Forging is the process in which metal, cold or heated, is shaped into a component geometry through the use of multiple blows with a drop hammer or through the application of pressure with a hydraulic press. For most forging processes, a set of dies are required. Due to grain orientation, forgings are a desirable choice when high strength and excellent fatigue life is required for the component. Many materials can be forged including aluminum and steel.

There are four major types of forgings used in industry: - Hand, Blocker, Conventional, and pressed. Conventional and blocker forgings are the most common. Forgings have several advantages over other manufacturing processes such as plate, and castings. The ability to control the produced part grain direction relative to the applied stresses will produce superior components. High strength, extended fatigue life and produced component repeatability are advantages of grain direction control.

Many factors need to be considered by the designer in the selection of the appropriate forging process and include: size, geometry, complexity, quantity, material, component cost and component tolerances. Always consult with the manufacturer for their recommendations in selecting the appropriate forging process for your particular application.

All of the following forging processes can be performed at various temperatures, however they are generally classified by whether the metal temperature is above or below the recrystallization temperature. If the temperature is above the material's recrystallization temperature it is deemed hot forging; if the temperature is below the material's recrystallization temperature but above 3/10ths of the recrystallization temperature (on an absolute scale) it is deemed warm forging; if below 3/10ths of the recrystallization temperature (usually room temperature) then it is deemed cold forging. The main advantage of hot forging is that as the metal is deformed work hardening effects are negated by the recrystallization process. Cold forging typically results in work hardening of the piece.

The most common type of forging equipment is the hammer and anvil. Principles behind the hammer and anvil are still used today in drop-hammer equipment. The principle behind the machine is very simple—raise the hammer and then drop it or propel it into the workpiece, which rests on the anvil. The main variations between drop-hammers are in the way the hammer and anvil are powered; the most common being air and steam hammers. Drop-hammers usually operate in a vertical position. The main reason for this is excess energy (energy that isn't used to deform the workpiece) that isn't released as heat or sound needs to be transmitted to the foundation. Moreover, a large machine base is needed to absorb the impacts.

To overcome some of the shortcomings of the drop-hammer, the counterblow machine or impactor is used. In a counterblow machine both the hammer and anvil move and the workpiece is held between them. Here excess energy becomes recoil. This allows the machine to work horizontally and consist of a smaller base. Other advantages include less noise, heat and vibration. It also produces a distinctly different flow pattern. Both of these machines can be used for open die or closed die forging.
A forging press, often just called a press, is used for press forging. There are two main types: mechanical and hydraulic presses. Mechanical presses function by using cams, cranks and/or toggles to produce a preset (a predetermined force at a certain location in the stroke) and reproducible stroke. Due to the nature of this type of system, different forces are available at different stroke positions. Mechanical presses are faster than their hydraulic counterparts (up to 50 strokes per minute). Their capacities range from 3 to 160 MN (300 to 18,000 tons). Hydraulic presses use fluid pressure and a piston to generate force. The advantages of a hydraulic press over a mechanical press are its flexibility and greater capacity. The disadvantages include a slower, larger, and costlier machine to operate.

The roll forging, upsetting, and automatic hot forging processes all use specialized machinery.