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**Design, components, and operation**

**Operation and layout**

Escalators, like moving walkways, move at constant speeds of around 0.3–0.6 metres (1–2 ft) per second. The typical angle of inclination of an escalator to the horizontal is 30 degrees, and the total difference in height can be about 18 metres (60 ft) or more. Modern escalators have single-piece aluminum or stainless steel steps that move on a system of tracks in a continuous loop.

"Crisscross" layout

"Multiple parallel" layout

"Parallel" layout

Escalators have three typical configuration options: parallel (up and down escalators side by side or separated by a distance, seen often in metro stations and multilevel motion picture theaters), crisscross (minimizes space requirements by "stacking" escalators that go in one direction, frequently used in department stores or shopping centers), and multiple parallel (two or more escalators together that travel in one direction next to one or two escalators in the same bank that travel in the other direction).

As a safety measure, escalators are required to have moving handrails that keep pace with the movement of the steps. This helps riders steady themselves, especially when stepping onto the moving stairs. Occasionally, a handrail will move at a slightly different speed from the steps, causing it to "creep" slowly forward or backward relative to the steps. The loss of synchronization between handrail and step speed can result from slippage and wear.[2] As a result, escalators must have moving handrails that move at the same speed as the moving stairs of the escalator.

The direction of escalator movement (up or down) can be permanently set, or controlled manually depending on the predominant flow of the crowd, or controlled automatically. In some setups, the direction is controlled by whoever arrives first, whether at the bottom or at the top (the system is programmed so that the direction is not reversed while a passenger is on the escalator).

**Design and layout considerations**

A number of factors affect escalator design. These include physical requirements, location, traffic patterns, safety considerations, and aesthetic preferences. Foremost, physical factors like the vertical and horizontal distance to be spanned must be considered. These factors will determine the length and pitch of the escalator. The building infrastructure must be able to support the heavy components. The escalator should be located where it can be easily seen by the general public. Furthermore, up and down escalator traffic should be physically separated and should not lead into confined spaces.

Traffic patterns must also be anticipated. In some buildings, the objective is simply to move people from one floor to another, but in others, there may be a more specific requirement, such as funneling visitors towards a main exit or exhibit. The escalators must be designed to carry the required number of passengers. For example, a single-width escalator traveling at about 0.5 metres (1.5 ft) per second can move about 2000 people per hour, assuming that passengers ride single file. The carrying capacity of an escalator system must match the expected peak traffic demand. This is crucial if there are sudden increases in the number of riders. For example, escalators at stations must be designed to cater for the peak traffic flow discharged from a train, without causing excessive bunching at the escalator entrance.

In this regard, escalators help in controlling the flow of people. For example, if an exit can only be accessed by an escalator, one cannot use it as an entrance unless one tries to use the escalator in the "wrong" direction. This may reduce security concerns. Escalators are sometimes used as the exit from an airport security checkpoint. Such an egress point would still generally be staffed to prevent its use as an entrance during times of light pedestrian traffic.

It is preferred that there is a staircase next to the escalator if the escalator is the primary means of transport between floors.[citation needed] It may also be necessary to provide an elevator lift near the escalator for wheelchairs and disabled people. Finally, consideration should be given to the aesthetics of the escalator.

**Types of Elevators**

**Hydraulic elevators**

Conventional hydraulic elevators. They use an underground hydraulic cylinder, are quite common for low level buildings with two to five floors (sometimes but seldom up to six to eight floors), and have speeds of up to 1 m/s (200 ft/min). For higher rise applications, a telescopic hydraulic cylinder can be used.

Holeless hydraulic elevators were developed in the 1970s, and use a pair of above ground cylinders, which makes it practical for environmentally or cost sensitive buildings with two, three, or four floors.

Roped hydraulic elevators use both above ground cylinders and a rope system, allowing the elevator to travel further than the piston has to move.

The low mechanical complexity of hydraulic elevators in comparison to traction elevators makes them ideal for low rise, low traffic installations. They are less energy efficient as the pump works against gravity to push the car and its passengers upwards; this energy is lost when the car descends on its own weight. The high current draw of the pump when starting up also places higher demands on a building’s electrical system. There are also environmental concerns should the lifting cylinder leak fluid into the ground.

The modern generation of low cost, machine room-less traction elevators made possible by advances in miniaturization of the traction motor and control systems challenges the supremacy of the hydraulic elevator in their traditional market niche.

**Climbing elevator**

A climbing elevator is a self-ascending elevator with its own propulsion. The propulsion can be done by an electric or a combustion engine. Climbing elevators are used in guyed masts or towers, in order to make easy access to parts of these constructions, such as flight safety lamps for maintenance. An example would be the Moonlight towers in Austin, Texas, where the elevator holds only one person and equipment for maintenance. The Glasgow Tower — an observation tower in Glasgow, Scotland — also makes use of two climbing elevators. The ThyssenKrupp MULTI elevator system is based on this principle and it uses a linear motor, like the ones used in maglev trains.[citation needed]

**Pneumatic elevator**

An elevator of this kind uses a vacuum on top of the cab and a valve on the top of the "shaft" to move the cab upwards and closes the valve in order to keep the cab at the same level. A diaphragm or a piston is used as a "brake", if there's a sudden increase in pressure above the cab. To go down, it opens the valve so that the air can pressurize the top of the "shaft", allowing the cab to go down by its own weight. This also means that in case of a power failure, the cab will automatically go down. The "shaft" is made of acylic, is always round due to the shape of the vacuum pump turbine. In order to keep the air inside of the cab, rubber seals are used. Due to technical limitations, these elevators have a low capacity, they usually allow 1–3 passengers and up to 525 lbs.

**Uses of elevators**

Passenger service

A passenger elevator is designed to move people between a building's floors.

Passenger elevators capacity is related to the available floor space. Generally passenger elevators are available in capacities from 500 to 2,700 kg (1,000–6,000 lb) in 230 kg (500 lb) increments.[citation needed] Generally passenger elevators in buildings of eight floors or fewer are hydraulic or electric, which can reach speeds up to 1 m/s (200 ft/min) hydraulic and up to 152 m/min (500 ft/min) electric. In buildings up to ten floors, electric and gearless elevators are likely to have speeds up to 3 m/s (500 ft/min), and above ten floors speeds range 3 to 10 m/s (500–2,000 ft/min).

Sometimes passenger elevators are used as a city transport along with funiculars. For example, there is a 3-station underground public elevator in Yalta, Ukraine, which takes passengers from the top of a hill above the Black Sea on which hotels are perched, to a tunnel located on the beach below. At Casco Viejo station in the Bilbao Metro, the elevator that provides access to the station from a hilltop neighborhood doubles as city transportation: the station's ticket barriers are set up in such a way that passengers can pay to reach the elevator from the entrance in the lower city, or vice versa. See also the Elevators for urban transport section.

**Types of passenger elevators**

The former World Trade Center's twin towers used skylobbies, located on the 44th and 78th floors of each tower

Passenger elevators may be specialized for the service they perform, including: hospital emergency (code blue), front and rear entrances, a television in high-rise buildings, double-decker, and other uses. Cars may be ornate in their interior appearance, may have audio visual advertising, and may be provided with specialized recorded voice announcements. Elevators may also have loudspeakers in them to play calm, easy listening music. Such music is often referred to as elevator music

An express elevator does not serve all floors. For example, it moves between the ground floor and a skylobby, or it moves from the ground floor or a skylobby to a range of floors, skipping floors in between. These are especially popular in eastern Asia

Capacity

Residential elevators may be small enough to only accommodate one person while some are large enough for more than a dozen. Wheelchair, or platform elevators, a specialized type of elevator designed to move a wheelchair 3.7 m (12 ft) or less, can often accommodate just one person in a wheelchair at a time with a load of 340 kg (750 lb).

**Freight elevators**

A specialized elevator from 1905 for lifting narrow gauge railroad cars between a railroad freight house and the Chicago Tunnel Company tracks below

The interior of a freight elevator. It is very basic yet rugged for freight loading.

A freight elevator, or goods lift, is an elevator designed to carry goods, rather than passengers. Freight elevators are generally required to display a written notice in the car that the use by passengers is prohibited (though not necessarily illegal), though certain freight elevators allow dual use through the use of an inconspicuous riser. In order for an elevator to be legal to carry passengers in some jurisdictions it must have a solid inner door. Freight elevators are typically larger and capable of carrying heavier loads than a passenger elevator, generally from 2,300 to 4,500 kg. Freight elevators may have manually operated doors, and often have rugged interior finishes to prevent damage while loading and unloading. Although hydraulic freight elevators exist, electric elevators are more energy efficient for the work of freight lifting.

**Sidewalk elevators**

A sidewalk elevator is a special type of freight elevator. Sidewalk elevators are used to move materials between a basement and a ground-level area, often the sidewalk just outside the building. They are controlled via an exterior switch and emerge from a metal trap door at ground level. Sidewalk elevator cars feature a uniquely shaped top that allows this door to open and close automatically.[60]

**Stage lifts**

Stage lifts and orchestra lifts are specialized elevators, typically powered by hydraulics, that are used to raise and lower entire sections of a theater stage. For example, Radio City Music Hall has four such elevators: an orchestra lift that covers a large area of the stage, and three smaller lifts near the rear of the stage. In this case, the orchestra lift is powerful enough to raise an entire orchestra, or an entire cast of performers (including live elephants) up to stage level from below. There's a barrel on the background of the image of the left which can be used as a scale to represent the size of the mechanism

**Vehicle elevators**

Vehicular elevators are used within buildings or areas with limited space (in place of ramps), generally to move cars into the parking garage or manufacturer's storage. Geared hydraulic chains (not unlike bicycle chains) generate lift for the platform and there are no counterweights. To accommodate building designs and improve accessibility, the platform may rotate so that the driver only has to drive forward. Most vehicle elevators have a weight capacity of 2 tons.

Rare examples of extra-heavy elevators for 20-ton lorries, and even for railcars (like one that was used at Dnipro Station of the Kiev Metro) also occur.

**Boat lift**

In some smaller canals, boats and small ships can pass between different levels of a canal with a boat elevator rather than through a canal lock.

**Aircraft elevator**

**Elevators for aircraft**

On aircraft carriers, elevators carry aircraft between the flight deck and the hangar deck for operations or repairs. These elevators are designed for much greater capacity than other elevators, up to 91,000 kg (200,000 lb) of aircraft and equipment. Smaller elevators lift munitions to the flight deck from magazines deep inside the ship.

**Elevators within aircraft**

On some passenger double-deck aircraft such as the Boeing 747 or other widebody aircraft, elevators transport flight attendants and food and beverage trolleys from lower deck galleys to upper passenger carrying decks.

Limited use & limited application

The limited-use, limited-application (LU/LA) elevator is a special purpose passenger elevator used infrequently, and which is exempt from many commercial regulations and accommodations. For example, a LU/LA is primarily meant to be handicapped accessible, and there might only be room for a single wheelchair and a standing passenger.

**Residential elevator**

A residential elevator with integrated hoistway construction and machine-room-less design

A residential elevator is often permitted to be of lower cost and complexity than full commercial elevators. They may have unique design characteristics suited for home furnishings, such as hinged wooden shaft-access doors rather than the typical metal sliding doors of commercial elevators. Construction may be less robust than in commercial designs with shorter maintenance periods, but safety systems such as locks on shaft access doors, fall arrestors, and emergency phones must still be present in the event of malfunction.

The American Society of Mechanical Engineers (ASME) has a specific section of Safety Code (ASME A17.1 Section 5.3) which addresses Residential Elevators. This section allows for different parameters to alleviate design complexity based on the limited use of a residential elevator by a specific user or user group. Section 5.3 of the ASME A17.1 Safety Code is for Private Residence Elevators, which does not include multi-family dwellings.

Some types of residential elevators do not use a traditional elevator shaft, machine room, and elevator hoistway. This allows an elevator to be installed where a traditional elevator may not fit, and simplifies installation. The ASME board first approved machine-room-less systems in a revision of the ASME A17.1 in 2007. Machine-room-less elevators have been available commercially since the mid 1990s, however cost and overall size prevented their adoption to the residential elevator market until around 2010.[62]

Also, residential elevators are smaller than commercial elevators. The smallest passenger elevator is pneumatic, and it allows for only 1 person.[63] The smallest traction elevator allows for just 2 persons.

**Dumbwaiter (elevator)**

Dumbwaiters are small freight elevators that are intended to carry food, books or other small freight loads rather than passengers. They often connect kitchens to rooms on other floors. They usually do not have the same safety features found in passenger elevators, like various ropes for redundancy. They have a lower capacity, and they can be up to 1 meter (3 ft) tall. Control panels at every stop mimic those found in passenger elevators, allowing calling, door control and floor selection. In Cutthroat Kitchen, Alton Brown use on to bring sabotages down to the kitchen to make it harder for chefs to make and cook dishes.

**Paternoster**

A special type of elevator is the paternoster, a constantly moving chain of boxes. A similar concept, called the manlift or humanlift, moves only a small platform, which the rider mounts while using a handhold seen in multi-story industrial plants.

**Scissor lift**

A mobile scissor lift, extended to near its highest position

The scissor lift is yet another type of lift. These are usually mobile work platforms that can be easily moved to where they are needed, but can also be installed where space for counter-weights, machine room and so forth is limited. The mechanism that makes them go up and down is like that of a scissor jack.

Rack-and-pinion elevator

Rack-and-pinion elevator are powered by a motor driving a pinion gear. Because they can be installed on a building or structure's exterior and there is no machine room or hoistway required, they are the most used type of elevator for buildings under construction (to move materials and tools up and down).[65]

Material handling belts and belt elevators

Material transport elevators generally consist of an inclined plane on which a conveyor belt runs. The conveyor often includes partitions to ensure that the material moves forward. These elevators are often used in industrial and agricultural applications. When such mechanisms (or spiral screws or pneumatic transport) are used to elevate grain for storage in large vertical silos, the entire structure is called a grain elevator. Belt elevators are often used in docks for loading loose materials such as coal, iron ore and grain into the holds of bulk carriers

Sensors are sophisticated devices that are frequently used to detect and respond to electrical or optical signals. A Sensor converts the physical parameter (for example: temperature, blood pressure, humidity, speed, etc.) into a signal which can be measured electrically. Let’s explain the example of temperature. The mercury in the glass thermometer expands and contracts the liquid to convert the measured temperature which can be read by a viewer on the calibrated glass tube.

**Sensors**

Criteria to choose a Sensor

There are certain features which have to be considered when we choose a sensor. They are as given below:

1. Accuracy

2. Environmental condition - usually has limits for temperature/ humidity

3. Range - Measurement limit of sensor

4. Calibration - Essential for most of the measuring devices as the readings changes with time

5. Resolution - Smallest increment detected by the sensor

6. Cost

7. Repeatability - The reading that varies is repeatedly measured under the same environment

**Classification of Sensors**

The sensors are classified into the following criteria:

1. Primary Input quantity (Measurand)

2. Transduction principles (Using physical and chemical effects)

3. Material and Technology

4. Property

5. Application

Transduction principle is the fundamental criteria which are followed for an efficient approach. Usually, material and technology criteria are chosen by the development engineering group.

Classification based on property is as given below:

· Temperature - Thermistors, thermocouples, RTD’s, IC and many more.

· Pressure - Fibre optic, vacuum, elastic liquid based manometers, LVDT, electronic.

· Flow - Electromagnetic, differential pressure, positional displacement, thermal mass, etc.

· Level Sensors - Differential pressure, ultrasonic radio frequency, radar, thermal displacement, etc.

· Proximity and displacement - LVDT, photoelectric, capacitive, magnetic, ultrasonic.

· Biosensors - Resonant mirror, electrochemical, surface Plasmon resonance, Light addressable potentio-metric.

· Image - Charge coupled devices, CMOS

· Gas and chemical - Semiconductor, Infrared, Conductance, Electrochemical.

· Acceleration - Gyroscopes, Accelerometers.

· Others - Moisture, humidity sensor, Speed sensor, mass, Tilt sensor, force, viscosity.

Surface Plasmon resonance and Light addressable potentio-metric from the Bio-sensors group are the new optical technology based sensors. CMOS Image sensors have low resolution as compared to charge coupled devices. CMOS has the advantages of small size, cheap, less power consumption and hence are better substitutes for Charge coupled devices. Accelerometers are independently grouped because of their vital role in future applications like aircraft, automobiles, etc and in fields of videogames, toys, etc. Magnetometers are those sensors which measure magnetic flux intensity B (in units of Tesla or As/m2).

Classification based on Application is as given below:

· Industrial process control, measurement and automation

· Non-industrial use – Aircraft, Medical products, Automobiles, Consumer electronics, other type of sensors.

Sensors can be classified based on power or energy supply requirement of the sensors:

· Active Sensor - Sensors that require power supply are called as Active Sensors. Example: LiDAR (Light detection and ranging), photoconductive cell.

· Passive Sensor - Sensors that do not require power supply are called as Passive Sensors. Example: Radiometers, film photography.

In the current and future applications, sensors can be classified into groups as follows:

· Accelerometers - These are based on the Micro Electro Mechanical sensor technology. They are used for patient monitoring which includes pace makers and vehicle dynamic systems.

· Biosensors - These are based on the electrochemical technology. They are used for food testing, medical care device, water testing, and biological warfare agent detection.

· Image Sensors - These are based on the CMOS technology. They are used in consumer electronics, biometrics, traffic and security surveillance and PC imaging.

· Motion Detectors - These are based on the Infra Red, Ultrasonic, and Microwave / radar technology. They are used in videogames and simulations, light activation and security detection.

**Audio visual equipment**

The professional audiovisual industry is a multibillion-dollar industry, comprising the manufacturers, dealers, systems integrators, consultants, programmers, presentations professionals and technology managers of audiovisual products and services.

Commercial Audiovisual can sometimes be a very lengthy process to get it right. Boardroom Audio Visual can be installed for a number of reasons, but usually it is because the executives of the organization/business wants to have meetings with colleagues/customers/suppliers around the world. When creating an array of Boardrooms for customers it has been seen that you have to be able to balance the pattern from the Audio and Microphone so there is no interruption in the sound quality for the individual/s listening in.

The proliferation of audiovisual communications technologies, including sound, video, lighting, display and projection systems, is evident in every sector of society: in business, education, government, the military, healthcare, retail environments, worship, sports and entertainment, hospitality, restaurants, and museums. The application of audiovisual systems is found in collaborative conferencing (which includes video-conferencing, audio-conferencing, web-conferencing and data-conferencing); presentation rooms, auditoria, and lecture halls; command and control centers; digital signage, and more. Concerts and corporate events are among the most obvious venues where audiovisual equipment is used in a staged environment. Providers of this type of service are known as rental and staging companies, although they may also be served by an in-house technology team (e.g., in a hotel or conference center).

**Proper Care and Handling of Audio Visual Materials**

Taking care when handling any collection item is one of the more effective, cost-efficient, and easily achieved preservation measures.

General

Wash and thoroughly dry hands before handling A/V materials

Store and handle materials in a clean environment

Keep food and drink away

Do not touch playing surface(s)

Keep playback equipment clean and well maintained

Allow materials from cool storage to acclimate to room temperature before playing back

Discs

Handle grooved discs (78s, 45s, LPs, lacquer discs) by the edge and label areas only

Handle optical discs (CDs, DVDs) by the edge and center hole only

Magnetic tape (Reel-to-Reel or Open Reel)

Handle by the edge of the plastic or metal reel (the flanges) and center hub only

Do not squeeze the flanges together, which will crush the tape pack in between

Magnetic tape (Cassettes, Audio and Video)

Handle by the outer shell only

Do not touch the spools

**Cylinders**

Hold with middle and index fingers, open to a V shape, in the cylinder

Do not touch the outer, grooved surface (the playing surface) of the cylinder

Allow wax cylinders from cool storage to acclimate to room temperature before touching to avoid thermal shock

Computer maintenance is the practice of keeping computers in a good state of repair. Computer valeting is the in-depth cleaning of the physical components of a personal computer. Usually performed by a computer repair technician, this service addresses the different ways that dirt builds up on four main components: the keyboard, the monitor, the mouse, and the tower/desktop unit. Computer cleaning involves physically cleaning the interior and exterior of a computer, including the removal of dust and debris from cooling fans, power supplies, and other hardware components. This should be after certain period of time (weekly/monthly). A computer containing accumulated dust and debris may not run properly.

Dust and other cruft may accumulate as a result of air cooling. Any filters used to mitigate this need regular service and changes. If the cooling system is not filtered then regular computer cleaning may prevent short circuits and overheating.

**Keyboard**

The crumbs, dust, and other particulate that fall between the keys and build up underneath are loosened by spraying pressurized air into the keyboard, then removed with a low-pressure vacuum cleaner. A plastic-cleaning agent applied to the surface of the keys with a cloth is used to remove the accumulation of oil and dirt from repeated contact with a user's fingertips. If this is not sufficient for a more severely dirty keyboard, keys are physically removed for more focused individual cleaning, or for better access to the area beneath. Finally, the surface is wiped with a disinfectant.

**Monitor**

Fingerprints, water spots, and dust are removed from the screen with a cleaning wipe specialized for the screen type (CRT, LCD, etc.). A general plastic-cleaning agent is used on the outer casing, which requires a less gentle cleanser but may need more focused attention to unusual buildups of dust, grime, pen marks, etc. idiosyncratic to the user and environment.

**Mouse**

The top surface of the mouse is wiped with a plastic cleanser to remove the dirt that accumulates from contact with the hand, as on the keyboard. The bottom surface is also cleaned to ensure that it can slide freely. If it is a mechanical mouse, the trackball is taken out, not only to clean the ball itself, but to scrape dirt from the runners that sense the ball's movement and can become jittery or stuck if impeded by grime.

Tower/desktop unit

The case is opened to expose the internal components, which accumulate dust brought in by the airflow maintained by fans to keep the PC from overheating. A soft brush is used throughout the case and components to remove as much loose dirt as possible; the remainder is dislodged with compressed air and removed with a low-pressure vacuum. The case is wiped down with a cleaning agent.

You cannot completely protect your computer case from dirt, no matter how much you clean the surrounding area. That is why it is important to regularly clean your system to ensure that everything is speck-free for longer service lives

**Printer**

Anytime you are required to open the printer for maintenance, turn off the power and keep your hands clear of hot fusers and moving parts inside the printer. This will prevent unnecessary damage to the printer and to you.

Clean Printer Heads

At some point, you’ve probably seen a document come out of a printer with white lines running across the text or graphics that are missing ink, even though the cartridges are full. This means that the printer heads are clogged and need to be cleaned. Check out the manual that came with your printer or look on the manufacturer’s website to find out how to clean the printer heads on your particular model; many printers will self-clean with just a few clicks but can also be cleaned manually if you prefer. Just be careful not to clean the heads more often than necessary, as the cleaning process will use some ink.

Remove Dust and Debris

Build-up of dust, toner and other debris inside your printer can cause jams as well as streaks of ink that appear on papers where you don’t want them. A quick fix is to remove particles using a small vacuum. This is preferred over using canned air dusters because it removes the dust instead of spraying it around the inside of the printer. You can go further by using a cotton swab and purified water to clean the ink cartridges; most manufacturers will provide specific instructions in the printer manual or online. Be sure to read them because there are some parts of the cartridge you shouldn't swab.

Carefully Resolve Mechanical Errors

Like most products, your printer will last longer if you take good care of it; even an incorrectly resolved paper jam can lead to printing issues in the future. Instead of getting frustrated when a jam does occur and yanking the paper out, refer to the instructions that come with the printer to find the best way to fix a jam on your specific model. Usually, the best practice is to use both hands to slowly pull the jammed paper out of the printer to avoid leaving ripped paper behind or damaging the internal parts of the printer. You can also prevent jams by making sure the paper you load into the printer is not torn, dog-eared or stuck together and that the tray is not overfilled.

Laptops are replaced every few years. We crave fancier hardware, novel features, and maybe our old device has become unresponsive and suffered some damage over time. Consequently, most laptops get thrown out prematurely.

Unless you are looking for a silly excuse to buy a new and shiny device, you will love to hear that there are many ways to make your laptop last longer. Apart from delaying the headache of setting up a new computer and moving all your files over, this will also save you money in the long run. So let’s see what you can do to turn your laptop into an electronic Methuselah.

**Laptop**

1: Treat Your Laptop With Care

Laptops can be fragile. I should know; not long ago I broke my laptop screen (and fixed it). Besides this unfortunate accident, I have had my fair share of worn out keyboards, broken power supplies, and failed hard drives. Most components can be easily replaced, but something like a broken hard drive, with all your precious files on it, is a whole different story.

Over the past couple of years I have traveled a lot and took my work with me wherever I went. I worked from the most ridiculous and beautiful places all over North America and Europe....

Hard Drive

Some wear and tear can be avoided simply by handling your hardware with care. Next to the display, the hard drive is the most fragile part of your laptop. As Matt writes in his article on how to utterly destroy your laptop, move your laptop gently and try not to move it when the hard drive is performing intensive operations. Your hardware will thank you and last longer.

2: Regularly Clean Your Laptop Hardware

Computers are dirt magnets. Laptop fans seem to accumulate dust better than any vacuum cleaner and apparently keyboards are dirtier than toilet seats. So what do you do? You should give your laptop’s hardware a thorough cleaning every once in a while!

With the arrival of Spring in the Northern Hemisphere, houses across the globe get a nice cleaning to rid them of dirt and clutter that has accumulated over the past year. Dust and junk also...

Brushing Laptop Fan

Cleaning your computer hardware is not just a matter of hygiene. Especially when it comes to internal fans and heat sinks, it also prevents your laptop from overheating. Keeping the hardware cool significantly increases its lifespan.

3: Keep The Operating System Snappy

The most common complaint about old computers is that they are slow. This is only mildly related to age and more likely due to bad maintenance or — as Apple fans will attest to — poor operating system and software design. Fortunately, you can speed up an old installation of Windows and with a few tricks, you can prevent a fresh installation from going stale too quickly. Conveniently, we have articles on how to speed up Windows 7 and make Windows 8 work faster.

Windows Task Manager

A lean operating system that responds quickly and doesn’t get in the way of you trying to get work done can go a long way. You won’t worry about the age of your laptop at all.

4: Run Regular Software & Operating System Updates

No operating system or program is perfect. But with every upgrade, issues get patched and new features are added. That’s why you need to run Windows updates and also make sure your installed software is up to date. The latter is not so easy because few software updaters support every program available. Aaron recently reviewed OUTDATEfighter, which can handle both Windows and software updates for you.

Upgrade Your Laptop Hardware

To most people, upgrading laptop hardware sounds impossible. But it’s not so difficult to install a bigger hard drive — or better yet a solid state drive (SSD) –, add more RAM, or even put in a new display. When you can pinpoint the exact component that’s slowing you down, chances are there is an easier and cheaper fix than buying a new laptop. Here is a little laptop troubleshooting guide to get you started.

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