**Weaving:**

A major method of fabric construction is weaving. However, the process of interlacing of yarn or thread, usually at right angles warp yarn with the inserted weft yarn in a definite order to form a fabric suitable for use as a dress material or industrial purpose is called weaving. The machine used for this purpose is called loom. Woven cloth is normally much longer in one direction than the other. A set of longer or lengthwise threads is called the warp or end. A set of crossing or widthwise threads is called the weft or pick or filling. Some weaving is still done by hand, but the vast majority is mechanized.

The way the warp and filling threads interlace with each other is called the weave. The majority of woven products are created with one of three basic weaves: plain weave, satin weave, or twill. Woven cloth can be plain (in one color or a simple pattern), or can be woven in decorative or artistic designs.

**Plain Weave:**

Plain weave (also called tabby weave, linen weave or taffeta weave) is the most basic of fundamental types of textile weaves. It is strong and hard-wearing, used for fashion and furnishing fabrics.

In plain weave, the warp and weft are aligned so they form a simple criss-cross pattern. Each weft thread crosses the warp threads by going over one, then under the next, and so on. The next weft thread goes under the warp threads that its neighbor went over, and vice versa. It has a flat appearance. There are no distinct designs. However these may be produced if yarns have contrasting colors or thickness. It is easily produced. This is the most made weave in the world. It is relatively inexpensive. Some examples of fabric with plain weave are chiffon, organza, and taffeta.

**Twill Weave:**

Twill weave is one of the three basic textile weaves, producing a fabric with a diagonal rib, ridge, or wale. Twill weave in which each weft thread passes over two (or more) warps and then under the same number of warps to produce diagonal ridges. In regular twill the diagonal line is repeated regularly, usually running upward from left to right at a 45° angle. Twill fabrics technically have a front and a back side, unlike plain weave, where the two sides are the same. The front side of the twill is the technical face and the back is called technical back. The technical face side of a twill weave fabric is the side with the most pronounced wale. It is usually more durable, more attractive, and most often used as the fashion side of the fabric. This side is usually visible during weaving. It’s strong, drapes well and is used for jeans, jackets and curtains.

**Satin Weave:**

Satin weaves are made by floating warp or weft yarns across many yarns to bring them to the surface. The interlacing float over 4 or more than 4 yarns before a single interlace. If filament fibers are used such as silk or nylon, the resulting fabric is termed as satin weave. Satin weave is flat and lustrous with a smooth surface. Satin weaves are tightly woven in a way that displays a smooth, glossy appearance on the front side. The back of satin is dull and not as smooth to the touch.

**Both warp and weft can be visible in the final product.**

**Weft-faced Weave:**

The organization of warp threads is completely hidden by the weft threads. It is common in tapestry and rug weaving.

**Warp-faced Weave:**

The organization of weft threads is hidden by the warp. By spacing the warp more closely, it can completely cover the weft that binds it, giving a warp faced textile such as rep weave.

**Ikat:**

Ikat is a technique of creating patterns on woven fabric by tie-dying the yarn before weaving. Or it is a type of weaving where the warp, weft or both are tie-dyed before weaving to create designs on the finished fabric. There are many different techniques for creating ikat.

There is warp ikat, which is created by dying the warp yarns. Weft ikat is created by dying the weft yarns. When both weft and warp yarns are dyed, that process is called double ikat. Ikat is prized for its beauty and unique look. Modern usage for ikat fabric is in clothing, as furniture upholstery, and in other soft home furnishings.

**Jacquard Weaving:**

A jacquard is a type of machine used in weaving. Jacquard looms allow for a complex pattern (design) to be woven into a fabric. It began as a mechanical loom in the 1800s, but today the electronic version of the original can weave more than 10,000 threads at once.

**Dobby Weaving:**

Dobby weave produced on a special loom, are characterized by complex woven in designs, (geometrical patterns) often with large design repeats. Fabrics made by this method include brocade, damask and brocatelle. Dobby weaves, requiring a special loom attachment, have small, geometric, textured, frequently repeated woven-in designs. Dobby weaves are limited to simple, small geometric figures, with the design repeated frequently, and are fairly inexpensive to produce. Another advantage to a dobby loom is the ability to handle much longer sequences in the pattern.

**Loom:**

A loom is a device used to weave cloth. The basic purpose of any loom is to hold the warp threads under tension to facilitate the interweaving of the weft threads. Cloth is usually woven on a loom, a device that holds the warp threads in place while filling threads are woven through them.

**Process:**

Weaving is done by intersecting the longitudinal threads, the warp i.e. “that which is thrown across”, with the transverse threads, the weft, i.e. “that which is woven”. The major components of the loom are the warp beam, heddles, harnesses or shafts, shuttle, reed and take up roll. In the loom, yarn processing includes shedding, picking, battening and take-up operations. These are the principle motions.

**Shedding:**

Shedding is the raising of part of the warp yarn to form a shed (the vertical space between the raised and unraised warp yarns), through which the filling yarn, carried by the shuttle, can be inserted. On the modern loom, simple and intricate shedding operations are performed automatically by the heddle frame, also known as a harness. This is a rectangular frame to which a series of wires, called heddles, are attached. The yarns are passed through the eye holes of the heddles, which hang vertically from the harnesses. The weave pattern determines which harness controls which warp yarns, and the number of harnesses used depends on the complexity of the weave.

**Picking:**

As the harnesses raise the heddles, which raise the warp yarns, the shed is created. The filling yarn inserted through the shed by a small carrier device called a shuttle. The shuttle is normally pointed at each end to allow passage through the shed. In a traditional shuttle loom, the filling yarn is wound onto a quill, which in turn is mounted in the shuttle. The filling yarn emerges through a hole in the shuttle as it moves across the loom. A single crossing of the shuttle from one side of the loom to the other is known as a pick. As the shuttle moves back and forth across the shed, it weaves an edge, or selvage, on each side of the fabric to prevent the fabric from raveling.

**Battening:**

As the shuttle moves across the loom laying down the fill yarn, it also passes through openings in another frame called a reed (which resembles a comb). With each picking operation, the reed presses or battens each filling yarn against the portion of the fabric that has already been formed. The point where the fabric is formed is called the fell.

**Types of Loom:**

**Back strap Loom:**

A simple loom which has its roots in ancient civilization comprising of two sticks or bars between which the warps are stretched. One bar is attached to a fixed object and the other to the weaver usually by means of a strap around the back. On traditional looms, the two main sheds are operated by means of a shed roll over which one set of warps pass, and continuous string heddles which encase each of the warps in the other set. The weaver leans back and uses their body weight to tension the loom. To open the shed controlled by the string heddles, the weaver relaxes tension on the warps and raises the heddles. The other shed is usually opened by simple drawing the shed roll toward the weaver. Both simple and complex textiles can be woven on this loom.

**Hand Loom:**

A hand loom is a simple machine used for weaving. In a wooden vertical-shaft looms, the heddles are fixed in place in the shaft. The warp threads pass alternately through a heddle, and through a space between the heddles (the shed), so that raising the shaft raises half the threads (those passing through the heddles), and lowering the shaft lowers the same threads- the threads passing through the spaces between the heddles remain in place.

**Pedal Loom:**

This loom has a basic computer to assist in designing, and in lifting the shafts. Because it has so many shafts, I can’t lift them the way a normal floor loom requires. Normally, floor looms have a number pedals (or treadles) which are connected to the shafts and you press one of the pedals to raise a specific combination of shafts that you have planned by tying those shafts to the pedal. As you need to think about the tie-ups quite carefully to give you the results you want, because the greater the number of shafts you have, the more pedals you will need. The size of the loom gives you physical constraints in how many pedals you can fit inside your loom, and when you have lots of shafts, it is easier to have a dobby loom which puts the shaft selection into a box on the side of the loom, and you only need one or two pedals to operate the selection.

**Power Loom:**

A loom is a tool used for weaving yarn into textiles. A power loom, yet another type of loom, is a mechanized tool that uses a drive shaft for power. Invented by Edmund Cartwright in Great Britain in 1784, the power loom allowed manufacturers to create textiles much more quickly than with hand-driven looms. This improvement helped the power loom become one of the defining machines of the industrial revolution.