The solar system is a fascinating and vast cosmic neighbourhood that consists of the Sun, planets, moons, asteroids, comets, and other celestial objects.

Sun: The Sun is a massive, hot, and luminous star located at the centre of the solar system. It accounts for about 99.86% of the solar system's mass and provides heat and light to all the planets.

Planets: There are eight planets in the solar system, classified into two main groups:

a. Inner Planets (Terrestrial Planets):

Mercury: The closest planet to the Sun and the smallest planet in the solar system.

Venus: Known for its thick atmosphere, Venus is the hottest planet.

Earth: Our home planet, the only one known to support life.

Mars: Referred to as the "Red Planet" due to its reddish appearance, Mars has geological features like valleys, polar ice caps, and the largest volcano and canyon in the solar system.

b. Outer Planets (Gas Giants):

Jupiter: The largest planet, known for its prominent bands and the Great Red Spot—a giant storm.

Saturn: Recognized for its stunning ring system, Saturn is the second-largest planet.

Uranus: An ice giant planet with a unique tilted axis, causing it to appear to roll on its side.

Neptune: The farthest planet from the Sun and also an ice giant, known for its vivid blue color.

Note: In 2006, Pluto was reclassified as a "dwarf planet" and is no longer considered one of the main planets.

Moons: Many planets in the solar system have moons. For example, Earth has one moon (the Moon), while Jupiter has 79 known moons, including the four largest ones known as the Galilean moons: Io, Europa, Ganymede, and Callisto. Saturn also has numerous moons, with Titan being the largest.

Asteroids: These are rocky objects that orbit the Sun, mostly found in the asteroid belt—a region between Mars and Jupiter. They range in size from small boulders to large bodies several hundred kilometers in diameter.

Comets: Comets are icy bodies composed of dust, rock, and frozen gases. When they come close to the Sun, they heat up, creating a glowing coma (a fuzzy atmosphere) and often a tail that points away from the Sun.

Kuiper Belt and Oort Cloud: Beyond the orbit of Neptune lies the Kuiper Belt, a region containing small icy bodies, including dwarf planets like Pluto. Farther out is the hypothetical Oort Cloud, a vast sphere of icy objects that marks the outer edge of the solar system.

Spacecraft Exploration: Over the years, numerous space probes and telescopes have been sent to explore and study the solar system. Examples include the Voyager missions, Mars rovers (such as Curiosity and Perseverance), the Hubble Space Telescope, and the Cassini-Huygens mission to Saturn.

Understanding the solar system has greatly expanded our knowledge of the universe and our place within it. Ongoing research and exploration continue to unveil new discoveries and insights about these celestial bodies.