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8.1 INTRODUCTION AND DEFINITION

Windows are essential architectural elements found in buildings that provide natural light, ventilation, and views of the surrounding environment. They are openings in walls, typically made of glass within a frame of wood, metal, or other materials, allowing light to enter while offering protection from weather conditions.

These features serve various purposes:

- i. **Natural Light:** Windows allow sunlight to penetrate indoor spaces, reducing the need for artificial lighting during the day and creating a more pleasant environment.
- ii. **Ventilation:** They enable airflow, allowing fresh air to enter and aiding in the circulation of air within a building, contributing to air quality and regulating indoor temperatures.
- iii. **Aesthetics:** Windows can enhance the architectural appeal of a structure, offering visual interest and contributing to the overall design and style of the building.
- iv. **Views and Connection to the Outdoors:** They offer views of the external environment, connecting the interior space with the surrounding landscape, cityscape, or nature.

Windows come in various types, including fixed windows (non-operable), sliding windows, casement windows (hinged on the side and opened by a crank), double-hung windows (both sashes move up and down), awning windows (hinged at the top and open outward), and more, each offering specific functionalities and aesthetic qualities.

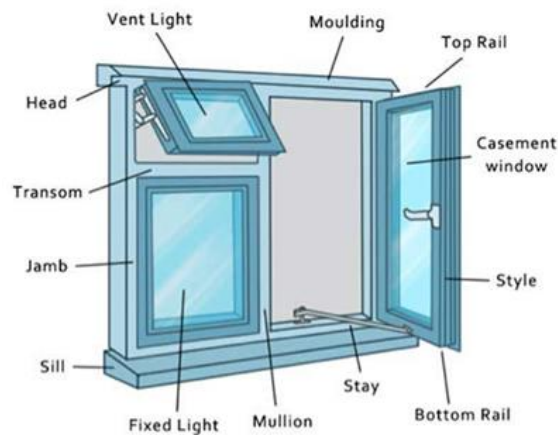
A window is an opening formed in a wall or roof primarily to admit daylight through some transparent or translucent material. Windows also serve an important function in providing controlled natural ventilation to buildings and make a major contribution to the visual appearance of buildings. As the window is part of the wall or roof envelope, it should serve to exclude wind and rain and act as a barrier to excessive transfer of heat, sound, and spread of fire in much the same way that the surrounding wall or roof does.

A window can be defined as:

- An opening is constructed in a wall or roof that functions to admit light or air to an enclosure and is often framed and spanned with glass mounted to permit opening and closing.
- A framework enclosing a pane of glass for such an opening; a sash.
- A pane of glass or similar material is enclosed in such a framework.

8.2 PARTS OF THE WINDOW

- Head:** The horizontal piece at the top of the window frame is called the head. The window frame surrounds and supports the window pane and can be made of aluminum, fiberglass, wood, or vinyl. Each part of the frame is a distinct component of a window
- Jamb.** The jambs are the vertical sides of the window frame. Having a jamb in the window allows the window to have a stronger structure
- Sash:** A window sash is a key component of a window frame that holds the glass panes in place. It is a rectangular or square framework that can be opened, closed, or tilted to allow ventilation and access to the outside. Windows typically consist of two main parts: the window frame and the window sash.



- Mullion:** Mullion is the vertical divider that separates glass panes in a window.
- Transom:** A horizontal separator between two window units or lights

- vi. **Sill:** The window sill is the horizontal bottom piece of the window frame. A window sill is also known as a window ledge or window bottom. It is the shelf-like, flat piece of window trim found at the base of the window.
- vii. **Grills:** Grills are decorative grid patterns consisting of horizontal and/or vertical bars that divide a larger sheet of glass into smaller panes.
- viii. **Stiles:** Stiles are the left and right vertical rails that hold the slats in place and connect to the solid top and bottom rails to comprise your shutter panel.
- ix. **Lock:** A window latch is a standard lock found on double and single-hung windows. This simple mechanism connects the two sashes of the window and prevents either from moving.
- x. **Rails:** Rails are the horizontal pieces that connect the stiles or vertical pieces of the window. They help hold the glass in place.

8.3 TYPE OF WINDOWS

Windows can be classified based on various factors, including their operation, materials, design, and purpose. Here are some common classifications:

8.3.1 Fixed Windows

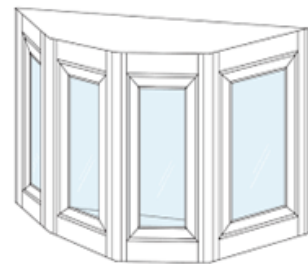
A fixed or Stationary window is a large, rectangular pane of glass installed in a wall to allow light into a room and provide a view of outdoor scenery. Stationary windows are usually made of thick, heavy glass because they have no supporting structure to divide the window into individual panes. For this reason, they provide a much larger view of outdoor scenery than smaller windows that open and close. They're a great addition to homes in need of natural light, and they make small rooms look much larger by connecting them to the outside.

Disadvantages

- Does not allow adequate privacy
- Permits excessive light, which creates glare. Also fades furnishing and upholstery.
- The expanse of cold black night may be uninviting.
- They require a large amount of drapery and lampshades.

Types of Fixed Windows

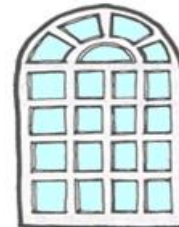
- **Bay Window:** A bay window is a window space projecting outward from the main walls of a building and forming a bay in a room. The arrangement creates a panoramic view of the outside, allows more natural light to enter the room, and provides additional space within the room. Bay windows are often designed to extend beyond the exterior wall, forming a small nook or seating area inside, which can be used for various purposes such as reading, displaying, or simply enjoying the view. They are commonly found in residential buildings, particularly in living rooms, dining areas, or bedrooms, but can also be seen in commercial or public structures.



- Box Bay Window:** A box bay window is shaped like a box, generally a rectangular one. With flat sides, a flat front, and some sort of roof, this is an extremely common style of bay window

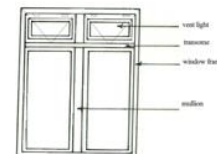
Due to their curved appearance bow windows work well when utilized on the corner of a building, they can be wrapped around which also offers impressive panoramic views. All the panes are generally the same shape and size making for a symmetrical appearance.
- Oriel Window:** An oriel window is a form of bay window that protrudes from the main wall of a building but does not reach the ground. These windows are supported by brackets or similar cantilevers. An oriel window is mostly found projecting from an upper floor but is also sometimes used on the ground floor. Oriel windows are seen in Arab architecture in the form of mashrabiya and Turkish are known as cumba. In Islamic culture, these windows and balconies project from the street front of a house, providing an area in which women could peer out and see the activities below while remaining invisible
- Picture Window:** A picture window is a stationary window, which means it doesn't open. It is usually a large, statement window that highlights an architectural element of the home or is placed to give the perfect view of an architectural element outside the home.

As its name implies, a picture window is designed to act almost like a picture frame, framing the outdoors. It offers a great focal point for a room and offers great natural light to a room.
- Arched Window:** Arched windows—also called arch top windows or radius windows—are a bit different. These windows have square bottoms and an arch or half-circle on top. You may also see half-circle-shaped windows, which are typically installed directly above a traditional rectangular window, referred to as arched windows. Arched windows add a unique and impressive appeal. Most homes only have rectangular windows, so the arched design can make your home stand out.
- Ribbon Window:** Ribbon windows are a series of windows set side by side to form a continuous band horizontally across a facade. These windows can be placed low like a normal window or higher up on a wall to still allow for light and maintain privacy. Ribbon windows are nearly always fixed or non-movable and do not maximize the window glass area. This means they are usually energy-efficient windows and allow in tons of light.



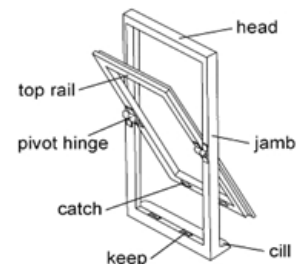
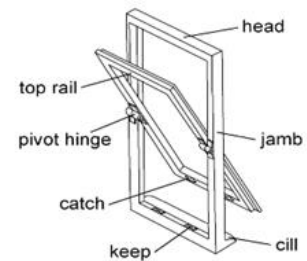
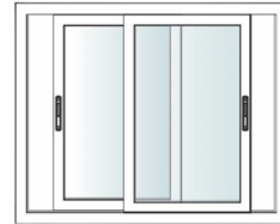
8.3.2 Movable Windows

- Casement window:** the earliest form of movable window, wood or metal framed, with hinges or pivots at the upright side of the vertically hung sash, so that it opens outward or inward along its entire length in the manner of a door. One frame, separately movable, of such a window is called a casement sash.

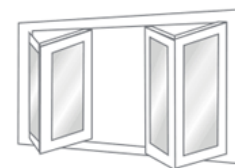
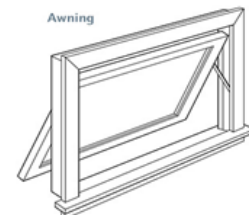
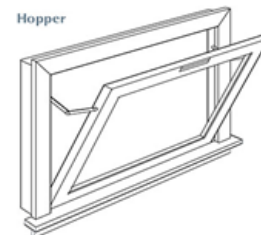
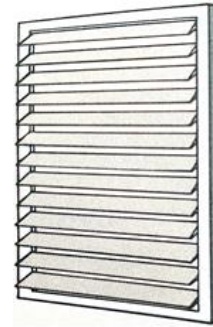


- Double Hung Window:** A double-hung window, also commonly referred to as a double-sash window, is a type of window that has two operable sashes that slide up and down. There are two main operable parts of a double-hung window — the top sash and the bottom sash. They are both able to open to provide ventilation. The ability to open both sashes creates increased airflow and ventilation, one of the big reasons this window is so popular. Both sashes of a double-hung window can also tilt for easy cleaning. This is very helpful for windows on upper floors that would normally be very tough to clean on the outside.
- Sliding Window:** A sliding window is a window that opens by sliding horizontally along a top and bottom track in the window frame. Sliding windows open both left and right, and are perfect for areas where you want ventilation. They're a popular option in places with an unobstructed view or where maximum ventilation is required. Sliding windows typically have oversized glass panels that let in plenty of natural light and offer homeowners wide, unobstructed views.

There are three main types of slider windows: single slider, double slider, and three-pane slider. Single sliders have one fixed pane and one moveable pane. The moveable pane slides back and forth on the sash. Double sliders feature two or three panes of glass, but they have two panes that move.
- Vertical Single Pivoting Sash Window:** A vertical pivot window is a type of window where the opening framework of the window is not hinged on the sideline, but the action is designed differently. In pivot windows, the hinge is mounted somewhere midline on the vertical frame varying according to pivot type. They are common in attics. The pivoting window system offers many advantages: a good level of impermeability and soundproofing thanks to its pressure closure, very wide field of vision, and little invasion of internal space. Pivoting windows allow for adjustment of the amount of ventilation, helping to obtain the desired temperature in a room.
- Horizontal Single Pivoting Sash Window:** A pivot window opens and closes by pivoting from the middle of the frame. Many horizontal pivot windows pivot inward at the top and outward at the bottom to prevent rain from getting in. Horizontal sliding windows are commonly referred to simply as sliding windows or slider windows. This style traditionally includes panels within the window that slide side to side. Both styles come with several benefits including compact functionality, ease of operation, and the option of an exterior screen. Pivot windows consist of all types of frame materials: wood, vinyl, aluminum, and fiberglass.



- Jalousie Window:** A jalousie window or **louvered** is a window composed of parallel glass, acrylic, or wooden louvers set in a frame. The louvers are joined onto a track so that they may be tilted open and shut in unison to control airflow, usually by turning a crank. It originated in 18th century France from the Italian word *geloso*, which means "jealous" or "screen", as in to screen something from view. Because of their slatted louvers, jalousie windows protect the interior of the house from jealous, peering eyes (when not made of a transparent material like glass). The main benefit of Jalousie window vents is that they can help naturally cool the temperature of the rooms. It acts as a vital component of a natural ventilation system and when open, it brings a lot of natural fresh air.
- Hopper Window:** Hopper windows are typically a small, narrow window that opens from the top. This type of window opens downward and inward and is commonly installed as a bathroom laundry room or basement window and garage and sometimes above doors and other windows. They are usually found in pairs on either side of a door or along the bottom of casement windows. These windows do not keep debris or rain from coming inside. They are also not as easy to escape from in case of a fire or dangerous situation. Hopper windows aren't easy to cover with blinds or shades so one might lose privacy.
- Awning Window:** Awning windows are hinged on the top and open outward from the bottom, allowing for ventilation and protection from the rain. Often placed higher on walls for privacy or in combination with large stationary windows for a better view. Awning windows open outside and can cause accidents when people have to pass behind them. Awning windows open towards outside therefore they collect a lot of debris and dirt. They are also often used on high walls, which makes them difficult to clean.
- Folding Window:** Also known as a 'servery window', this style was traditionally found in cafes and restaurants, but it's now creating a revolution in the way you can entertain, barbecue, and open up your home. The bi-fold window delivers all the benefits of a bi-fold door in a new place with a new purpose.



8.4 WINDOW TREATMENTS

Window treatments are decorative covering (such as a curtain, shade, or valance) for a window or part of a window. A window covering refers to something that covers the window, like a shade or blind for privacy and light control.

Window treatments can also cover faults, create illusions, or become a focal point. Whether to provide an inconspicuous background or make a decorating asset, it should be remembered that the basic purpose of a window is

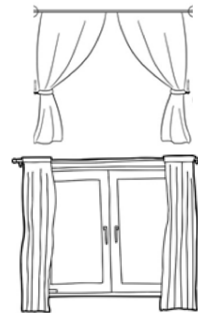
to provide light and air. At times it may be desirable for sunshine to flood the room; at other times it may be appropriate to block out strong sunlight. It may also frame a lovely view or exclude an unsightly one and it may be the means of ensuring privacy where privacy is needed.

Window treatments offer privacy, light control, and aesthetic enhancement to windows. Some of the various types of window treatments are:

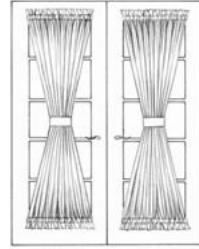
1. Curtains
2. Blinds
3. Shades
4. Shutters
5. Top Treatments.

8.4.1 Types of Curtains

- **Tieback Curtains:**A fabric band, cord, or chain designed to hold draperies back on each side from the centre of the window. Allows the passage of light and adds a decorative look. Tie-back curtains can be of different types. They include Decorative ruched tie-backs, tassel tie-backs, and pendulum tie-backs.
- **Casement Curtains:**Casement curtains are a low-cost form of curtain as they don't use heading tape, hooks, or expensive curtain tracks, they simply use a rod or pole. This style of curtain has many names. the casement curtain is best described as the top forms a pocket (or casement) that the fabric is then threaded onto a pole or rod. This is usually fixed outside the window frame. They are ordinary curtains attached to casement windows. They may be used alone or with swags, or cornices.
- **Café Curtains:**They are short curtains suspended directly downward from a series of rings sliding on a horizontal rod to cover the lower and sometimes upper portions of a window. Cafe curtains strike an ideal balance between privacy and natural light. By covering only, the lower portion of the window, they allow ample sunlight to enter the room while still providing privacy. Originating in 19th century Vienna, cafe curtains, also called tier curtains, hung in-country cafes and roadside dining spots. This style of curtain was more practical and less expensive in design and material than traditional long-panel curtains.
- **Shirred Curtains:**Shirred curtains are a pair of window treatments created in lightweight fabric that gather along the top where a rod is inverted, leaving a row of ruffling. Sometimes, the fabric is transparent, allowing natural light to come in but providing privacy. The length depends on the size of the window.
- **Glass Curtains:****Glass curtains** are usually sheer translucent or transparent window curtains hung immediately over the glass of a window or a window shade and usually do not extend much beyond the sides of the window frame. The benefits of Glass Curtains are that they reduce noise. Glass curtains are highly effective at reducing the noise level from the outside, have minimal visual impact, are silent, and easily glide. sleek and elegant, flexible opening system.



- **Hourglass Curtains:** An Hourglass curtain is fitted to a door - flowing sheer curtains covering doors can be a nuisance as they tend to get caught when the door is used. An hourglass curtain solves this problem by adding a second rod at the lower edge and when it is tied in the centre with a bow of ribbon you can create a focal point from an ordinary door. Hourglass curtains are also ideal for covering French or patio doors and windows. However, if the door or window is very wide, we would suggest making more than one curtain across the width. Often used on a glass door. To ensure that curtain panels look ample when closed, they should have a combined width that is 2 to 2.5 times the width of the window/rod. The total drapery width should be at least 2 times the window/rod widths.
- **Priscilla Curtains:** A pair of extra-wide, ruffled, tieback curtains hung on crisscross curtain rods so the panels crisscross in the centre. The classic Priscilla floral lace curtain is beautifully finished with embellished scalloped bottoms. The curtain pair has a rod pocket that is 100% Polyester and includes two tiebacks. The Valance is sold separately. Priscilla Ruffled Curtain comes with both panels and ruffled tiebacks. Available in White 50%/50% cotton-poly blend, Natural, and White 70%/30% poly-cotton blend "thinner/sheer" To achieve the crisscross styling, it takes a double rod



8.4.2 Blinds

Blinds are “hard” window coverings, composed of slats or vanes that tumble down the blind as it is lowered or can be pulled across a window to stack lengthwise, to the side. These louvers or slats are individually formed together to create the complete blind and are usually controlled by a manual pull cord. These slats are meant to stay closed tightly for privacy and light control, but they can also be adjusted or tilted at different angles to allow control of the amount of light needed. Wood, faux wood, Woven Wood, Mini Blinds, and Vertical Blinds are the most popular “blinds” and are usually made of wood, metal, a composite, or woven grass or bamboo. These materials exude a tactile feeling of hard or bumpy; hence the name, hard window treatments. All of these blinds offer a traditional and classic look and match any decor style—always a handsome, architectural, clean look for your windows. █

- **Vertical Blinds:** Slats that hang vertically, typically used for wide windows or sliding glass doors.
- **Horizontal Blinds:** Include Venetian blinds with horizontal slats connected by strings or cords and mini blinds with thinner slats.
- **Roman Blinds:** Fabric shades that fold when raised and lie flat when lowered, creating a smooth appearance.

8.4.3 Shades

Shades are “soft” window treatments that are made of materials on a continuous roll to cover a large swath of a window opening, fitting snugly into the window and stacking neatly at the top. Shades are drawn up and down by cords or rolled up with a spring device. Shades have no slats or vanes and offer a smooth look to the windows; hence, they are called soft window treatments as the fabric and feeling of the shade are warm and flowing. Although one cannot adjust for light filtering, as with blinds, one can choose different levels of opacity for light preferences. Roller

Shades, Roman Shades, and Cellular Shades are the most popular “shades,” with cellular shades topping the list as a favourite window treatment.

- **Roller Shades:** Single-piece fabric that rolls up and down, available in light-filtering or blackout options. Made of vinyl or fabric attached to spring rollers which are mounted to the inside of the window frame/casing.
- **Cellular or Honeycomb Shades:** Constructed with cellular pockets to trap air for insulation and energy efficiency.
- **Pleated Shades:** Similar to cellular shades but made with a single layer of pleated fabric.

8.4.4 Shutters

- **Wooden Shutters:** Solid panels made of wood, offering insulation and light control.
- **Vinyl Shutters:** More affordable and moisture-resistant compared to wooden shutters, suitable for high-humidity areas.
- **Plantation Shutters:** Wide louvers or slats that can be tilted for light and privacy control.

8.4.5 Window Films:

- **Privacy Films:** Adhesive films are applied to windows to provide privacy without sacrificing natural light.
- **Decorative Films:** Add patterns or designs to windows while maintaining privacy and diffusing light.

8.4.6 Top Window Treatments

They are Decorative treatments used at the top of the window covering. They are sometimes used to conceal drapery rods or to soften hard-edged window treatments such as vertical blinds, pleated shades, or mini-blinds. Top treatments come in many different styles.

- **Swags:** Swags are strips of fabric for the top of the window. Swag is a longer and wider strip of fabric that drapes across the top of the window. It can be woven loosely around a rod, or it can drape from one tieback to another. In some cases, it can also feature a "tail" that hangs along the side of the window and even to the floor. Swags are also strips of fabric for the top of the window. Swags can overlap in any arrangement. Use an odd number of swags for the best look.

Swags are commonly stand-alone window treatments but can be layered over blinds or shades.

- **Cornice:** A cornice starts with a box that affixes over the hardware at the top of the window. Manufacturers cover this box with fabric, paint, or wallpaper - or some combination of the three. Cornices can also feature ornamentation within the wood itself, usually in the form of carving. One can also see cornices with trim, such as tassels or cords. Cornices offer some architectural interest, so they tend to work well in plain rooms with little to no trim. Likewise, they tend to box in a window. So, not only is the effect more formal, but a cornice also tends to tidy up the look of window treatments. Because of the array of materials used in making cornices, one might

have the most style options with this topper. Fabric-covered cornices are very popular, usually in a matching or complementary fabric to the curtains. Most often cornices are used as a topper for drapes, though the more elaborate styles can stand alone.

- **Valence:** A valance can be simpler than a cornice. It doesn't feature the underlying structure. Instead, a valance is a strip of fabric that spans the width of the window. Its main purpose is to hide the curtain rod and rings. Valances can be simple, gathered strips of fabric or they can feature different levels of pleating and trim. Valance styles vary widely, so you have a lot of design options here. If you want to add some architectural appeal without the actual structure of a cornice, a box-pleated or roll-up valance will work well. Less structured styles soften the look of your window treatments. As with cornices, valances are often part of a layered window treatment. You see them commonly with drapes but also with shades and blinds to soften the top of the window. However, valances also work well alone if you want decoration and don't need privacy. Trim can make these toppers the centre of attention.
- **Lambrequins:** Lambrequin window treatments provide a luxurious touch to any space. With various lambrequin curtains available, one can find the perfect fit for the interior design. These are decorative fabric pieces that cover the top and sides of a window, often concealing curtain hardware. It can be used alone or paired with curtains or shades to create a stunning window treatment. Additionally, lambrequins can be used as wall accents in any room of the house for an elegant touch. The beauty of lambrequin is that it can be customized to match any décor, from traditional to modern.
- **Pelmet:** British term for cornice or valence. A pelmet is a wooden frame or fabric border that sits above a window and its curtains. Traditionally placed to decoratively hide the curtain track, they also help with blackout in the room and act as an extra layer of insulation in front of the window to reduce heat loss in your home.

End of Chapter Exercise

1. Explain primary functions of windows in a building.
2. Compare and contrast fixed and operable windows. Provide examples of situations where each type is most suitable.
3. Describe the key purposes served by window treatments. How do they contribute to the aesthetics and functionality of a room?
4. Discuss the differences between blinds, shades, and curtains. When might each type be preferred over the others?
5. Analyze the factors influencing the selection of specific window types and treatments for various architectural spaces, such as residential homes, commercial buildings, or public facilities.
6. Describe the considerations when choosing window treatments for different rooms (e.g., bedrooms, kitchens, living rooms) based on their specific requirements and functionalities.

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