality has been removed. Please use `Chrome://net-export` to save netlogs and the external [Catapult netlog_viewer](#) to view them.

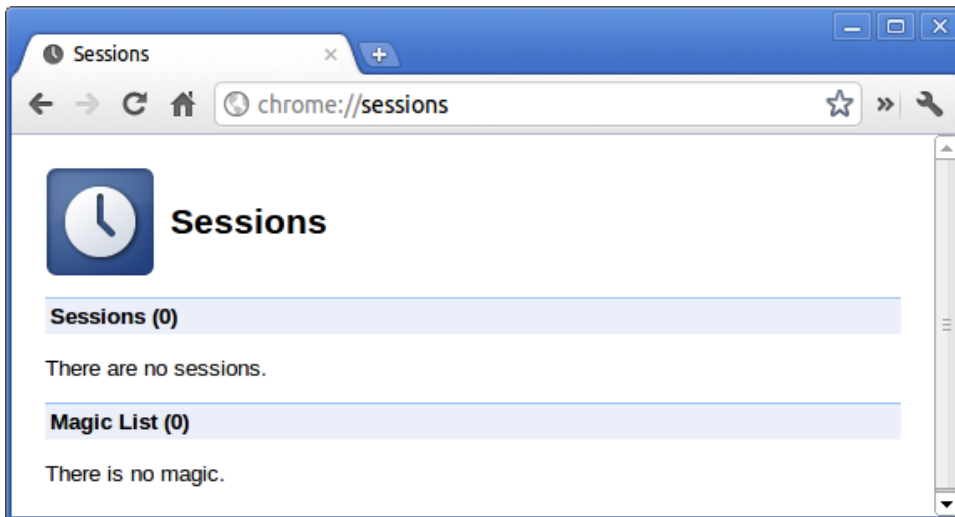
chrome://net-internals: This displays all networking related information. Use this to capture network events generated by the browser. You can also export this data. You can view DNS host resolver cache. One of the important features in this feature is "Test". If a URL failed to load, you can go to "chrome://net-internals" > click on "Tests" tab > type that URL which failed, and click on "Start Test", which does some test and report you why that URL failed. `chrome://plugins/`.



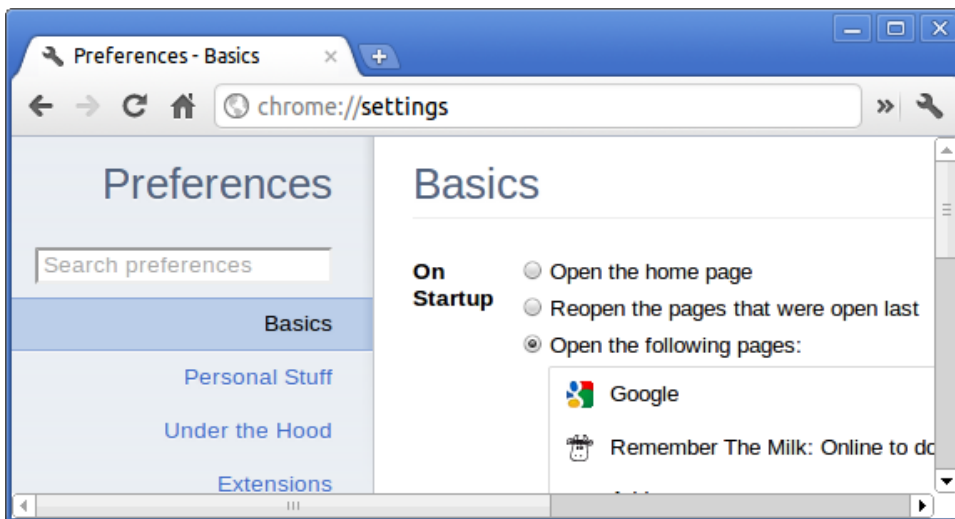
9. **chrome://quota-internals:** This gives information about the disk space quota used by the browser, including the breakdown of how much space the individual websites took under temporary files.



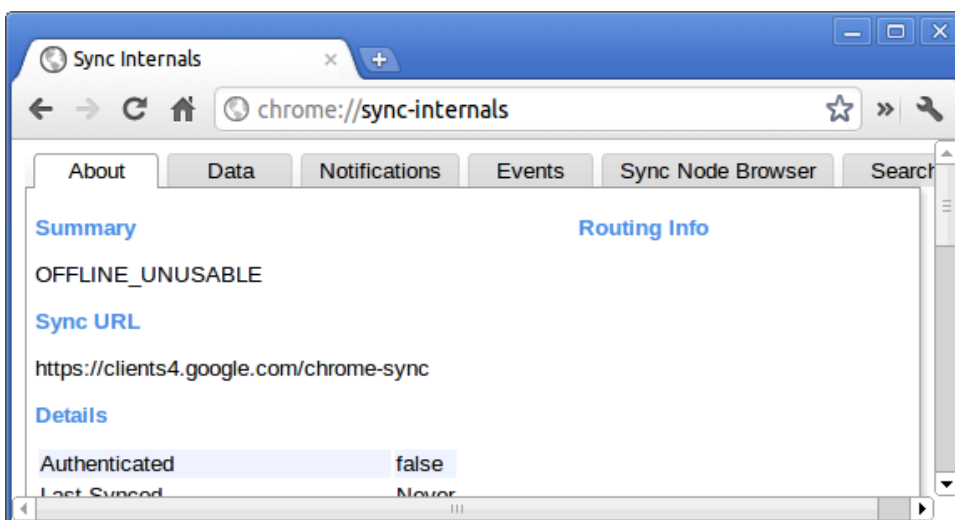
10. **chrome://sessions:** This displays the number of sessions and magic list that are currently running.



11. **chrome://settings:** This is also available from the Menu > Options (on Windows), and Menu > Preferences (on Linux). From here you can control various browser related settings.



12. **chrome://sync-internals:** This gives information about the Chrome sync feature, including the Sync URL used by Google, and sync statistics.



Commonly used CROSH command

This page contains information about the most commonly used CROSH commands to diagnose the Dell .

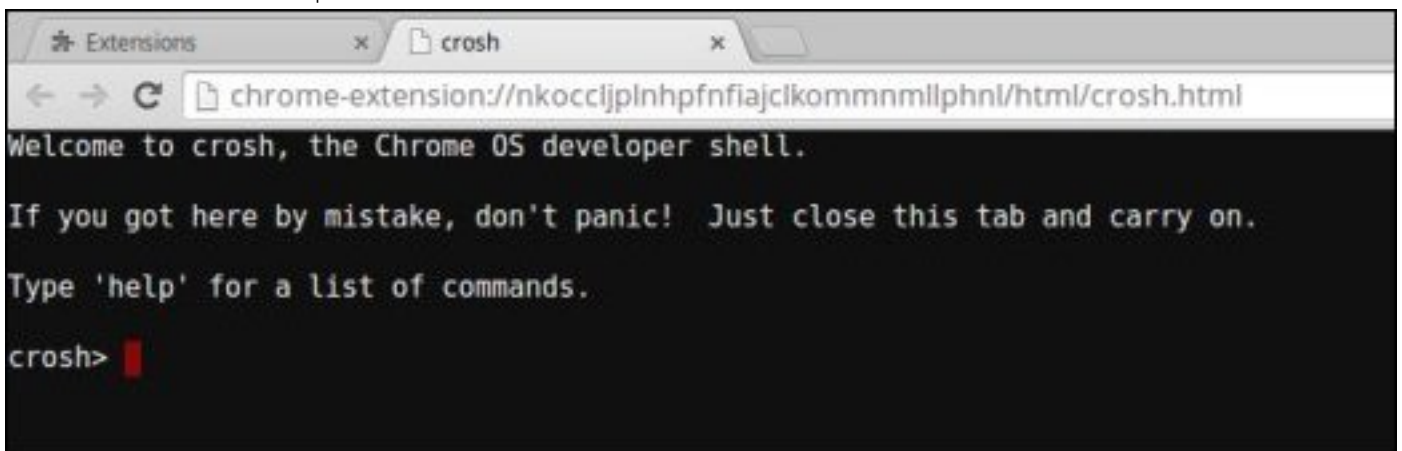
Below are some of the most commonly used CROSH commands to troubleshoot a hardware issue.

NOTE: CROSH `storage_test_1` and `storage_test_2` are not supported on the eMMC storage device.

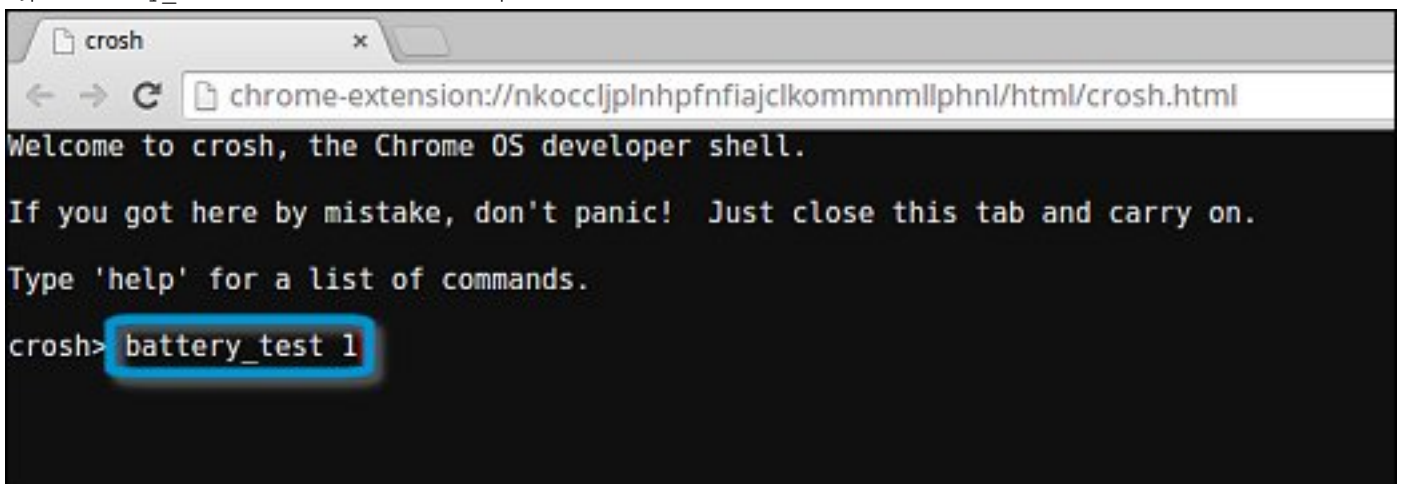
Check battery charging status

The Chrome Shell (CROSH) includes a simple battery health diagnostic test. This is to confirm that the battery is charging and to check on the battery health and discharge rate. Follow the instruction provided to check on the battery charging status:

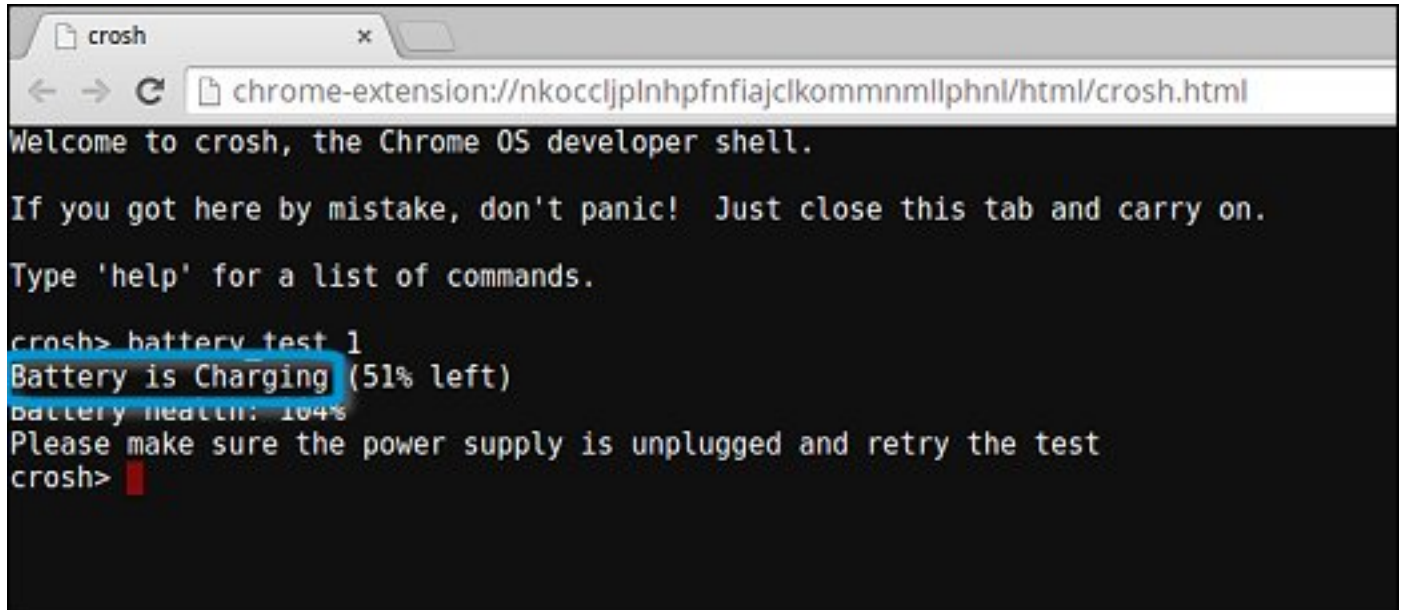
1. Connect the AC adapter to the Chromebook and a power outlet.
2. Turn on, and sign in to the Chromebook.
3. Open the Chrome browser.
4. Press **CTRL + ALT + T** to open CROSH.



5. Type `battery_test 1` into CROSH, and then press **Enter**.



6. Check the result to confirm that the battery is charging.

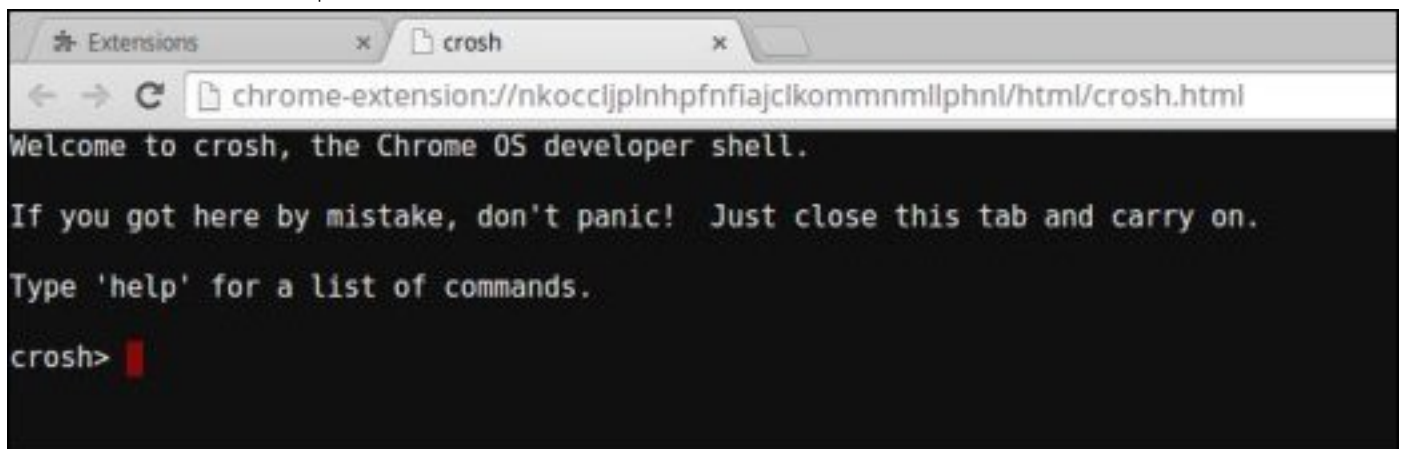


```
crosh
chrome-extension://nkoccljplnhpfnfiajclkommmmlphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.
If you got here by mistake, don't panic! Just close this tab and carry on.
Type 'help' for a list of commands.
crosh> battery test 1
Battery is Charging (51% left)
battery health: 104%
Please make sure the power supply is unplugged and retry the test
crosh>
```

Check battery health

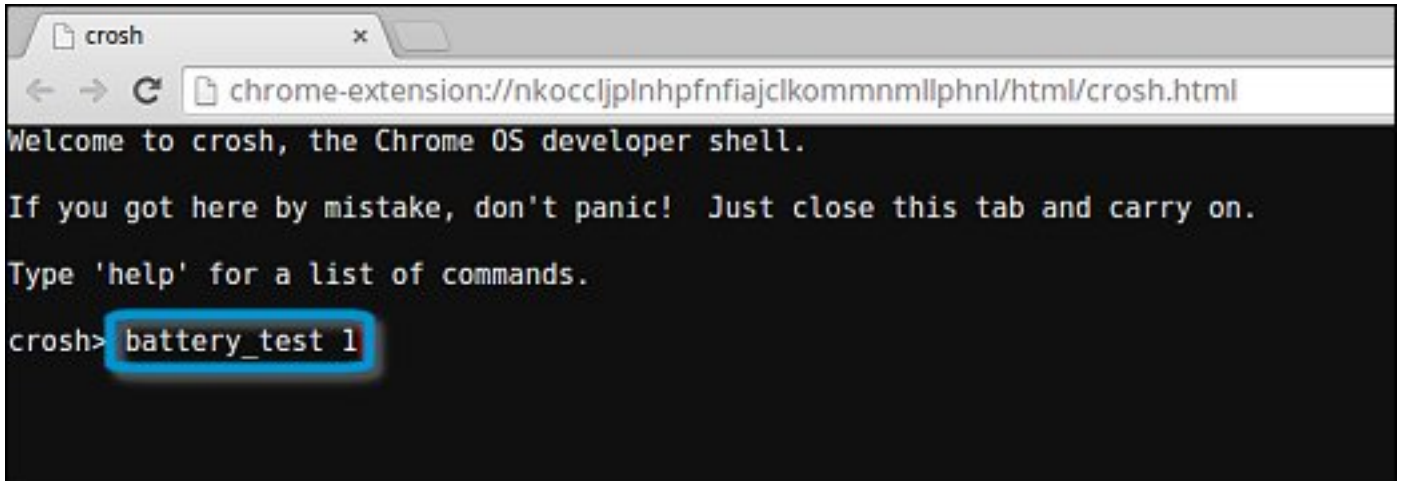
Follow the steps to evaluate the health of the Chromebook battery, and check the discharge rate:

1. Disconnect the AC adapter from the Chromebook.
2. Turn on and sign in to Chromebook.
3. Open the Chrome browser.
4. Press CTRL + ALT + T to open CROSH.



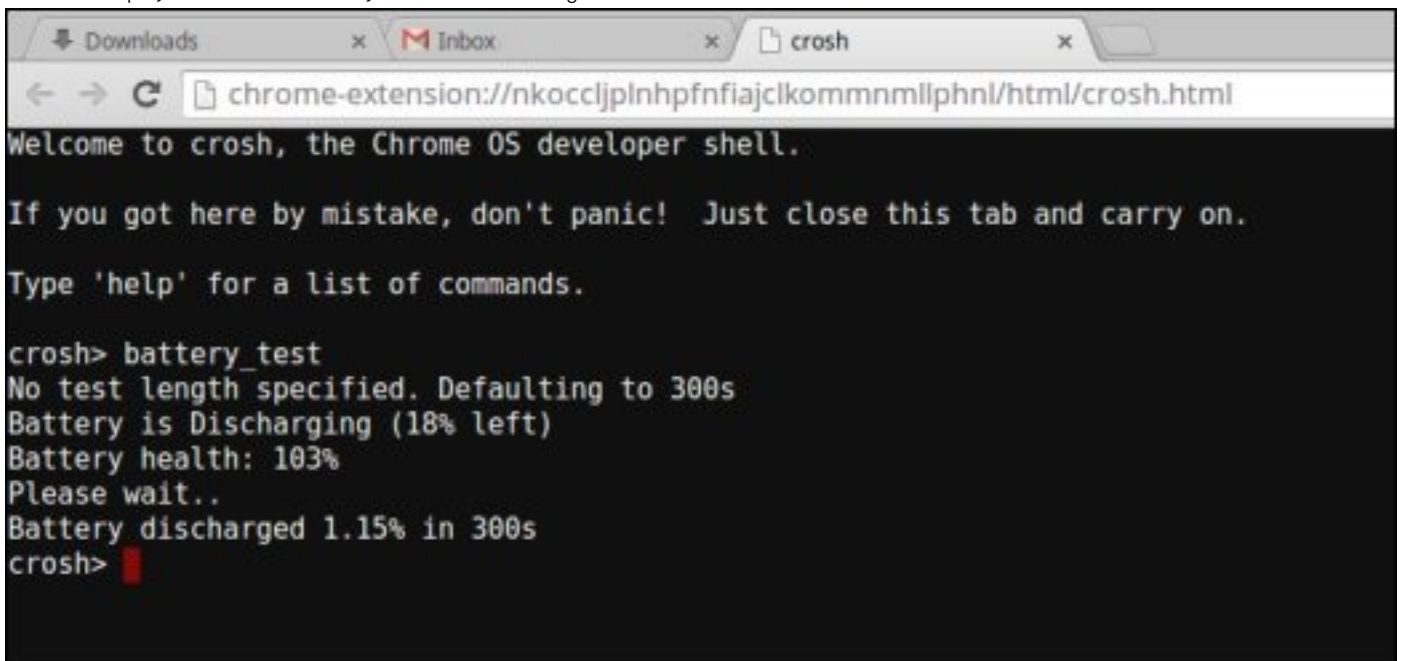
```
Extensions
crosh
chrome-extension://nkoccljplnhpfnfiajclkommmmlphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.
If you got here by mistake, don't panic! Just close this tab and carry on.
Type 'help' for a list of commands.
crosh>
```

5. Type `battery_test 1` into CROSH, and then press Enter.



The screenshot shows a web browser window with a single tab titled 'crosh'. The address bar displays 'chrome-extension://nkoccljplnhpfnfajclkommmnmlphnl/html/crosh.html'. The main content area shows the text: 'Welcome to crosh, the Chrome OS developer shell. If you got here by mistake, don't panic! Just close this tab and carry on. Type 'help' for a list of commands.' Below this, the prompt 'crosh>' is followed by the command 'battery_test 1', which is highlighted with a blue selection box.

6. A screen displays the current battery health and discharge rate.



The screenshot shows the same web browser window as before, but now the command 'battery_test' has been executed. The output displayed is: 'No test length specified. Defaulting to 300s', 'Battery is Discharging (18% left)', 'Battery health: 103%', 'Please wait..', and 'Battery discharged 1.15% in 300s'. The prompt 'crosh>' is now followed by a red cursor.

- If the Battery health percentage is greater than 50%, the battery is within the expected wear limits.
- If the Battery health percentage is equal to or less than 50% and the battery is less than a year old, the battery is outside expected wear limits and might need to be replaced.
- If the test results show that Battery is Unknown, the battery might need to be replaced.

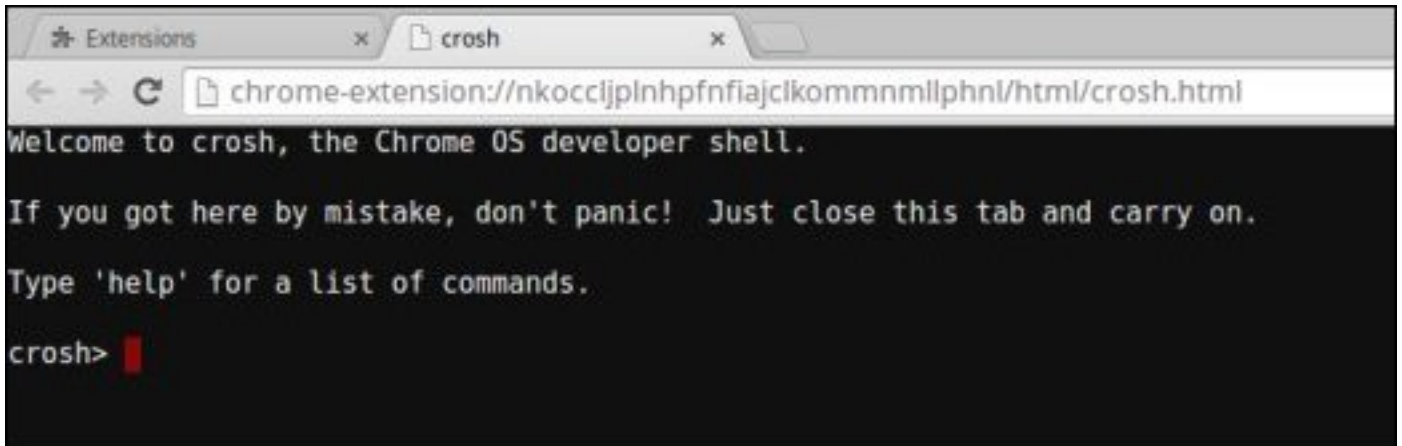
Checking memory

Follow the steps below to perform a memory check for Chromebook:

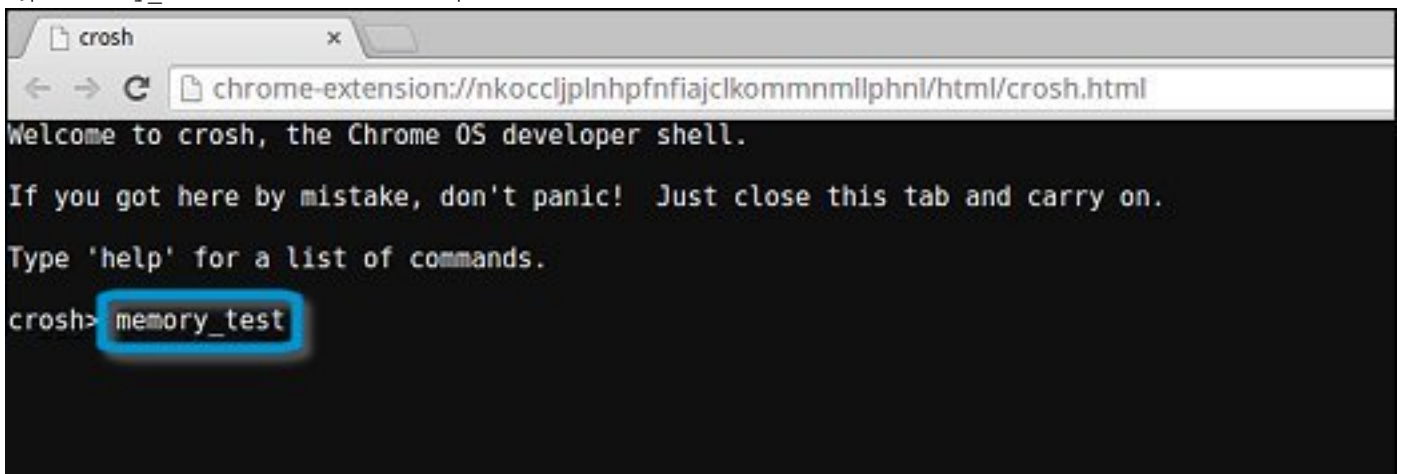
NOTE: This will approximately take 20 minutes to complete the test, and it also depends on the capacity of the memory.

1. Turn on and sign in to Chromebook.
2. Open the Chrome browser.

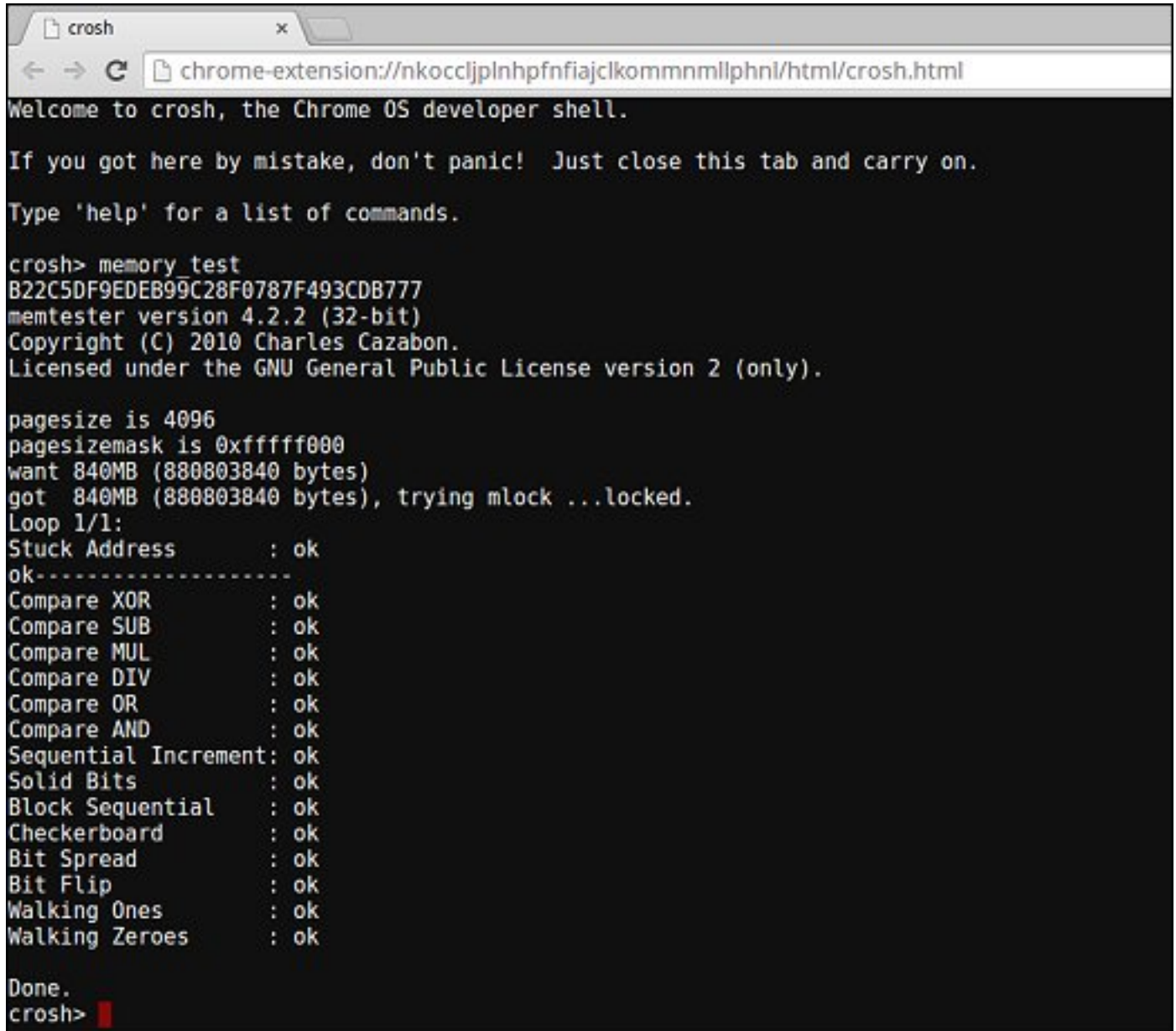
3. Press CTRL + ALT + T to open CROSH.



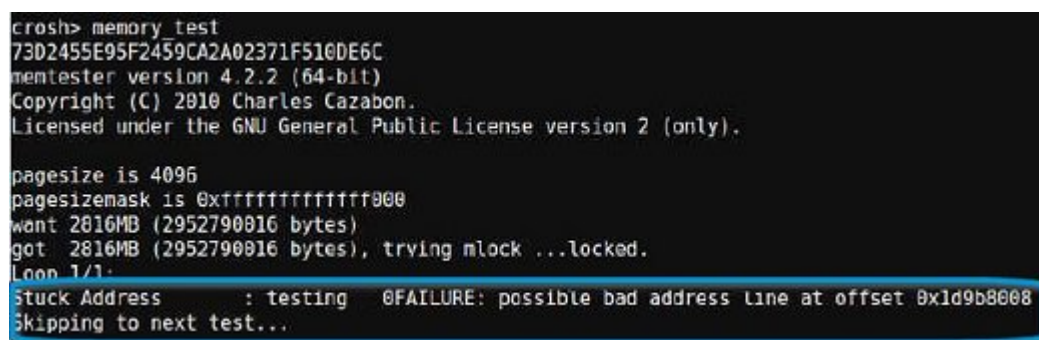
4. Type memory_test into CROSH, and then press Enter.



5. A diagnostic screen displays the result of the memory test passed without any errors.



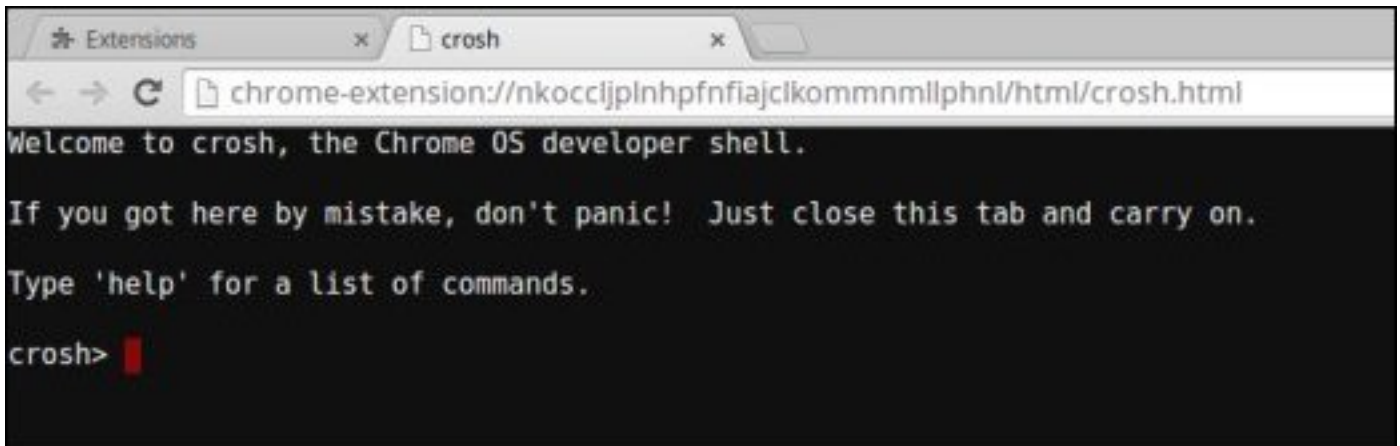
Example of a memory test failure.



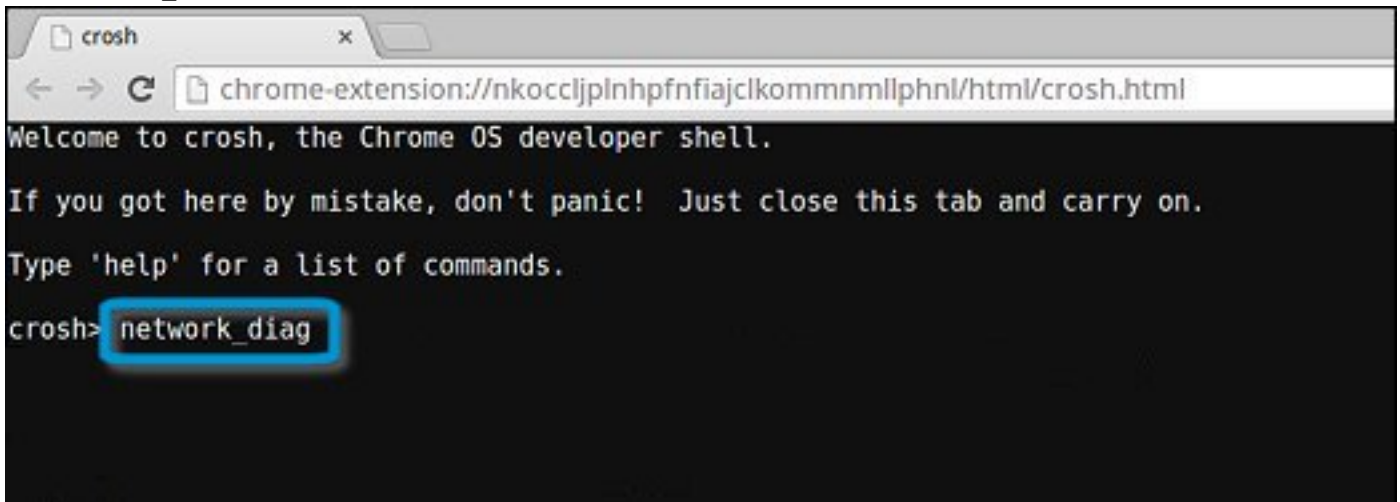
Checking network status

If you are having trouble connecting to the Internet, use the steps in one or more of the following sections to test the network adapter: Follow the instruction to gather the information about the network and diagnose the network errors.

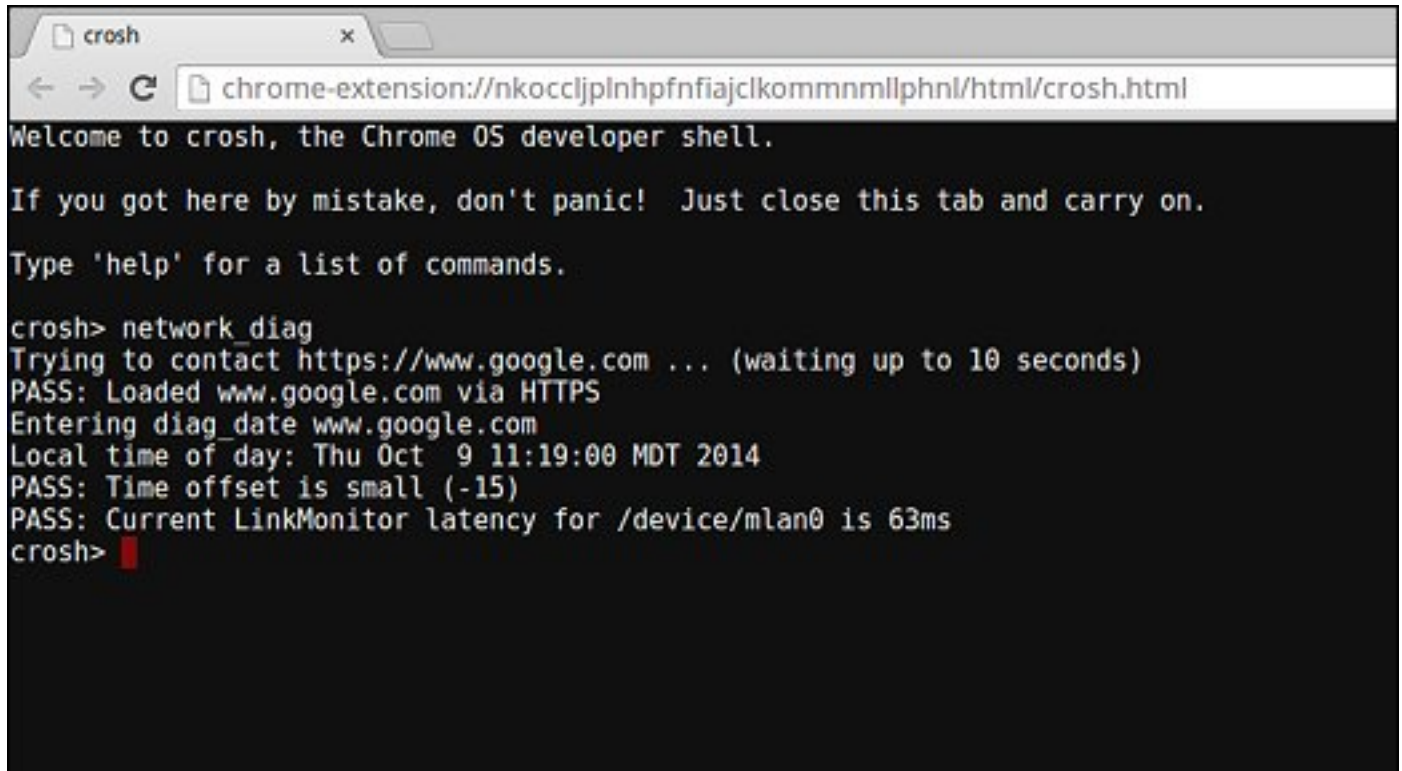
1. Turn on and sign in to Chromebook.
2. Open the Chrome browser.
3. Press CTRL + ALT + T to open CROSH.



4. Type `network_diag` into CROSH, and then press **Enter**.



5. Wait while CROSH performs a set of network diagnostic tests. A diagnostic screen displays the results of the network adapter health test.



The screenshot shows a web browser window with a single tab titled 'crosh'. The address bar displays 'chrome-extension://nkoccljplnhpfnfiajclkommmmlphnl/html/crosh.html'. The main content area is a black terminal window with white text. It starts with a welcome message, followed by instructions to close the tab if accessed by mistake. The user enters the command 'network_diag', which triggers a series of network tests. The results show successful connections to https://www.google.com via HTTPS, with a time offset of -15 and a LinkMonitor latency of 63ms for the /device/mlan0 interface.

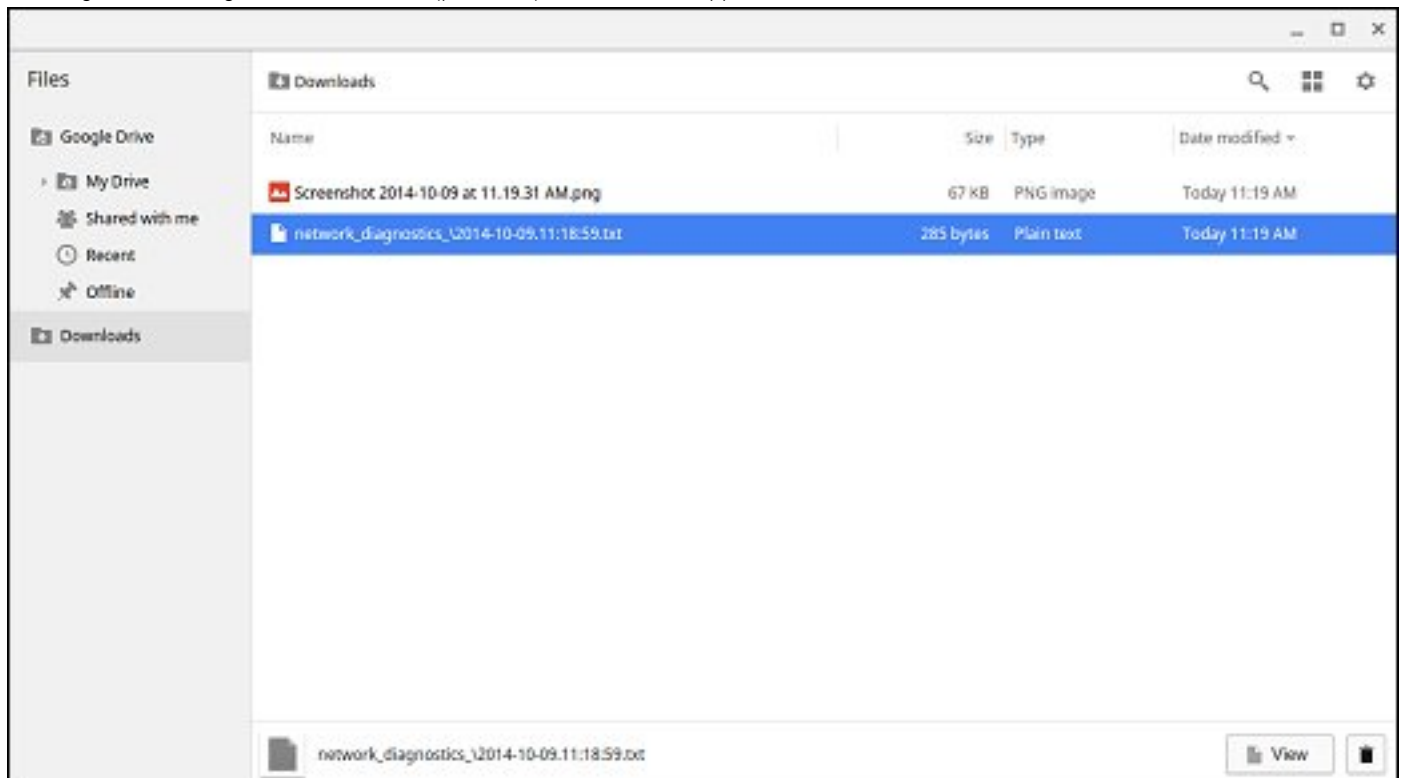
```
crosh
Welcome to crosh, the Chrome OS developer shell.

If you got here by mistake, don't panic! Just close this tab and carry on.

Type 'help' for a list of commands.

crosh> network_diag
Trying to contact https://www.google.com ... (waiting up to 10 seconds)
PASS: Loaded www.google.com via HTTPS
Entering diag_date www.google.com
Local time of day: Thu Oct 9 11:19:00 MDT 2014
PASS: Time offset is small (-15)
PASS: Current LinkMonitor latency for /device/mlan0 is 63ms
crosh>
```

6. The diagnostic test log is saved as a .txt (plain text) file in the Files app.



7. If the diagnostic test returns a failure message, make sure the Wi-Fi adapter is enabled and connect to a network.

```
Enter diag ping 192.168.1.254
connect: Network is unreachable
FAIL: We can reach the nameservers but were not able to resolve hostnames
FAIL: You may be behind a captive portal or there may be a DNS
FAIL: configuration problem
Entering get device list
```

Reset Chromebook

This page contains all information about resetting Dell .

All local user data stored on the Chromebook can be cleared by resetting it to its original factory state (also known as Powerwash).

This step might be helpful if you want to reset owner permissions or if you are experiencing issues with your user profile.

- NOTE:** All data stored on your Chromebook such as downloaded files, photos, owner permissions, and saved networks, will be deleted for all accounts when performing a factory reset. After clearing this data, you will be guided through the initial setup again. Resetting your device will not affect your accounts themselves, or any data synced to these accounts.
- NOTE:** Do not follow the instructions below if you're using a managed Chrome device, as you will not be able to re-enroll your device after powerwashing it.

Follow these steps to reset your Chromebook to its original factory state:

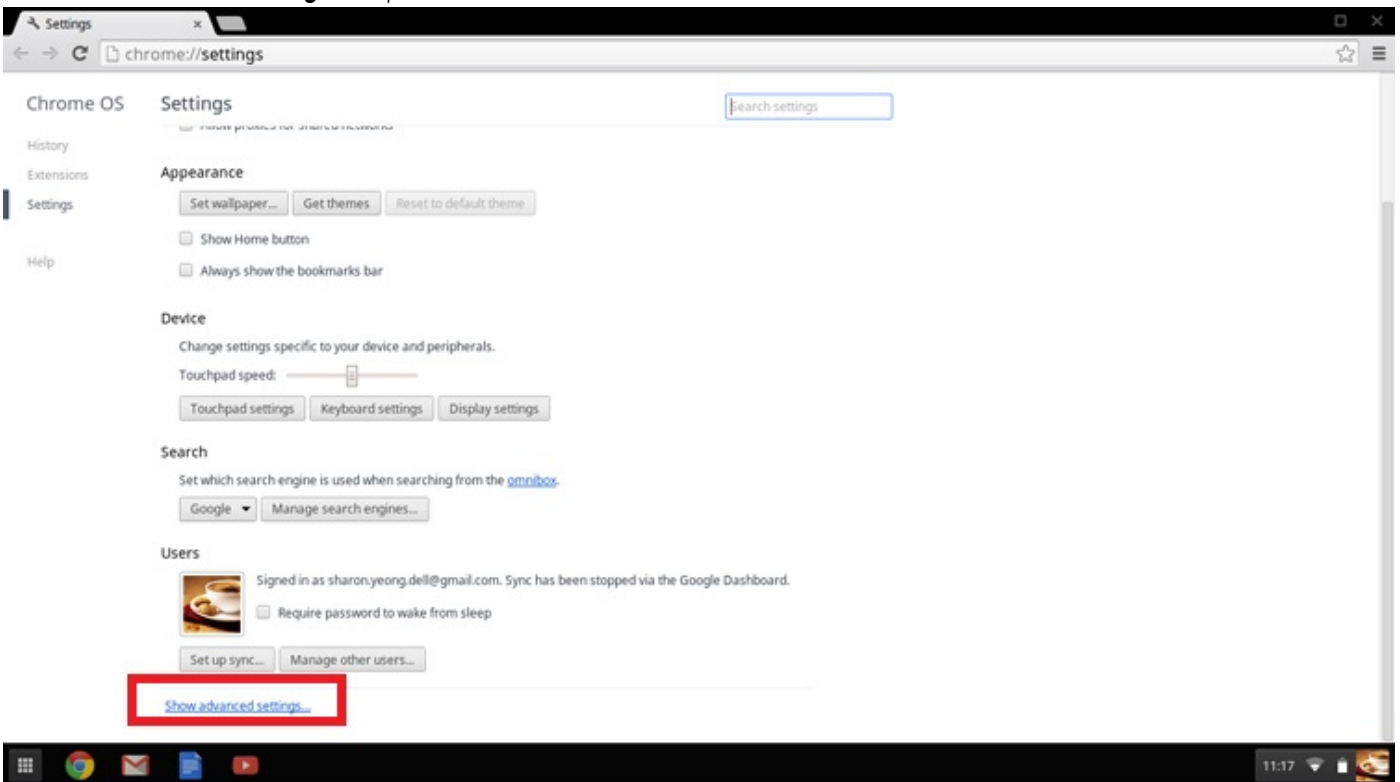
1. Click the status area in the lower-right corner, where your account picture appears.



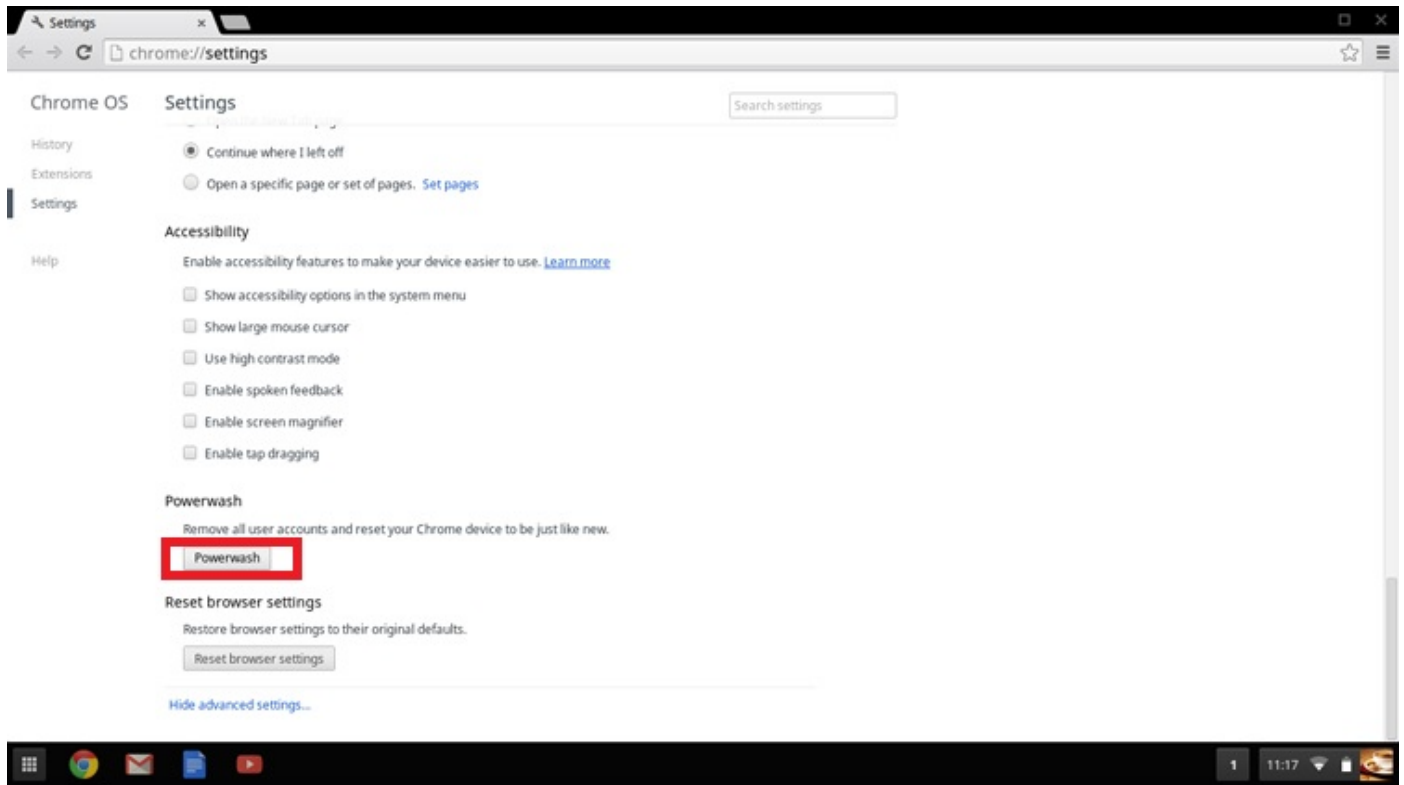
2. Click **Settings** as highlighted from the screenshot below.



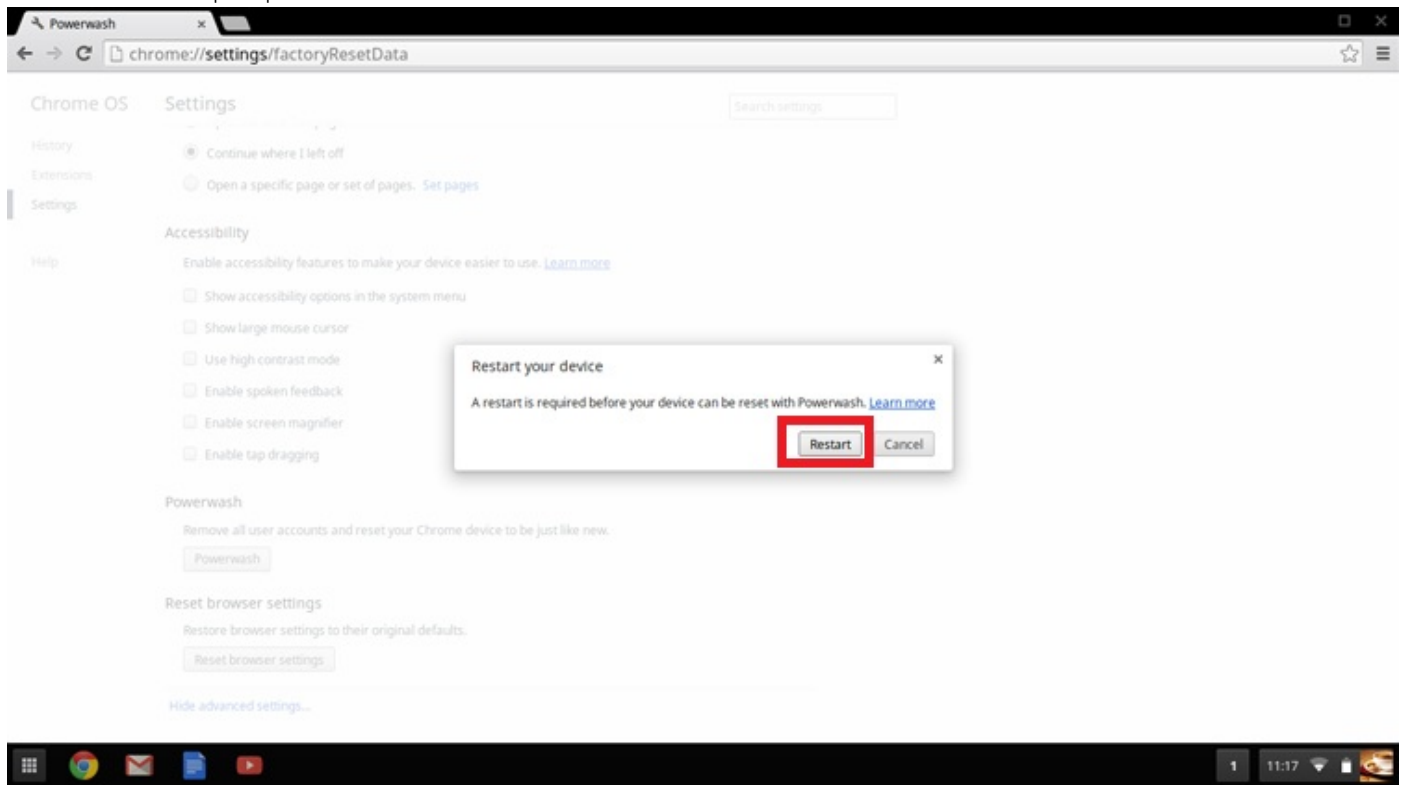
3. Click **Show advanced settings** to expand the menu.



4. Click the **Powerwash** button.



5. Click **Restart** when prompted.



You can also reset your Chromebook from the sign-in screen by holding down the keys **Ctrl+Alt+Shift+R** and clicking **Restart**. (If you are signed in to your Chromebook, sign out first before you press on **Ctrl+Alt+Shift+R**, then click **Restart**. Once the Chromebook is restarted, click **Reset**.)

After you restart the Chromebook, you should now see the setup screen. Follow the instructions on the screen to set up your Chromebook again. Make sure you sign in with your primary Google Account, because this account is set as the owner account.

Recovery Chromebook

This page contains information about recovering Dell .

Recovering the Chromebook

Install a new version of the Chrome operating system on your Chromebook by going through the recovery process. You may want to go through this process if you are having problems updating your Chromebook or if it stops working.

NOTE: All account information and data stored on your Chromebook, such as photos, downloaded files, and saved networks, will be deleted. Owner privileges for your primary account will also be reset. However, the actual Google Accounts and any data synced to these accounts are not affected by the recovery process. After the recovery process is complete, you will be guided through the initial setup again.

Prerequisites:

Before starting this process, you need the following:

- A Chrome device, Windows, Mac, or the Linux computer with administrative rights.
- A 4 GB or larger USB flash drive or SD card that you do not mind clearing.

Step 1- Check for the Chrome OS is missing or damaged message

If you see this message, you can first try to perform a hard reset on your Chromebook by pressing Refresh + Power. If you still see this message after performing a hard reset, please proceed to Step 2.

If you see the **Chrome OS verification is turned off** message, refer to **Chrome OS verification is turned off** section below.

Step 2- Create the recovery USB flash drive or SD card

Insert a USB flash drive or SD card into your computer and follow the instructions below

Table 14. USB flash drive or SD card

Operating System	Instructions
Chrome Device Instructions	Create a recovery flash drive by using the Image Burner. The tool may not be available in all languages. 1. Type chrome://imageburner into the omnibox (browser's address bar) . 2. Run the tool and follow the instructions that appear on your screen. NOTE: When recovering your Chromebook, make sure to create the recovery flash drive on the same model.
Windows Instructions	1. Click this link to download the Recovery Tool. If you are a network administrator for your school, business, or organization, click this link to download the Recovery Tool: 2. 3. 2. Run the tool and follow the instructions that appear on your screen. 3. After you recover your Chromebook, you must format your USB flash drive or SD card using the Recovery Tool. If you do not format your USB flash drive or SD card, you will not be able to use all the storage space on your external device. Additionally, your USB flash drive or SD card may not be recognizable by Windows.
Mac Instructions	Create a recovery flash drive by using the Recovery Tool. The tool may not be available in all languages. 1. Click this link to download the Recovery Tool. 2. Run the tool and follow the instructions that appear on your screen.

Operating System

Instructions

Linux Instructions

After the process is complete, you might see an alert saying your USB drive or SD card is unreadable. If this fails, try removing and reinserting your USB drive or SD card. Your USB drive or SD card should now be ready to use for recovery.

Create a recovery flash drive by using the Recovery Tool. The tool may not be available in all languages.

1. Click this [link](#) to download the Recovery Tool.
2. Modify the script permissions to allow execution with the following command: `$ & sudo chmod 755 linux_recovery.sh`
3. Run the script with root privileges with the following command: `$ sudo bash linux_recovery.sh`
4. Follow the prompts from the tool to complete building the operating system image.

Reinstall the Chrome Operating System

1. Start your Chromebook.
2. When the **Chrome OS is missing or damaged** screen appears, insert the USB flash drive or SD card you created into the USB port or SD card slot on your Chrome device
3. Wait for the Chromebook to boot up from the flash drive
4. Follow the instructions that appear on the screen.
5. On successful installation of the Chrome operating system, you will be prompted to remove the USB flash drive or SD card.
6. Remove the USB flash drive or SD card when prompted, and your Chromebook will automatically restart.

You should now be able to start your Chromebook as normal. Because the data stored on your Chromebook has been cleared, you will need to go through the initial setup again. Make sure you sign in with your primary Google Account, because this account will be set as the owner account.

Chrome OS verification is turned off Message

By default, Chromebooks are set to the normal user mode. If you've set the user mode to developer mode instead, you'll see a screen with the message "Chrome OS verification is turned off" when you start up. Use the developer mode if you want to test your own version of the Chrome operating system.

Press **Ctrl+D** to enter developer mode. If you press the space bar instead, you'll see a screen asking to recover your device.

Troubleshooting Tips

Table 15. Troubleshooting tips

Question	Solution
I am unable to recover my Chromebook	To help ensure that you are running the latest version of Chrome OS once you recover your Chromebook, we recommend creating the recovery media with the latest version of Chrome OS and avoid using recovery media that may contain an older version of the operating system.
An error message An unexpected error has occurred.	Try the following steps: 1. Confirm that you successfully completed all instructions exactly as specified in Step 2: Create the recovery USB flash drive or SD card above. 2. Try using a different USB stick or SD card. 3. If the problem persists, contact Google Chrome support team.
An error message You are using an out-of-date Chrome OS recovery image.	You should download an up-to date recovery image. Simply follow all the instructions exactly as specified in Step 2 above.

Question

You successfully recovered your Chromebook but now you can not use your USB or SD card with Windows

You successfully recovered your Chromebook but now Windows does not recognize the whole size of the USB or SD card used for recover.

Solution

After you have completed recovery, you need to format your USB or SD card using the recovery tool.

After you have completed recovery, you need to format your USB or SD card using the recovery tool.

Getting help

Topics:

- [Contacting Dell](#)

Contacting Dell

Prerequisites

 **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

About this task

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

Steps

1. Go to **Dell.com/support**.
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.