

# Dell Vostro 5480 Owner's Manual

Regulatory Model: P41G  
Regulatory Type: P41G002



# Notes, Cautions, and Warnings

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

 **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

## Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help 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.

 **WARNING:** 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 at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance)

 **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, such as 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.


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

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning off Your Computer).


3. If the computer is connected to a docking device (docked), undock it.


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

4. Disconnect all network cables from the computer.
5. Disconnect your computer and all attached devices from their electrical outlets.
6. Close the display and turn the computer upside-down on a flat work surface.

 **NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.**


7. Remove the main battery.
8. Turn the computer top-side up.
9. Open the display.
10. Press the power button to ground the system board.

 **CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.**

 **CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.**


11. Remove any installed ExpressCards or Smart Cards from the appropriate slots.

## Turning Off Your Computer


 **CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.**

1. Shut down the operating system:


- Windows 8:

- Point to upper-right corner of the screen and click **Settings**. Click on the  and then select **Shut down**.

- In Windows 7:

1. Click **Start** .
2. Click **Shut Down**.
- 3.

or

1. Click **Start** .
2. Click the arrow in the lower-right corner of the **Start** menu as shown below, and then click




**Shut Down..**


2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 4 seconds to turn them off.

## After Working Inside Your Computer

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

 **CAUTION: To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.**

1. Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
2. 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.**

3. Replace the battery.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

# Removing and Installing Components

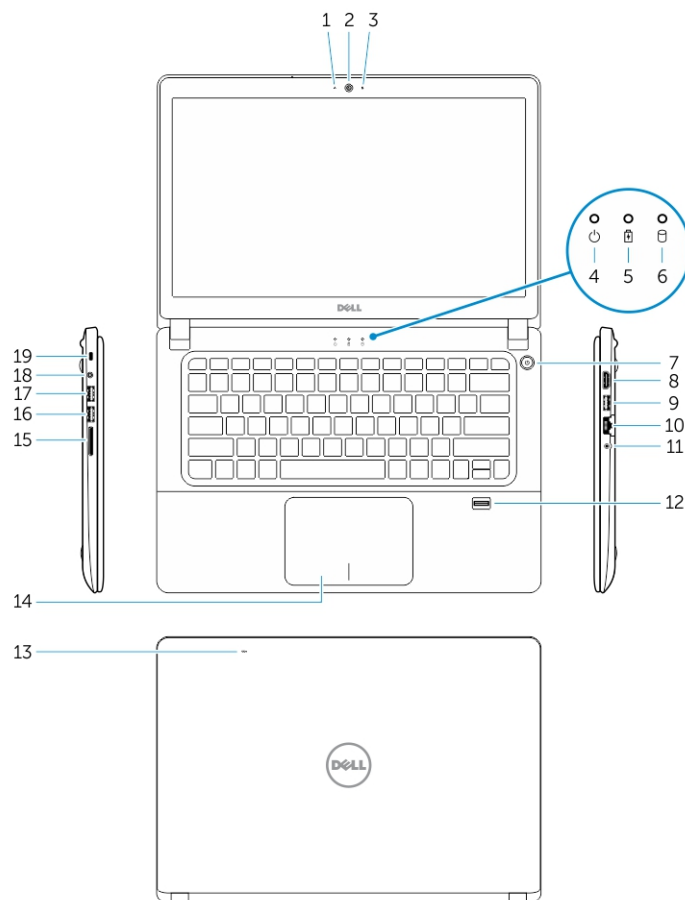
This section provides detailed information on how to remove or install the components from your computer.

## Recommended Tools

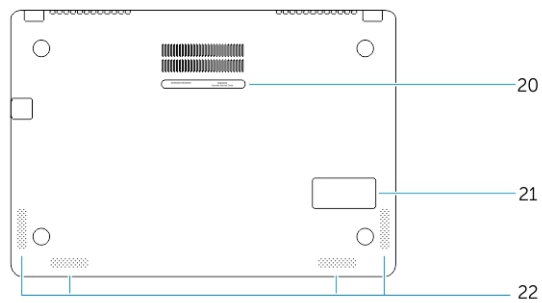
The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Small plastic scribe

## System Overview



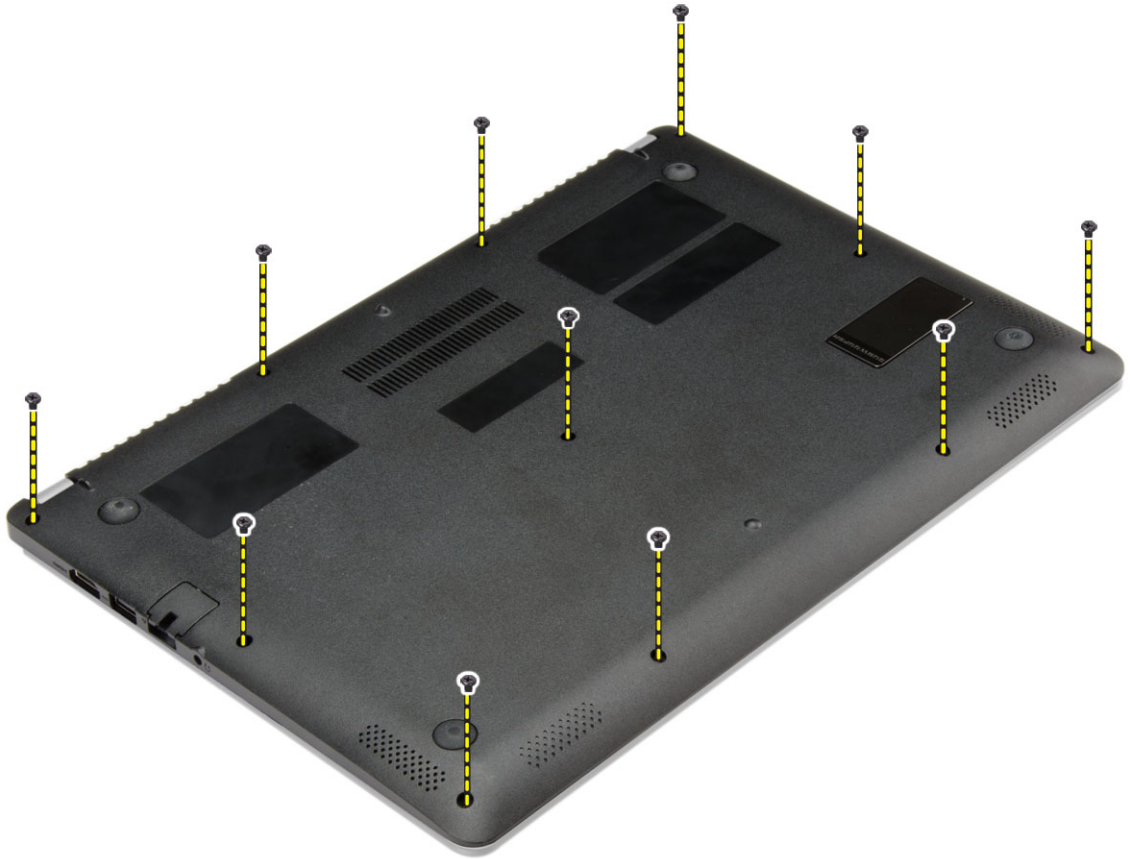




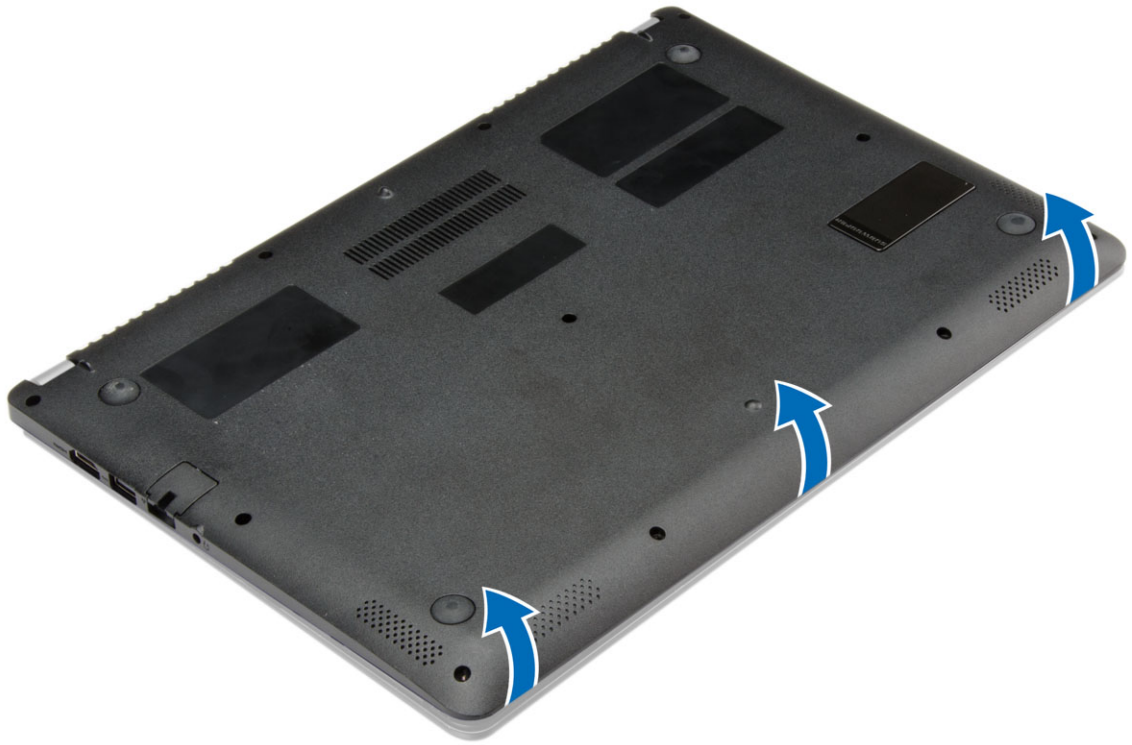
1. camera-status light
2. camera
3. microphone
4. power-status light
5. battery-status light
6. hard-drive activity light
7. power button
8. HDMI connector
9. USB 3.0 connector
10. network connector
11. headset connector
12. fingerprint reader
13. microphones
14. touchpad
15. memory card reader
16. USB 3.0 connector
17. USB 3.0 connector with PowerShare
18. power connector
19. security-cable slot
20. service-tag label
21. sub-woofer speaker
22. speakers

## Removing the Base Cover

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the screws that secure the base cover to the computer.



3. Pry the base cover along the edges to loosen it.



4. Lift and remove the base cover from the computer.

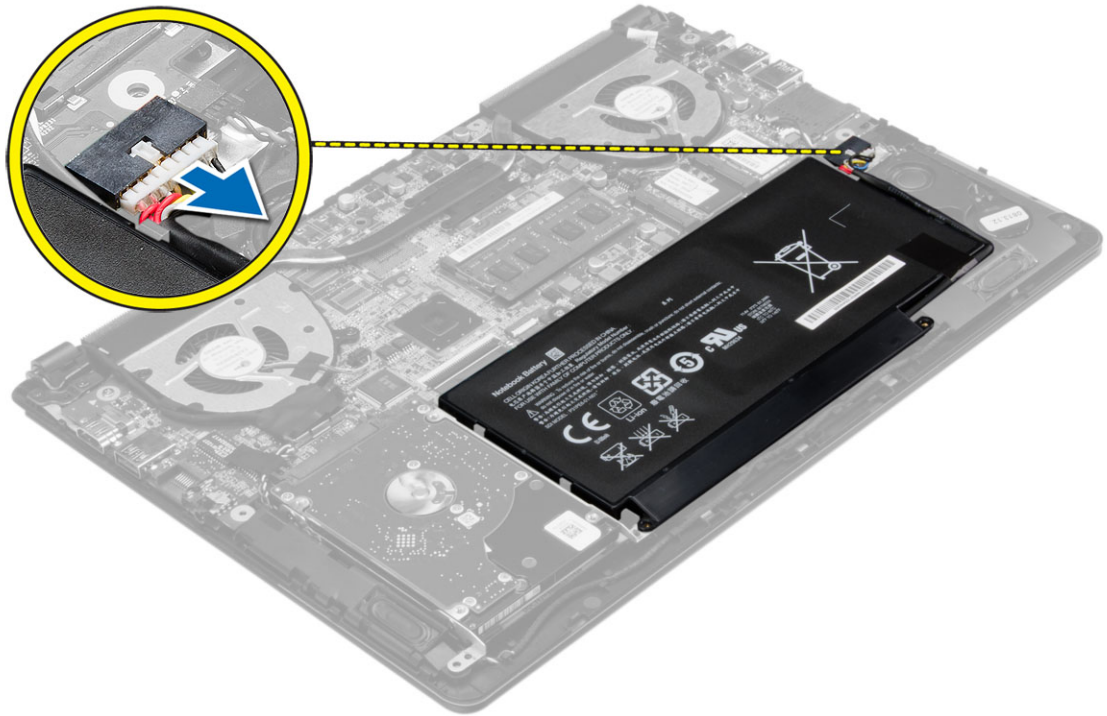


## Installing the Base Cover

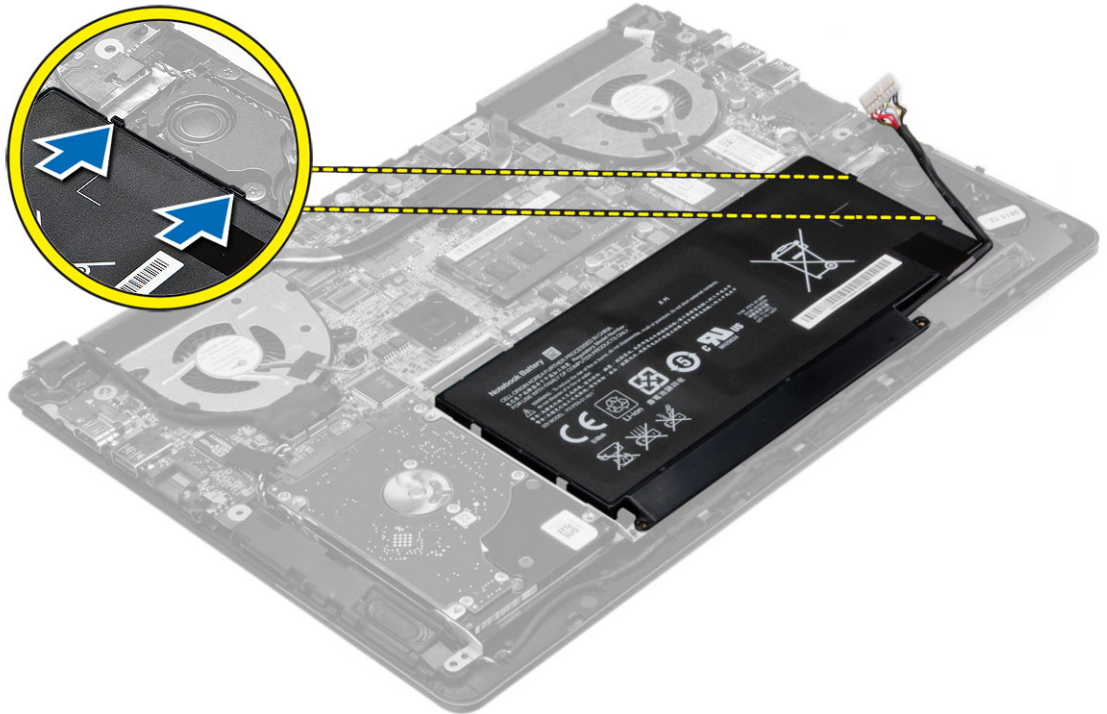
1. Place the base cover to align with the screw holes on the computer.
2. Tighten the screws to secure the base cover to the computer.
3. Follow the procedures in [After Working Inside Your computer](#).

## Removing the Battery

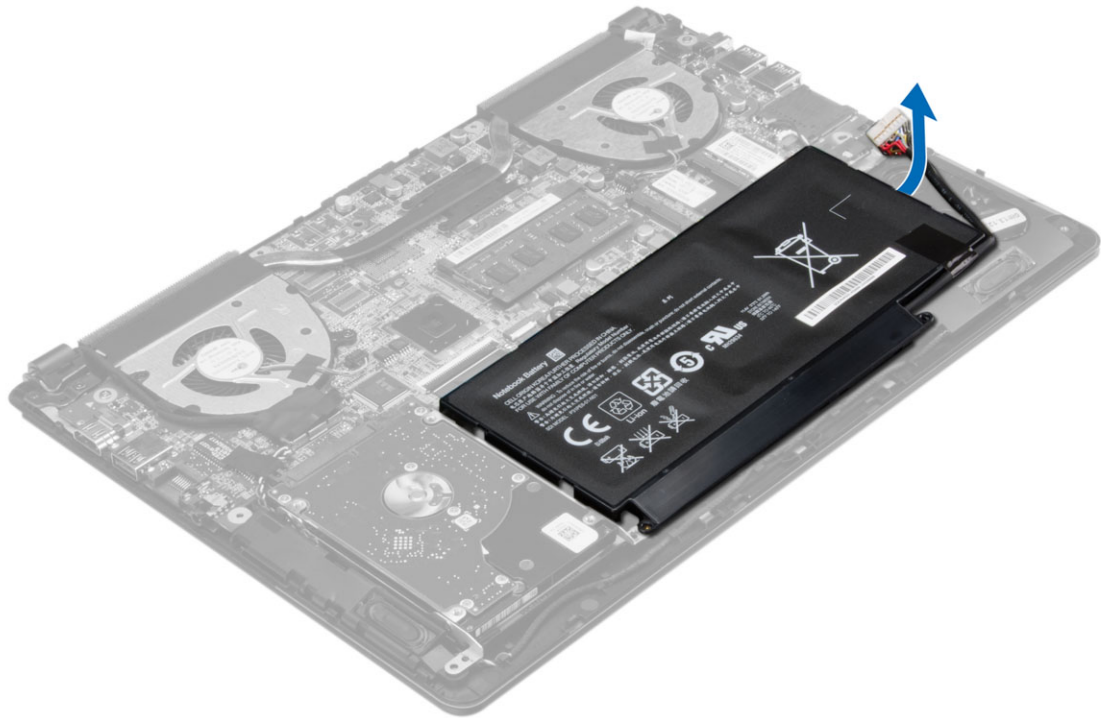
1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [base cover](#).
3. Disconnect the battery cable from its connector on the system board.



4. Release the tabs that secure the battery in the battery bay.



5. Lift and remove the battery from the computer.

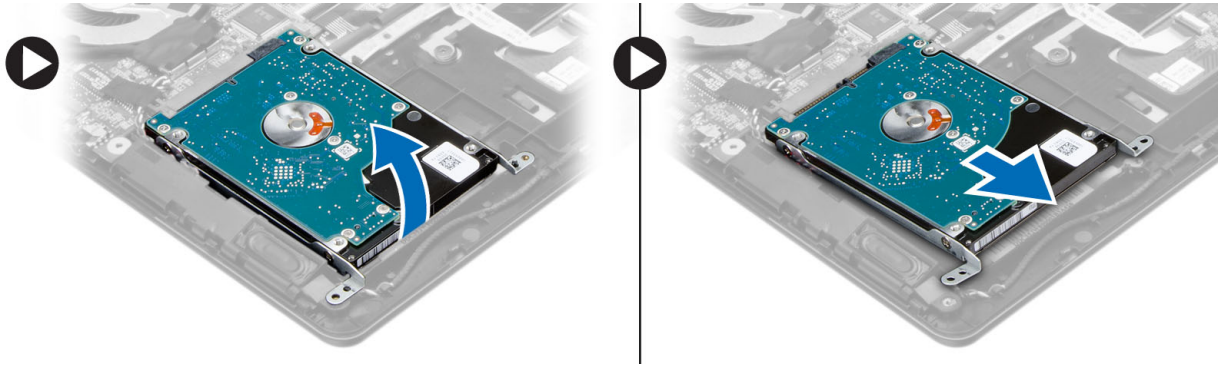


## Installing the Battery

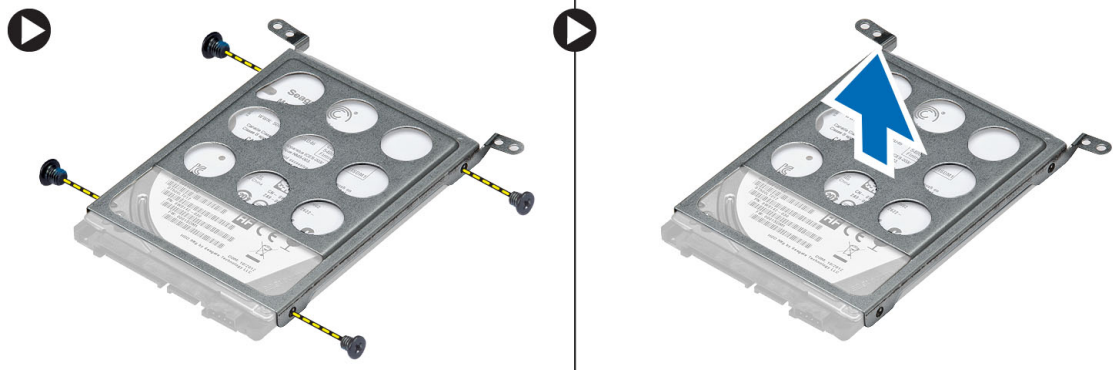
1. Place the battery into its slot on the computer.
2. Connect the battery cable to its connector on the system board.
3. Install the [base cover](#).
4. Follow the procedures in [After Working Inside Your computer](#).

## Removing the Hard Disk Drive

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove :
  - a. [base cover](#)
  - b. [battery](#)
3. Lift the hard drive assembly in an upward direction to release it from its compartment on the computer. Remove the hard drive from the computer.



4. Remove the screws that secure the hard drive to the hard drive assembly.
  - a. Lift and remove the hard drive from the hard drive assembly.

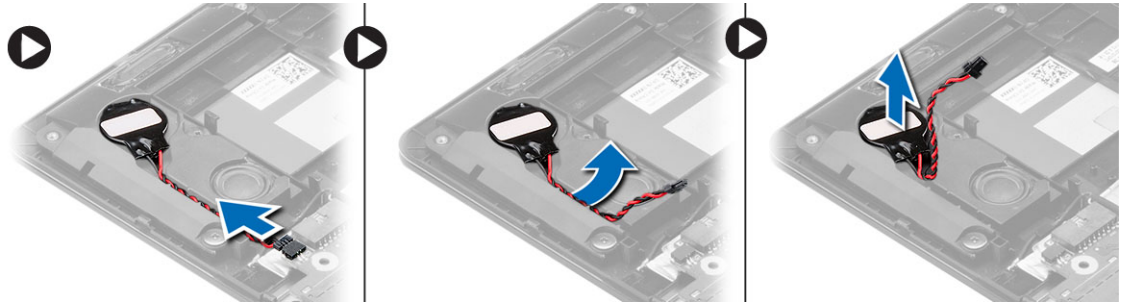


## Installing the Hard Drive

1. Place the hard drive assembly into its slot on the computer.
2. Tighten the screw that secures the hard drive to the computer
3. Install:
  - a. [battery](#)
  - b. [base cover](#)
4. Follow the procedures in [After Working Inside Your computer](#)

## Removing the Coin-Cell Battery

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove :
  - a. [base cover](#)
  - b. [battery](#)
3. Perform the steps as shown in the illustration:
  - a. Disconnect the coin-cell battery cable from its connector on the system board.
  - b. Unroute the coin-cell battery cable from the routing channel.
  - c. Lift and remove the coin-cell from the computer.

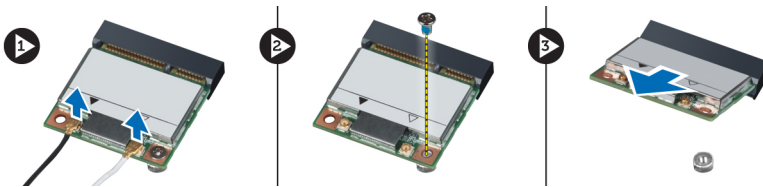


## Installing the Coin-Cell Battery

1. Place the coin-cell battery into its slot on the computer.
2. Route the coin-cell battery cable along the routing channel.
3. Connect the coin-cell battery cable to its connector on the system board.
4. Install :
  - a. [battery](#)
  - b. [base cover](#)
5. Follow the procedures in [After Working Inside Your computer](#)

## Removing the WLAN Card

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
  - a. [base cover](#)
  - b. [battery](#)
3. Perform the steps as shown in the illustration:
  - a. Disconnect the antenna cable from the WLAN card.
  - b. Remove the screw that secures the WLAN card to the computer.
  - c. Remove the WLAN card from its slot on the system board.



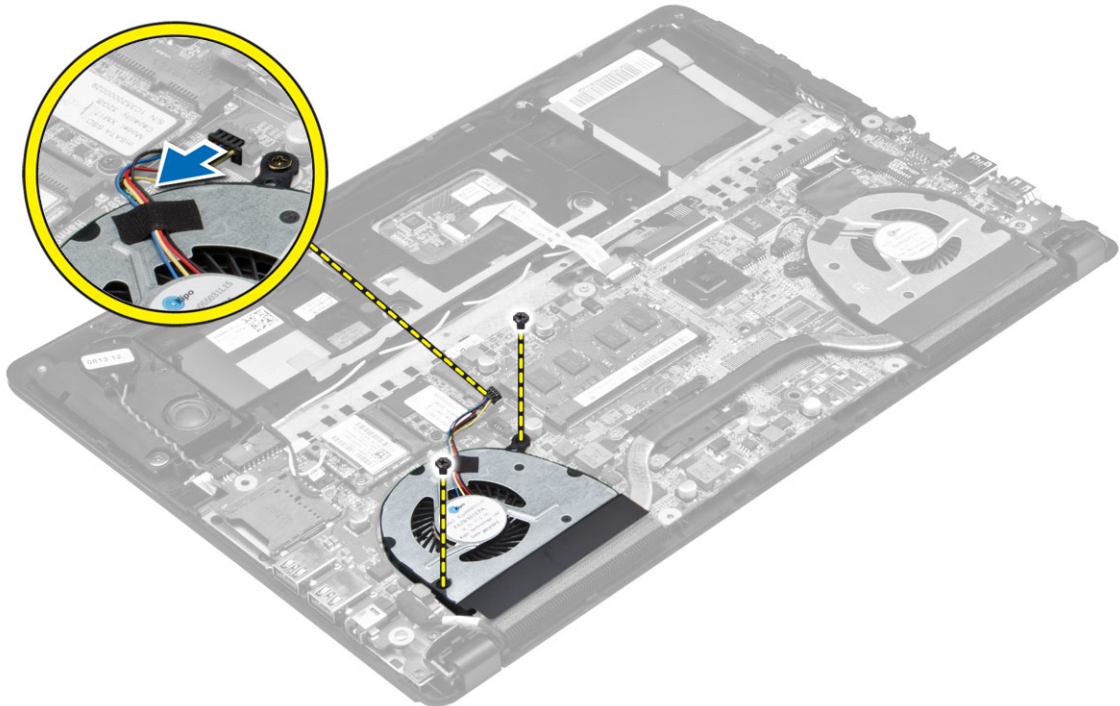
## Installing the WLAN Card

1. Insert the WLAN card into its connector at a 45-degree angle.
2. Tighten the screw to secure the WLAN card to the computer.
3. Connect the antenna cables to their respective connectors marked on the WLAN card.
4. Install:
  - a. [battery](#)
  - b. [base cover](#)
5. Follow the procedures in [After Working Inside Your computer](#).

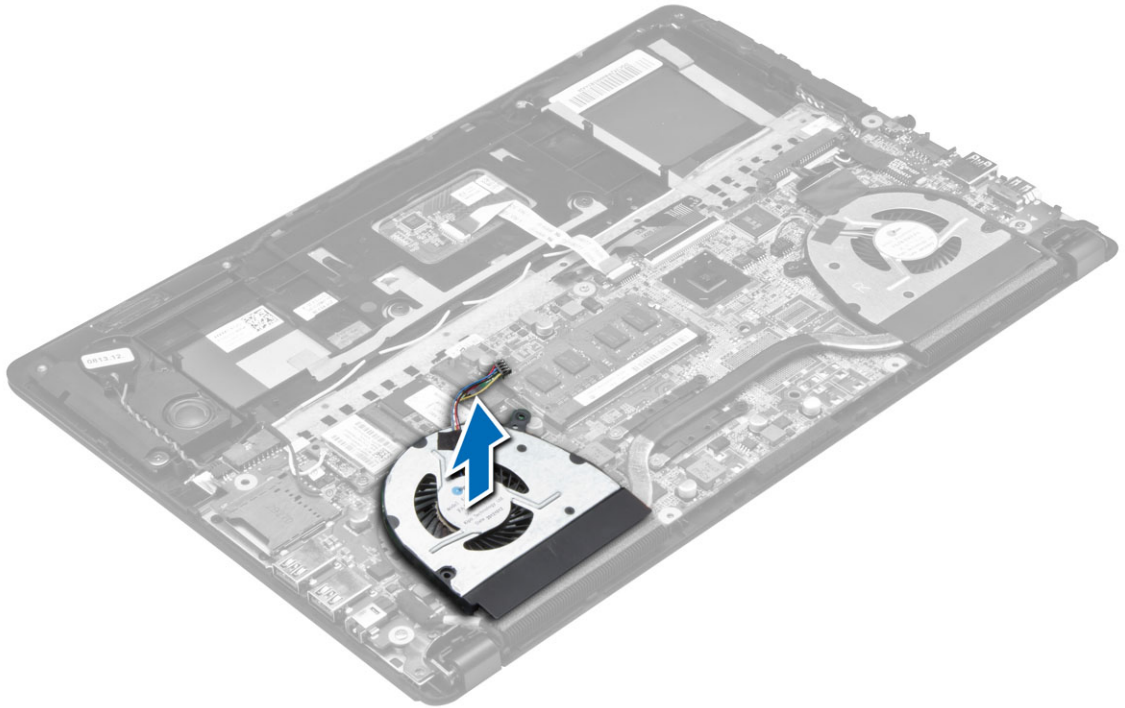


## Removing the System Fan

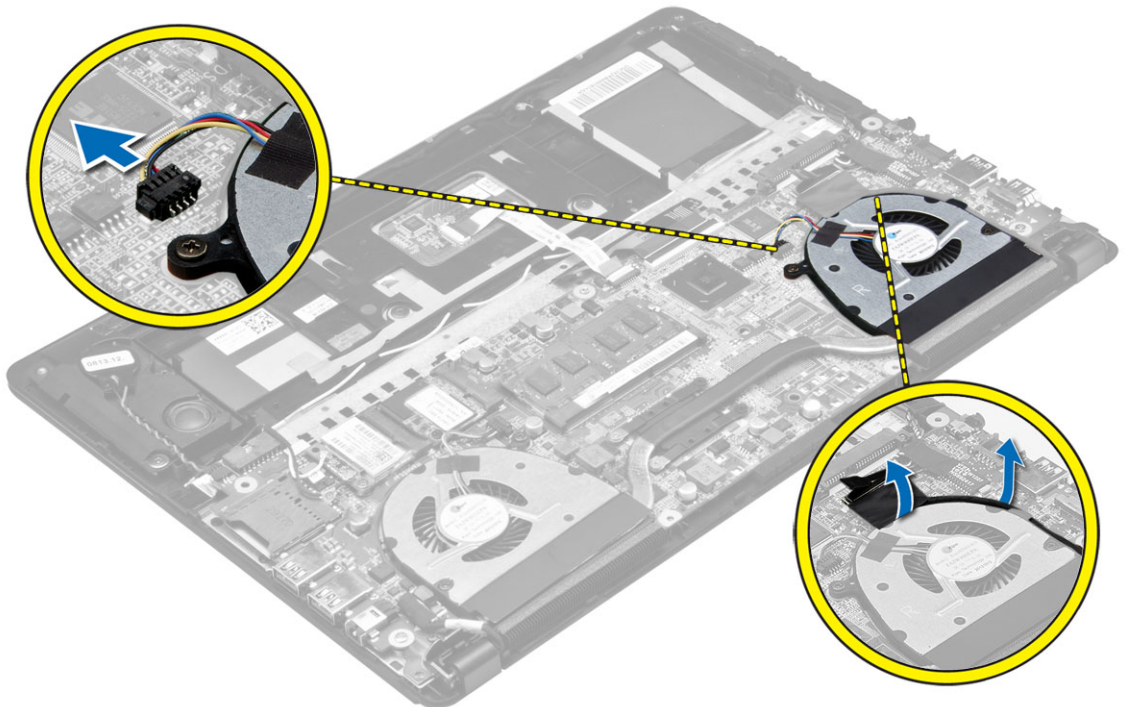
1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
  - a. [base cover](#)
  - b. [battery](#)
3. Perform the steps as shown in the illustration:
  - a. Disconnect the left system fan cable from its connector on the system board.
  - b. Remove the screws that secure the left system fan to the system board.



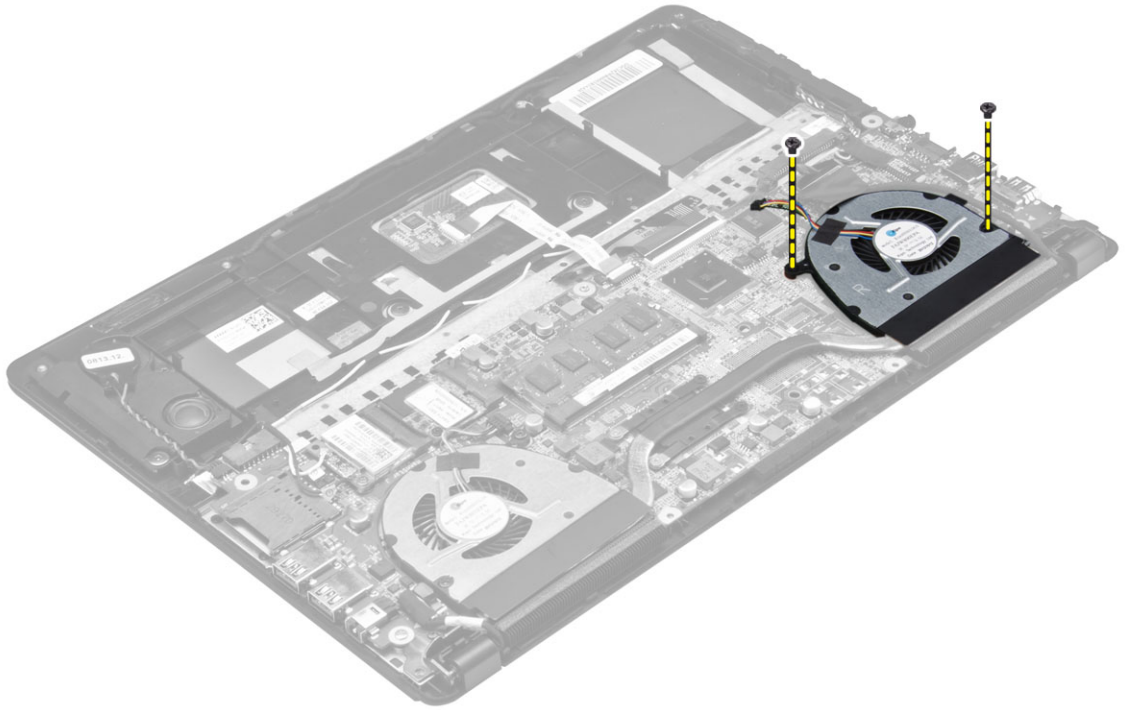
4. Lift and remove the left system fan from the computer.



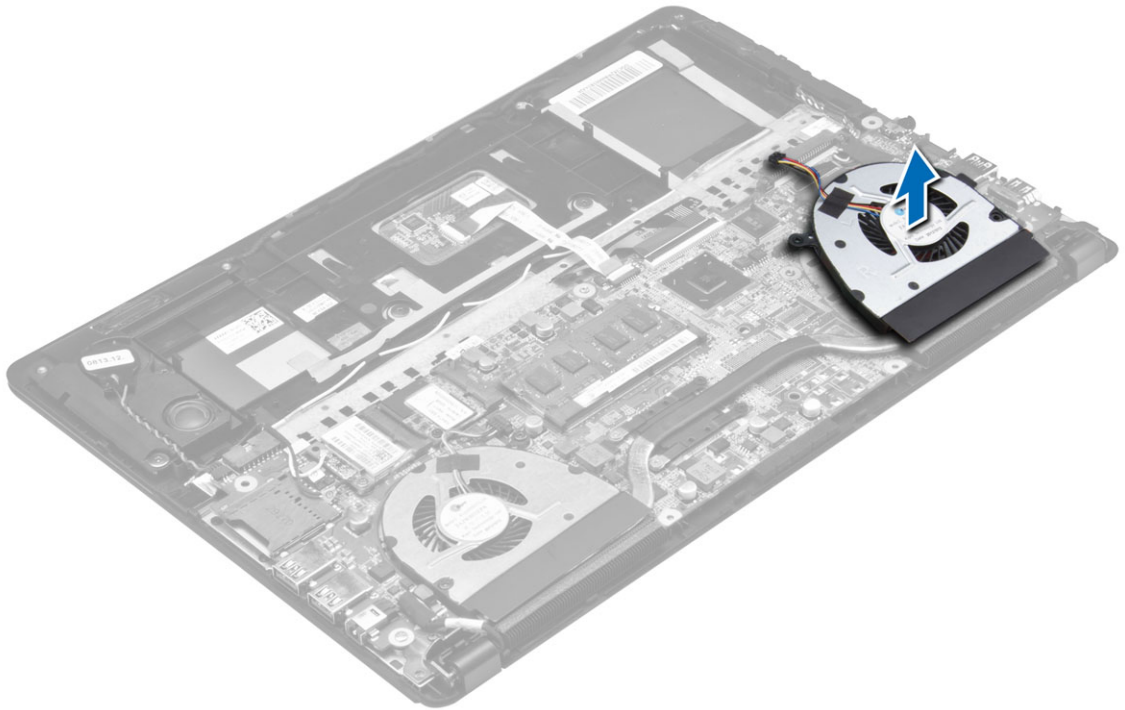
5. Disconnect the right system fan cable from its connector on the system board. Peel away the system board flex cable from the right system fan.



6. Remove the screws that secure the right system fan to the system board.



7. Lift and remove the right system fan from the computer.

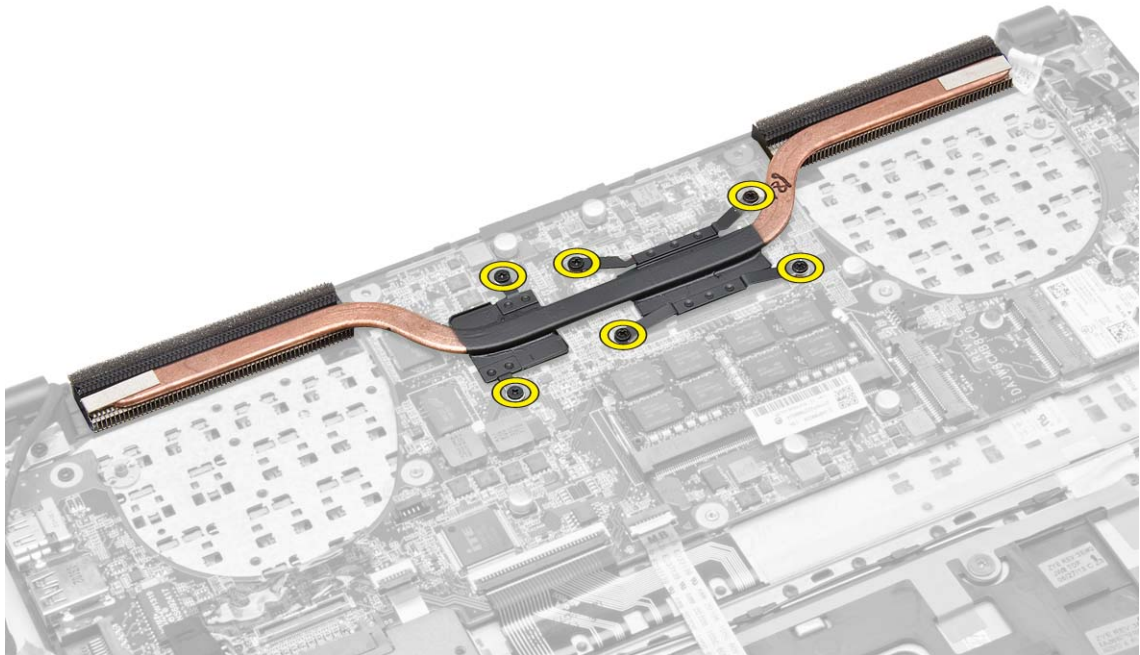


## Installing the System Fan

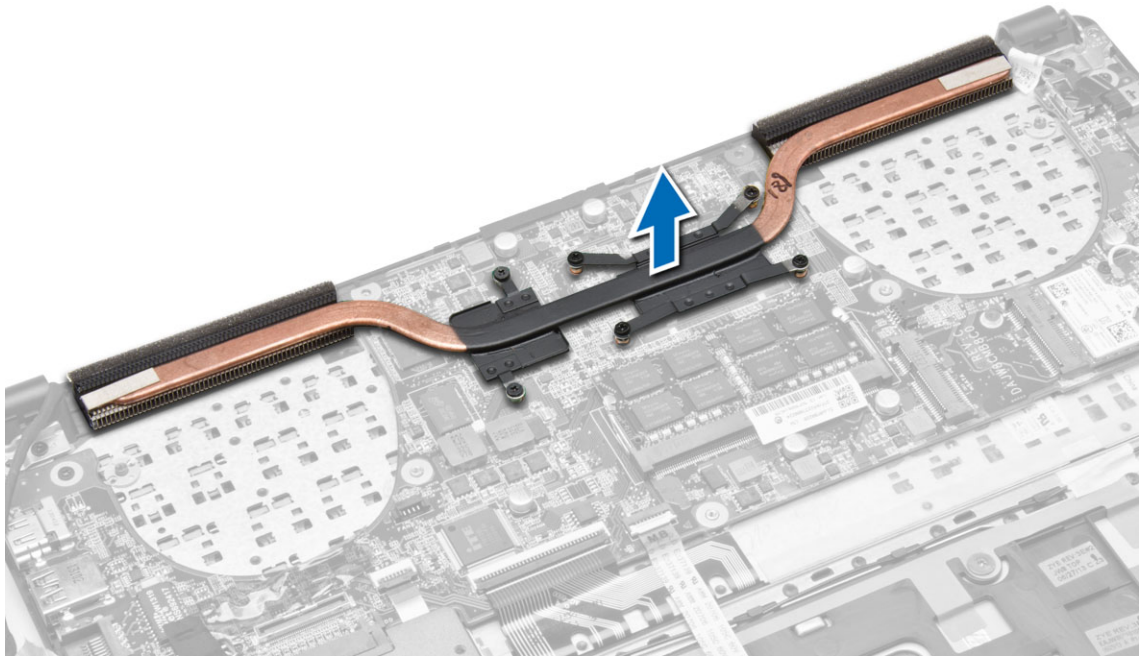
1. Place the right system fan into its original position in the system board and affix the system board flex cable.
2. Tighten the screws that secure the right system fan to the system board.
3. Connect the right system fan cable to its connector on the system board.
4. Place the left system fan into its original position in the system board.
5. Tighten the screws that secure the left system fan to the system board.
6. Connect the left system fan cable to its connector on the system board.
7. Install :
  - a. [battery](#)
  - b. [base cover](#)
8. Follow the procedures in [After Working Inside Your computer.](#)

## Removing the Heatsink

1. Follow the procedures in [Before Working Inside Your Computer.](#)
2. Remove:
  - a. [base cover](#)
  - b. [battery](#)
  - c. [system fan](#)
3. Remove the screws that secure the heatsink to the system board.



4. Lift up the heatsink and remove from the computer.

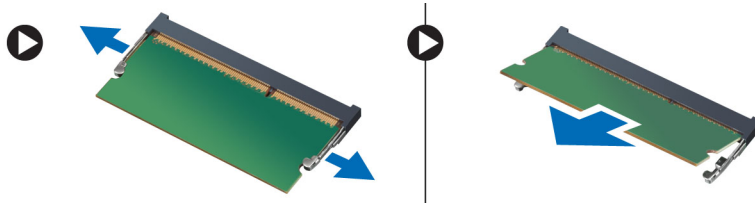


## Installing the Heatsink

1. Place the heatsink into its original position on the system board.
2. Tighten the screws to secure the heatsink to the system board.
3. Install:
  - a. [system fan](#)
  - b. [battery](#)
  - c. [base cover](#)
4. Follow the procedures in [After Working Inside Your computer](#)

## Removing the Memory Module

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
  - a. [base cover](#)
  - b. [battery](#)
  - c. [system fan](#)
  - d. [heatsink](#)
3. Pry the retention clips away from the memory module until it pops up. Remove the memory module from its connector on the system board.

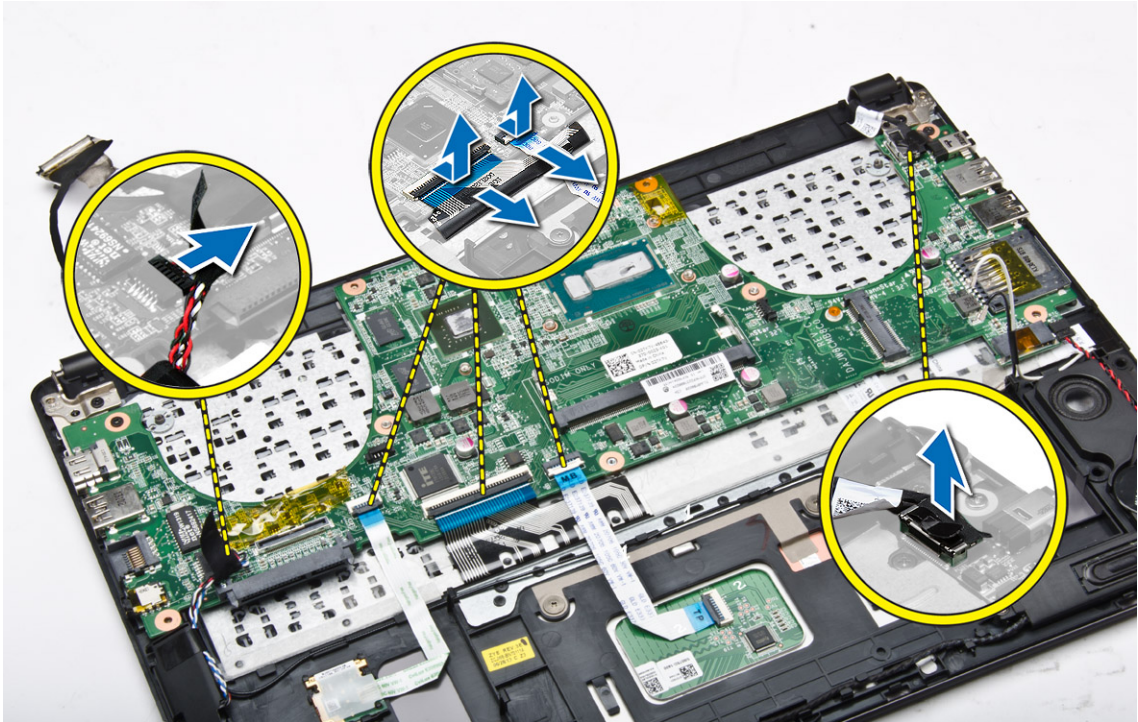


## Installing the Memory

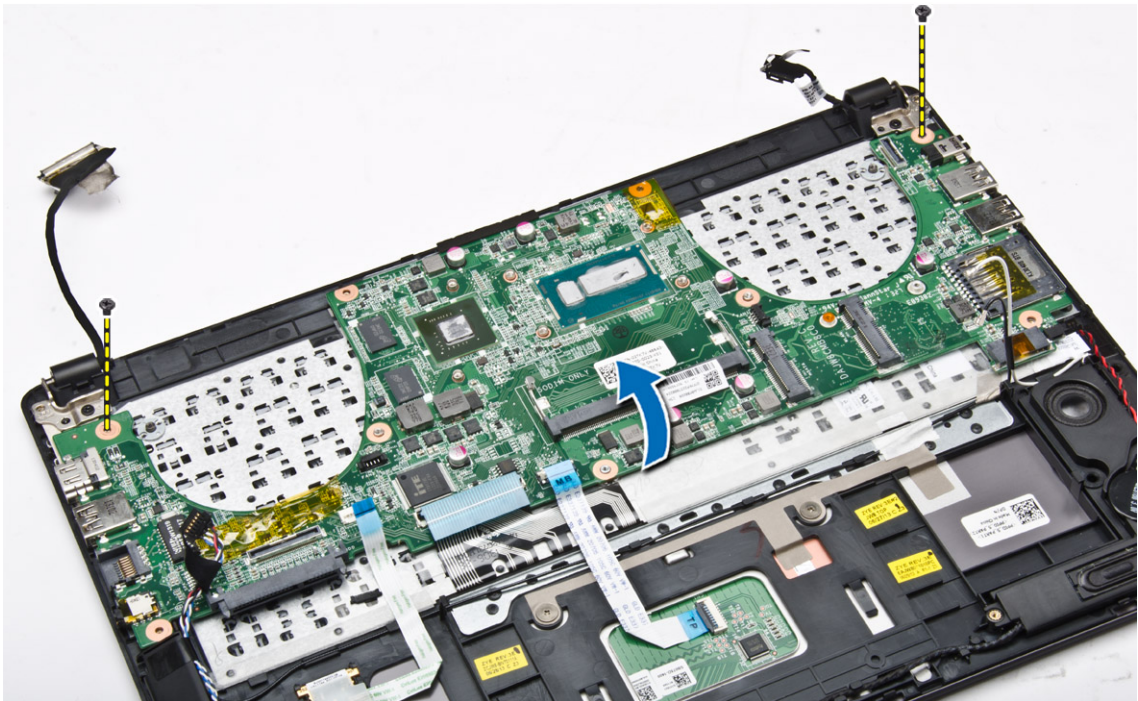
1. Insert the memory module into the memory socket.
2. Press the memory module down until it clicks into place.
3. Install:
  - a. [heatsink](#)
  - b. [system fan](#)
  - c. [battery](#)
  - d. [base cover](#)
4. Follow the procedures in [After Working Inside Your computer](#).

## Removing the System Board

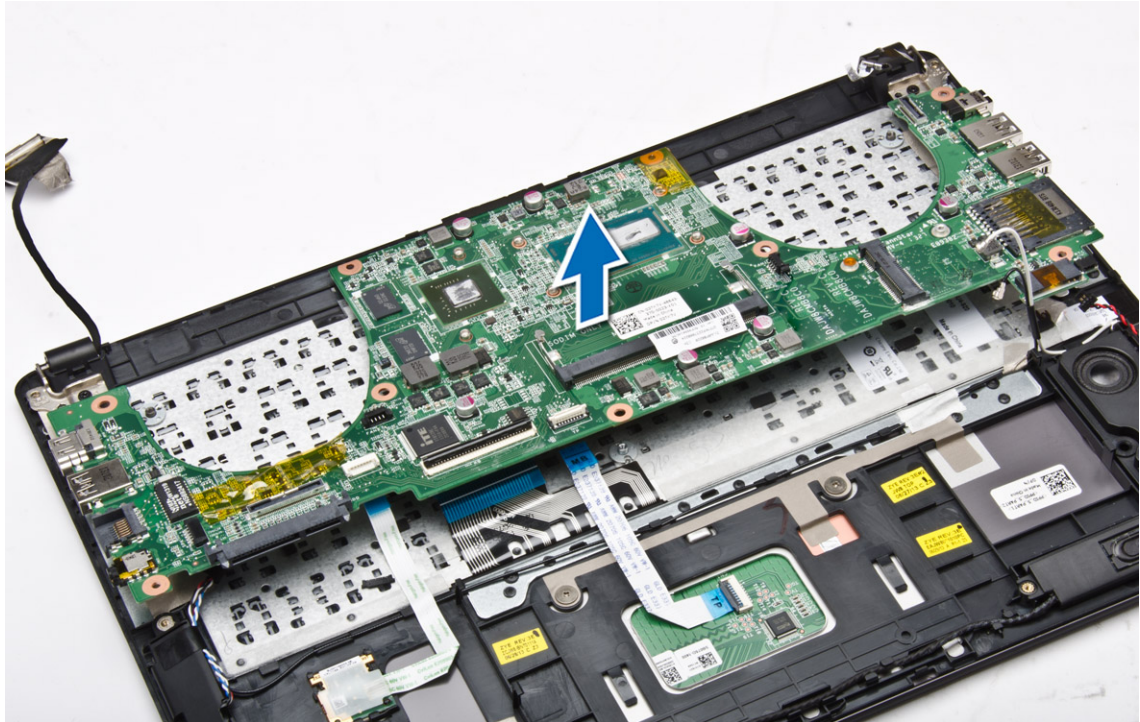
1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove :
  - a. [base cover](#)
  - b. [battery](#)
  - c. [system fan](#)
  - d. [heatsink](#)
  - e. [memory](#)
3. Disconnect the following cables:
  - a. speaker
  - b. display
  - c. keyboard
  - d. touchpad
  - e. camera



4. Remove the screws that secure the system board to the chassis.



5. Remove the system board from the computer.



## Installing the System Board

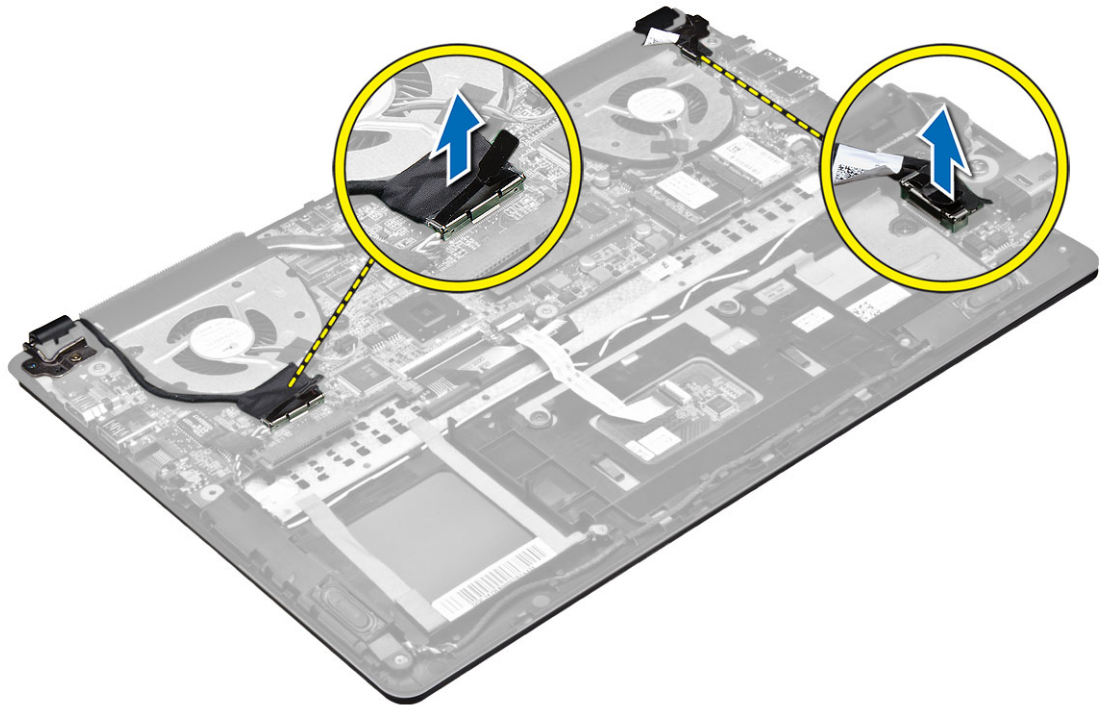
1. Place the system board into its original position on the chassis.
2. Install the screws that secure the system board to the chassis.
3. Connect :
  - a. camera cable
  - b. touchpad cable
  - c. keyboard cable
  - d. display cable
  - e. speaker cable
4. Install :
  - a. [memory](#)
  - b. [heatsink](#)
  - c. [system fan](#)
  - d. [battery](#)
  - e. [base cover](#)
5. Follow the procedures in [After Working Inside Your computer](#)

## Removing the Display Assembly

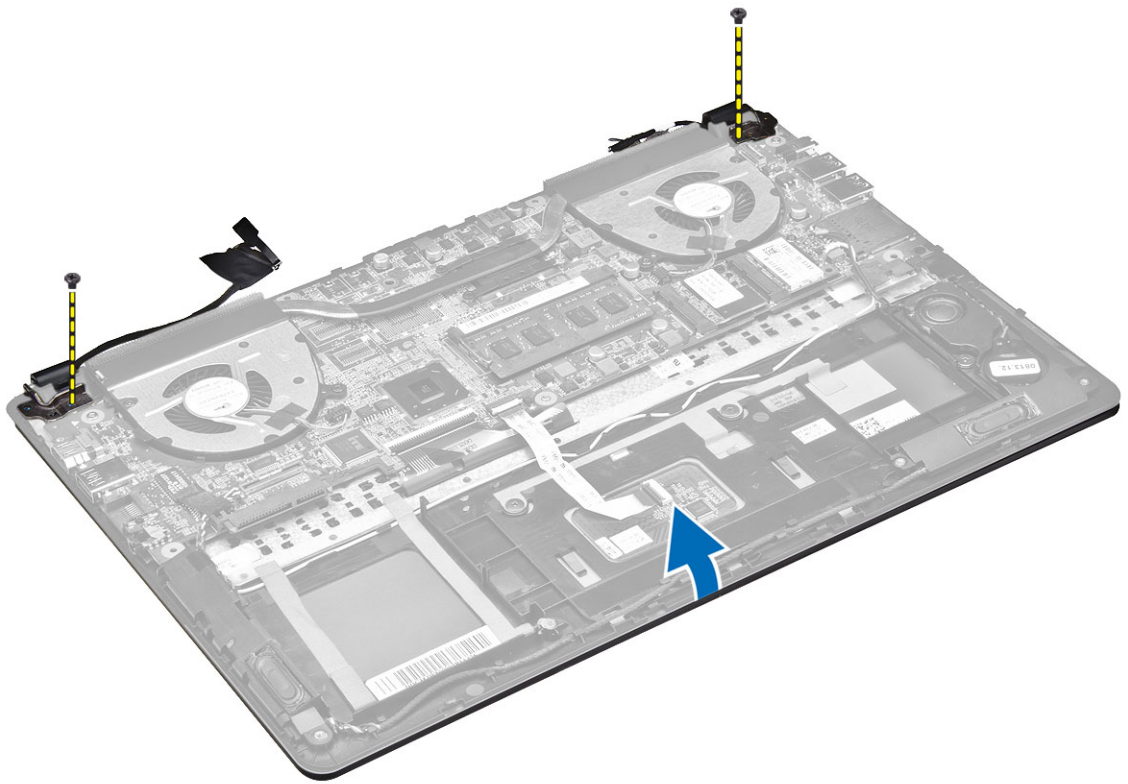
1. Follow the procedures in [Before Working Inside Your Computer.](#)
2. Remove :
  - a. [base cover](#)
  - b. [battery](#)



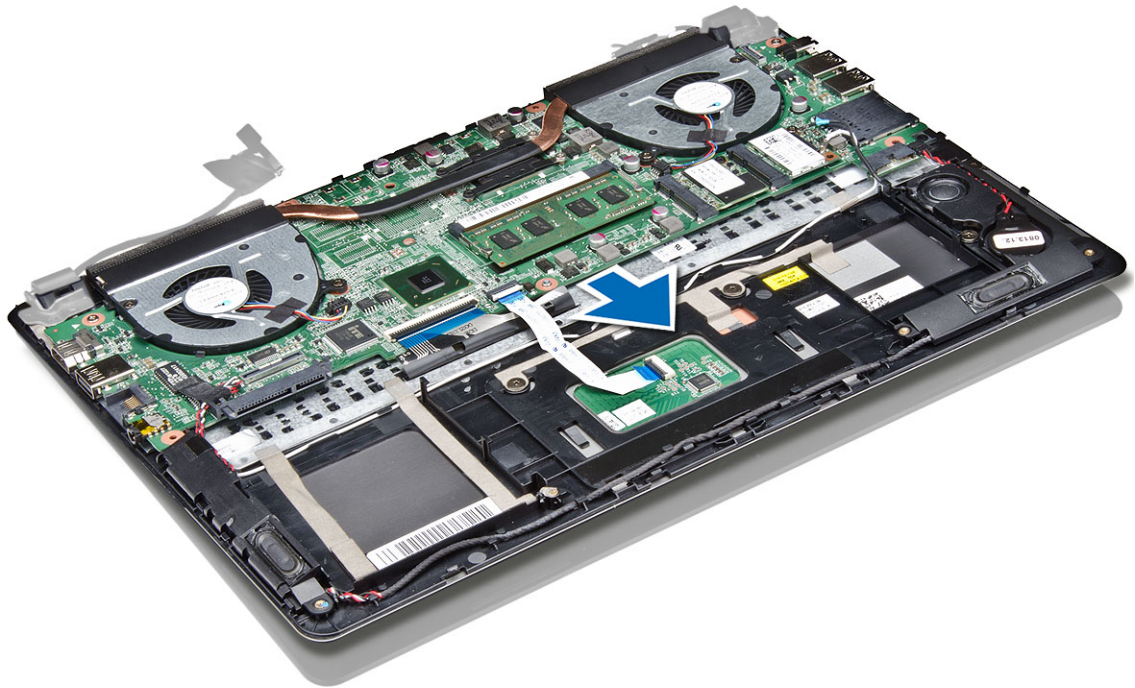
3. Disconnect the LVDS cable and the camera cable from its connectors on the system board.



4. Remove the screws that secure the display hinges to the system board. Lift and move the system base panel away from the display hinges to facilitate easy removal of the display assembly.



5. Detach the base panel from the display assembly..

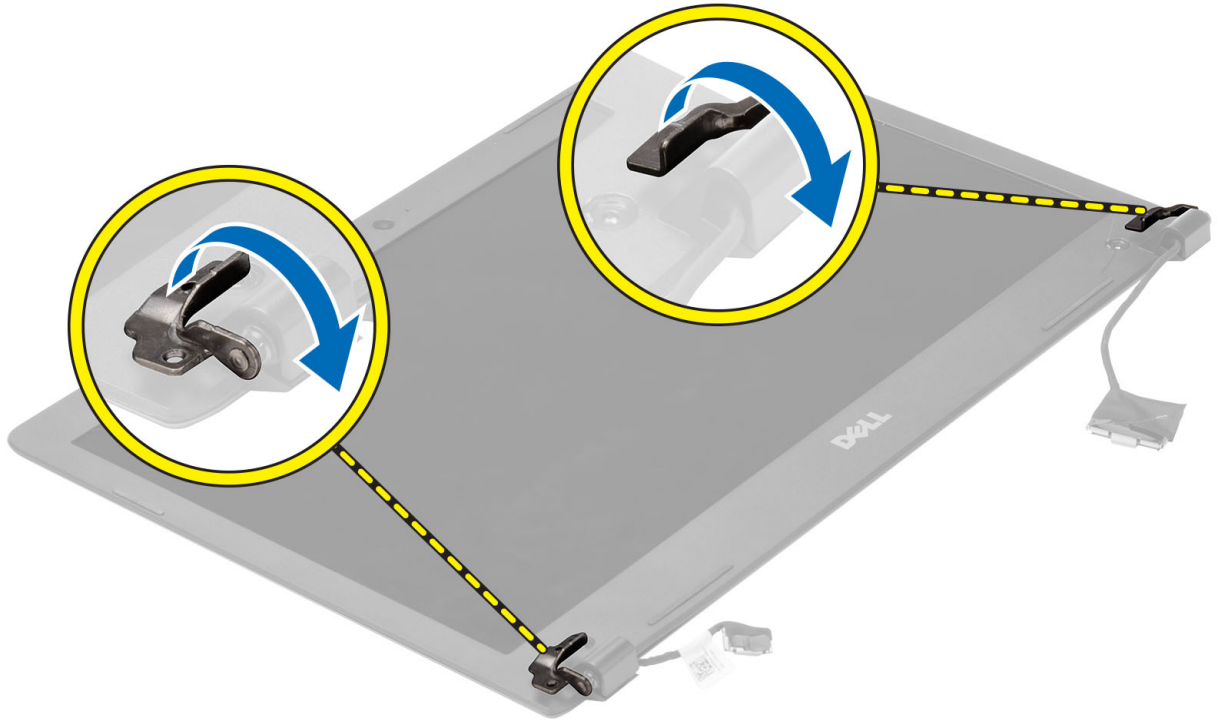


## Installing the Display Assembly

1. Align the base panel of the computer to the display hinges.
2. Install the screws that secure the display hinges to the base panel
3. Connect the LVDS cable and the camera cable to the connectors on the system board.
4. Install :
  - a. [battery](#)
  - b. [base cover](#)
5. Follow the procedures in [After Working Inside Your computer](#)

## Removing the Display Bezel

1. Follow the procedures in [Before Working Inside Your Computer.](#)
2. Remove :
  - a. [base cover](#)
  - b. [battery](#)
  - c. [display assembly](#)
3. Rotate the hinge brackets at the angle shown to facilitate easy removal of the display bezel.



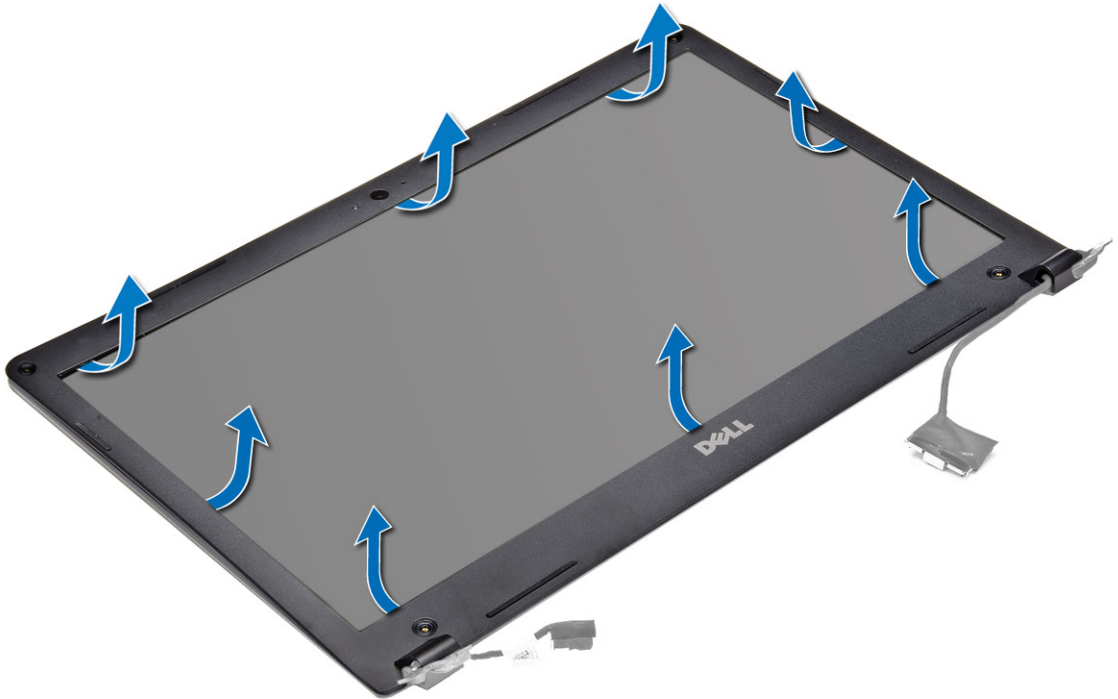
4. Pry on the plastic caps that cover the display bezel screws and remove them.



5. Remove the screws that secure the display bezel.



6. Pry along the inner edges of the display bezel and remove it.

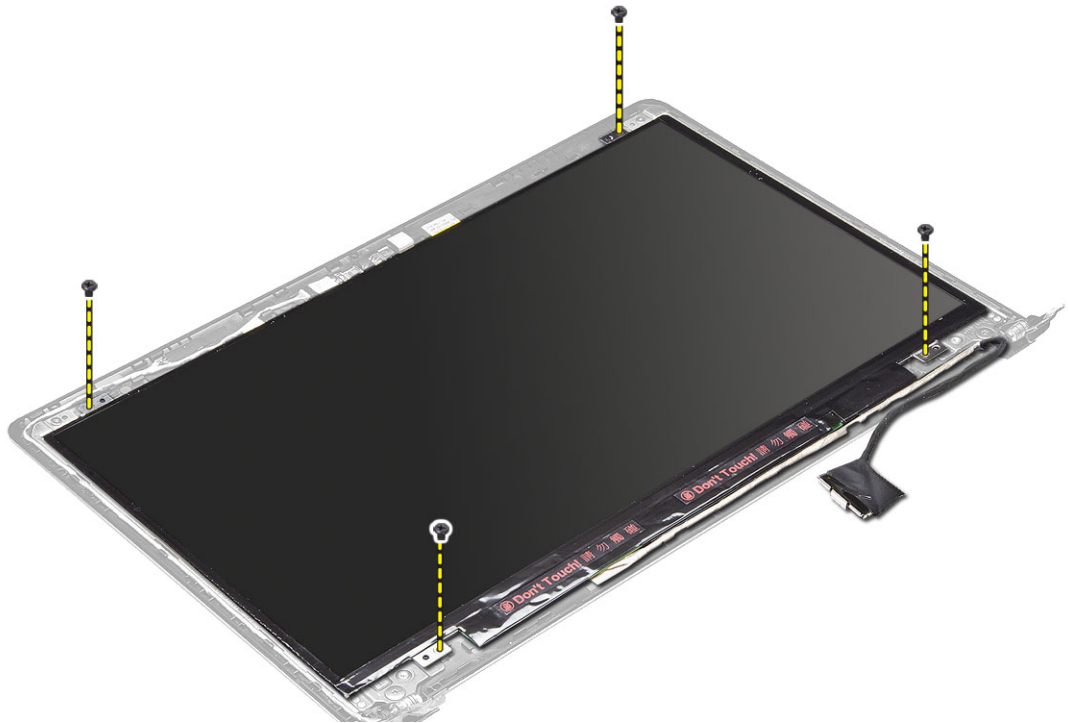


## Installing the Display Bezel

1. Align the display bezel by pressing along the edges.
2. Install the screws that secure the display bezel.
3. Install the plastic caps that secure the display bezel screws on both sides of the display bezel.
4. Install :
  - a. [battery](#)
  - b. [base cover](#)
  - c. [display assembly](#)
5. Follow the procedures in [After Working Inside Your computer](#).

## Removing the Display Panel

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
  - a. [base cover](#)
  - b. [battery](#)
  - c. [display assembly](#)
  - d. [display bezel](#)
3. Remove the screws that secure the display panel to the display assembly.



4. Lift and remove the display panel from the display assembly.

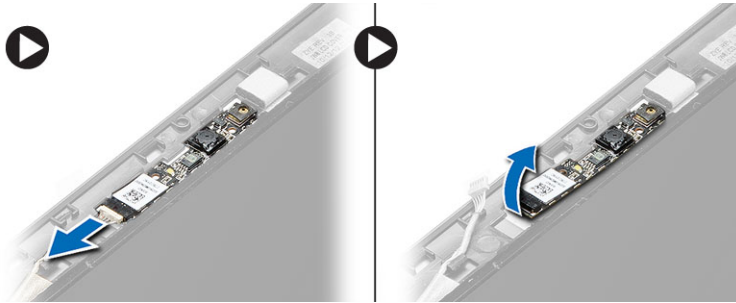


## Installing the Display Panel

1. Align the display panel to the display assembly by pressing along the edges.
2. Install the screws that secure the display panel.
3. Install:
  - a. [battery](#)
  - b. [base cover](#)
  - c. [display assembly](#)
  - d. [display bezel](#)
4. Follow the procedures in [After Working Inside Your computer](#).

## Removing the Camera

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove :
  - a. [base cover](#)
  - b. [battery](#)
  - c. [display assembly](#)
  - d. [display bezel](#)
  - e. [display](#)
3. Disconnect the camera cable and lift the camera to remove it from the computer.



## Installing the Camera

1. Align the camera to the display panel .
2. Connect the camera cable to the camera.
3. Install :
  - a. [battery](#)
  - b. [base cover](#)
  - c. [display assembly](#)
  - d. [display bezel](#)
  - e. [display](#)
4. Follow the procedures in [After Working Inside Your computer](#)




# System Setup

## System Setup Overview

System Setup allows you to:

- change the system configuration information after you add, change, or remove any hardware in your computer.
- set or change a user-selectable option such as the user password.
- read the current amount of memory or set the type of hard drive installed.
- check battery health.

Before you use System Setup, it is recommended that you write down the System Setup screen information for future reference.

 **CAUTION: Unless you are an expert computer user, do not change the settings for this program. Certain changes can cause your computer to work incorrectly.**


## Boot Sequence

Boot Sequence allows you to bypass the System Setup-defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:


- Access System Setup by pressing <F2> key
- Bring up the one-time boot menu by pressing <F12> key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot-menu options are:

- Removable Drive (if available)
- STXXXX Drive

 **NOTE:** XXX denotes the SATA drive number.


- Optical Drive
- Diagnostics

 **NOTE:** Choosing Diagnostics, will display the **ePSA diagnostics** screen.


The boot sequence screen also displays the option to access the System Setup screen.

## Navigation Keys

The following table displays the system setup navigation keys.



 **NOTE:** For most of the system setup options, changes that you make are recorded but do not take effect until you re-start the system.

**Table 1. Navigation Keys**

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
<Enter>	Allows you to select a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
<Tab>	Moves to the next focus area.
	 <b>NOTE:</b> For the standard graphics browser only.
<Esc>	Moves to the previous page till you view the main screen. Pressing <Esc> in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
<F1>	Displays the System Setup help file.

## Updating the BIOS

It is recommended to update your BIOS (system setup), on replacing the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet

1. Re-start the computer.
2. Go to **dell.com/support**.
3. Enter the **Service Tag** or **Express Service Code** and click **Submit**.
  -  **NOTE:** To locate the Service Tag, click **Where is my Service Tag?**
  -  **NOTE:** If you cannot find your Service Tag, click **Detect My Product**. Proceed with the instructions on screen.
4. If you are unable to locate or find the Service Tag, click the Product Category of your computer.
5. Choose the **Product Type** from the list.
6. Select your computer model and the **Product Support** page of your computer appears.
7. Click **Get drivers** and click **View All Drivers**.

The Drivers and Downloads page opens.
8. On the Drivers and Downloads screen, under the **Operating System** drop-down list, select **BIOS**.
9. Identify the latest BIOS file and click **Download File**.

You can also analyze which drivers need an update. To do this for your product, click **Analyze System for Updates** and follow the instructions on the screen.
10. Select your preferred download method in the **Please select your download method below** window, click **Download File**.

The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.

Follow the instructions on the screen.

## System Setup Options

### Main

**Table 2. Main**

System Time	Re-sets the time on the computer's internal clock.
System Date	Re-sets the date on the computer's internal calendar.
BIOS Version	Displays the BIOS revision.
Product Name	Displays the product name and the model number.
Service Tag	Displays the service tag of your computer.
Asset Tag	Displays the asset tag of your computer (if available).
CPU Type	Displays the type of processor.
CPU Speed	Displays the speed of the processor.
CPU ID	Displays the processor ID.
L1 Cache	Displays the processor L1 cache size.
L2 Cache	Displays the processor L2 cache size.
L3 Cache	Displays the processor L3 cache size.
Fixed HDD	Displays the model number and capacity of the hard drive.
System Memory	Displays the memory in-built on the computer.
Extended Memory	Displays the memory installed on the computer.
Memory Speed	Displays the memory speed.

### Advanced

**Table 3. Advanced**

Intel SpeedStep	Enable or disable the Intel SpeedStep feature.	Default: Enabled
Virtualization	Enable or disable the Intel Virtualization feature.	Default: Enabled
Integrated NIC	Enable or disable the power supply to the on-board network card.	Default: Enabled
USB Emulation	Enable or disable the USB emulation feature.	Default: Enabled
USB PowerShare	Enable or disable the USB PowerShare feature.	Default: Enabled
USB Wake Support	Enable or disable the USB wake support feature	Default: Disabled

SATA Operation	Change the SATA controller mode to either ATA or AHCI.	Default: AHCI
Adapter Warnings	Enable or disable the Adapter Warnings.	Default: Enable
Function Key Behavior	Specifies the behavior of the function key <Fn>.	Default: Function key
Battery Health	Displays a message about the battery health.	
Miscellaneous Devices	These fields let you enable or disable various on-board devices.	

## Security

**Table 4. Security**

Set Asset Tag	This field displays your system's asset tag. If the asset tag is not already set, this field can be used to enter it.
Set Admin Password	Allows you to change or delete the administrator password.
Set System Password	Allows you to change or delete the system password.
Set HDD Password	Allows you to set a password on the computer's internal hard drive (HDD).
Password Change	Allows you to change the security password.
Password Bypass	Allows you to bypass the system password and the internal HDD password prompts during a system restart/resume from hibernate state.

## Boot

**Table 5. Boot**

Boot Priority Order	Specifies the order of different devices in which the computer will boot through at start up.
Legacy Boot Option	Allows you to load legacy option. (Default: Enabled)
Secure Boot	Species if the UEFI secure boot option (Default: Disabled)
Add Boot Option	Allows the user to add an additional boot device.
Delete Boot Option	Allows the user to remove an existing boot device from the boot order.

## Exit


This section allows you to save, discard, and load default settings before exiting from System Setup.


# Troubleshooting

## Enhanced Pre-Boot System Assessment (ePSA) Diagnostics

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

 **CAUTION:** Use the system diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

 **NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

1. Power-on the computer.
2. As the computer boots, press the <F12> key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.  
The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
4. If you wish to run a diagnostic test on a specific device, press <Esc> and click **Yes** to stop the diagnostic test.
5. Select the device from the left pane and click **Run Tests**.
6. If there are any issues, error codes are displayed.  
Note the error code and contact Dell.




## Battery Status Lights

Table 6. Battery LED Behavior

Battery Charge LED		Off/Hibernate	Standby
AC mode	Full charge	Off	Off
	Charging	Solid White	Solid White

Battery Charge LED		Off/Hibernate	Standby
Battery mode	Discharging when Battery charge is > 10%	Off	Off
	Discharging when Battery charge is <=10%	Off	Blinking White

## Device Status Lights

-  Turns on when you turn on the computer and blinks when the computer is in a power management mode.
-  Turns on when the computer reads or writes data.
-  Turns on steadily or blinks to indicate battery charge status.

## LED Error Codes



Diagnostic LED codes are communicated via the Power Button LED. The Power Button LED blinks the corresponding LED codes for the corresponding fault condition. Example: For No Memory detected (LED code 2) , The Power Button LED blinks two times followed by a pause, blinks two times, pause, etc. This pattern continues until the system is powered off.

Code	Cause and Troubleshooting Steps
1	System board: BIOS ROM failure System board failure, covers BIOS corruption or ROM error
2	Memory No memory/RAM detected
3	Chipset Error (North and South Bridge Chipset, DMA/IMR/ Timer Error) , Time-Of-Day Clock test failure , Gate A20 failure , Super I/O chip failure , Keyboard controller test failure System board failure
4	RAM Read/Write failure Memory failure
5	Real-time clock power fail CMOS battery failure
6	Video BIOS test failure Video card failure

<b>Code</b>	<b>Cause and Troubleshooting Steps</b>
7	CPU - cache test failure Processor failure
8	Display Display failure

# Specifications

## Technical Specification

 **NOTE:** Offerings may vary by region. For more information regarding the configuration of your computer, click Start  (**Start icon**) → **Help and Support**, and then select the option to view information about your computer.

 **NOTE:** In Windows 8, navigate to **Help and Support** to view information about your computer.

**Table 7. System Information**

Feature	Description
Chipset	Intel i3, i5, i7 Series
DRAM bus width	64-bit
Flash EPROM	W25Q64FVSSIQ

**Table 8. Processor**

Feature	Description
L3 smart cache	3 MB and 4 MB

**Table 9. Memory**

Feature	Description
Memory connector	HM87
Memory capacity	8 GB
Memory type	DDRL, SO-DIMM
Memory Controller	Broadwell U
Minimum memory	4 GB
Maximum memory	8 GB

**Table 10. Audio**

Feature	Description
Type	two 1.5 watt speakers and one 2 watt subwoofer
Controller	Realtek ALC290Q



<b>Feature</b>	<b>Description</b>
Internal microphone supports	Digital microphone x 2
Speakers	3
Volume controls	Program menus and keyboard shortcut keys

**Table 11. Video**

<b>Feature</b>	<b>Description</b>
Video type	UMA/DIS
Video Controller:	
UMA	Intel HD graphics 5x00
Discrete	Nvidia N15S-GM
Data bus	64-bit
External display support	HDMI

**Table 12. Camera**

<b>Feature</b>	<b>Description</b>
Camera Resolution	1 Megapixel
Video Resolution (maximum)	1280 x 720 pixels
Diagonal viewing angle	74-degree

**Table 13. Communication**

<b>Feature</b>	<b>Description</b>
Network adapter	Ethernet 10/100/1000 Base-T
Wireless	w-fi 802.11 agn/ac

**Table 14. Ports and Connectors**

<b>Feature</b>	<b>Description</b>
Audio	combo jack
Video	HDMI
Network adapter	RJ-45
USB	two USB 3.0, one USB 3.0 PowerShare port
Media card reader	SD

**Table 15. Display**

<b>Feature</b>	<b>Description</b>
Type	HD
Dimensions:	
Height	206.44 mm (8.12 inches)
Width	326.18 mm (12.84 inches)
Diagonal	14.0"
Active area (X/Y)	309.4 mm (12.18 inches) x 173.95 mm (6.84 inches)
Maximum resolution	1366 x 768 pixels
Maximum Brightness	200 nits
Operating angle	135-degree
Refresh rate	60Hz /40Hz
Minimum Viewing angles:	
Horizontal	40(L)/40( R)
Vertical	10(up)/30(down)
Pixel pitch	0.2265 (H) x 0.2265 (V) mm

**Table 16. Keyboard**

<b>Feature</b>	<b>Description</b>
Number of keys	80

**Table 17. Touchpad**

<b>Feature</b>	<b>Description</b>
Active Area:	
X-axis	111.40 mm (4.38 inches)
Y-axis	76.40 mm (3 inches)

**Table 18. Battery**

<b>Feature</b>	<b>Description</b>
Type	ICP666480
Dimensions:	
Height	99.5 mm (3.91 inches)
Width	198.5 mm (7.81 inches)
Depth	7.5 mm (0.30 inch)

Feature	Description
Weight	269 grams (0.60 lb)
Charge time	3 hour
Voltage	11.4 V
Temperature range:	
Operating	0 °C to 50 °C
Non-Operating	0 °C to 65 °C
Coin-cell battery	LI 3V 83 MAH

**Table 19. AC Adapter**

Feature	Description
Type	AC adapter
Input voltage	90 ~ 264 VAC
Input current (maximum)	1.6 A / 1.5 A
Input frequency	50 Hz–60 Hz
Output power	65 W
Output current	0 A to 3.34 A
Rated output voltage	19.5 V
Temperature range:	
Operating	0 °C to 40 °C
Non-Operating	95 °C

**Table 20. Physical**

Feature	Non-Touch	Touch
Height	18.30 mm (0.72 inch)	19.35 mm (0.76 inch)
Width	337.60 mm (13.29 inches)	337.60 mm (13.29 inches)
Depth	233.50 mm (9.19 inch)	233.50 mm (9.19 inch)
Weight (minimum)	1.53 kg (3.37 lb)	1.62 kg (3.57 lb)

**Table 21. Environmental**

Feature	Description
Temperature:	
Operating	0 °C to 35 °C
Storage	-20 °C to 60 °C
Relative humidity (maximum):	

<b>Feature</b>	<b>Description</b>
Operating	20% – 90%
Storage	20% – 95%
Altitude (maximum):	
Operating	–15.2 m to 3048 m (–50 to 10,000 ft) 0° to 35°C
Non-Operating	–15.2 m to 10,668 m (–50 ft to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ISA - S71.04 – 1985

# Contacting Dell

## Contacting Dell

 **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.

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:

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.