Stars form from the gravitational collapse of dense regions within giant molecular clouds of interstellar gas and dust. As these regions contract, they heat up and eventually reach temperatures and pressures sufficient for nuclear fusion to ignite in their cores, marking the birth of a star.

Throughout their lives, stars undergo various stages of evolution determined by their mass. For example:

1. **Main Sequence**: Stars spend most of their lives fusing hydrogen into helium in their cores while on the main sequence. The duration of this phase depends on the star's mass, with more massive stars burning through their fuel more quickly.
2. **Red Giant or Supergiant**: As a star exhausts its hydrogen fuel in the core, it undergoes expansion and cooling, becoming a red giant or supergiant. In this phase, the star fuses helium into heavier elements in its core or shell.
3. **Planetary Nebula or Supernova**: Low to intermediate mass stars (like the Sun) eventually shed their outer layers as a planetary nebula, leaving behind a hot core called a white dwarf. Higher mass stars end their lives in a dramatic explosion known as a supernova, which can leave behind either a neutron star or a black hole, depending on the mass of the progenitor star.
4. **Stellar Remnants**: After their outer layers are ejected, the cores of low to intermediate mass stars become white dwarfs, dense objects supported by electron degeneracy pressure. Neutron stars are extremely dense remnants of supernova explosions, composed almost entirely of neutrons and supported by neutron degeneracy pressure. Black holes are regions of spacetime where gravity is so strong that nothing, not even light, can escape.

In summary, stars form from the collapse of interstellar gas and dust, evolve through various stages determined by their mass, and eventually die, leaving behind different types of stellar remnants such as white dwarfs, neutron stars, or black holes.