Star Classification

Classification of stars is based on size:

- Neutron
- White Dwarf
- Medium
- Giant
- Super Giant
A star’s **size** classification changes throughout its **life cycle**.

**Massive** stars use their **Hydrogen** supply much faster, therefore, they **generate** more **energy** and do not have as long of “**life cycle**.”
A Star is Born (1\textsuperscript{st} Stage)

- Begins when \textbf{gas} and \textbf{dust} in a \textit{nebula} contract to form a \textit{proto-star}.
- \textbf{Gravity} pulls the gas, dust together, \textit{sphere} gets denser, hotter.
- The process of \textbf{nuclear fusion} begins as \textbf{Hydrogen} changes to \textbf{helium}.
Main Sequence (2\textsuperscript{nd}/Longest)

- **Energy** is generated in the core.
- Process releases an **enormous** amount of **energy**.
- Size changes very **little** as long as there is a **continuous** supply of **Hydrogen**.
Red Giant or Super Giant (3rd Stage)

- **Hydrogen** supply has been **depleted**.
- The core **shrinks**.
- The outer layers grow very **large**.
- Red Giants are **10X** bigger than our sun
- Super Giants are **100X** bigger than our sun.
A Star’s Ending (4\textsuperscript{th} Stage)
Option A, B, or C

\textbf{Option A}

- Nova Occurs
- Sun sized and smaller become a \textit{white dwarf}.
- Can no longer generate \textit{energy} by fusion.
- Can shine for billions of years before they \text{cool} and become \textit{black dwarfs}.
Option B

- Supernova occurs
- Leftovers of the explosion form a new star called a **neutron star**.
- If it spins it is called a **pulsar**.
Option C

- Supernova occurs
- The biggest of the biggest stars - 3X the mass of the sun.
- Forms a black hole.
- Detected by studying nearby objects