India embarked on the space program in November 1963 with launch of a rocket from Thumba. More than 4 decades later, the planetary exploration program began in 2008 with the launch of Chandrayaan-1 orbiter mission to the Moon. The next Indian planetary mission was the Mars Orbiter Mission (MOM), launched in November 2013 and arrival on Mars in September 2014. The second India mission to Moon is the ongoing Chandrayaan-2 mission; the orbiter is working very well and providing high-quality science data. India will be launching next year the mission to study Sun from the L1 vantage-point called the Aditya-L1, and the Chandrayaan-3 Lander-Rover mission to study Moon. Other planetary and space missions are being planned as well for future. This talk will briefly discuss the Indian planetary missions, related challenges, and highlight the science derived from them.