**DAILY ASSESSMENT FORMAT**

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| **Course:** | **IIRS OUTREACH PROGRAMME** | **USN:** | **4AL17EC098** |
| **Topic:** | **Introduction to Global Positioning System** | **Semester & Section:** | **6th B** |
| **Github Repository:** | **Yashaswini** |  |  |

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| **FORENOON SESSION DETAILS** |
| The Global Positioning System :  The Global Positioning System (GPS ) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. GPS was originally intended for military applications, but in the 1980's, the government made the system available for civilian use.  GPSStands for "Global Positioning System." GPS is a satellite navigation system used to determine the ground position of an object. ... The satellites are evenly spread out so that four satellites are accessible via direct line-of-sight from anywhere on the globe.  Global Positioning System PDF :  Global Positioning System (GPS) is part of satellites orbiting round the universe. It sends the details of their position in space back to earth. ... It is available to any user with a GPS receiver. It has its usefulness in military, weather conditions, vehicle location, farms, mapping and many other areas.  What is GPS and how it works?  The Global Positioning System (GPS) is a network of about 30 satellites orbiting the Earth at an altitude of 20,000 km. ... These signals, travelling at the speed of light, are intercepted by your GPS receiver, which calculates how far away each satellite is based on how long it took for the messages to arrive.  The 3 components of GPS :  The Global Positioning System (GPS) is a U.S.-owned utility that provides users with positioning, navigation, and timing (PNT) services. This system consists of three segments: the space segment, the control segment, and the user segment  The Global Positioning System (GPS), originally NAVSTAR GPS, is a satellite-based [radio navigation](https://en.wikipedia.org/wiki/Radionavigation-satellite_service) system owned by the [United States](https://en.wikipedia.org/wiki/United_States) government and operated by the [United States Space Force](https://en.wikipedia.org/wiki/United_States_Space_Force).It is one of the [global navigation satellite systems](https://en.wikipedia.org/wiki/Satellite_navigation) (GNSS) that provides [geolocation](https://en.wikipedia.org/wiki/Geolocation) and [time information](https://en.wikipedia.org/wiki/Time_transfer) to a [GPS receiver](https://en.wikipedia.org/wiki/GPS_receiver) anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. Obstacles such as mountains and buildings block the relatively weak [GPS signals](https://en.wikipedia.org/wiki/GPS_signals).  The GPS does not require the user to transmit any data, and it operates independently of any telephonic or internet reception, though these technologies can enhance the usefulness of the GPS positioning information. The GPS provides critical positioning capabilities to military, civil, and commercial users around the world. The United States government created the system, maintains it, and makes it freely accessible to anyone with a [GPS receiver](https://en.wikipedia.org/wiki/GPS_navigation_device).  The GPS project was started by the [U.S. Department of Defence](https://en.wikipedia.org/wiki/United_States_Department_of_Defense) in 1973, with the first prototype spacecraft launched in 1978 and the full constellation of 24 satellites operational in 1993. Originally limited to use by the United States military, civilian use was allowed from the 1980s following an executive order from President [Ronald Reagan](https://en.wikipedia.org/wiki/Ronald_Reagan). Advances in technology and new demands on the existing system have now led to efforts to modernize the GPS and implement the next generation of [GPS Block IIIA](https://en.wikipedia.org/wiki/GPS_Block_IIIA) satellites and Next Generation Operational Control System (OCX).Announcements from Vice President [Al Gore](https://en.wikipedia.org/wiki/Al_Gore) and the [White House](https://en.wikipedia.org/wiki/Clinton_Administration) in 1998 initiated these changes. In 2000, the [U.S. Congress](https://en.wikipedia.org/wiki/United_States_Congress) authorized the modernization effort, [GPS III](https://en.wikipedia.org/wiki/GPS_Block_IIIA). During the 1990s, GPS quality was degraded by the United States government in a program called "Selective Availability"; this was discontinued in May 2000 by a law signed by President [Bill Clinton](https://en.wikipedia.org/wiki/Bill_Clinton).  The GPS service is provided by the United States government, which can selectively deny access to the system, as happened to the Indian military in 1999 during the [Kargil War](https://en.wikipedia.org/wiki/Kargil_War), or degrade the service at any time.As a result, several countries have developed or are in the process of setting up other global or regional satellite navigation systems. The Russian Global Navigation Satellite System ([GLONASS](https://en.wikipedia.org/wiki/GLONASS)) was developed contemporaneously with GPS, but suffered from incomplete coverage of the globe until the mid-2000s. GLONASS can be added to GPS devices, making more satellites available and enabling positions to be fixed more quickly and accurately, to within two meters (6.6 ft). China's [BeiDou Navigation Satellite System](https://en.wikipedia.org/wiki/BeiDou_Navigation_Satellite_System" \o "BeiDou Navigation Satellite System) began global services in 2018, and finished its full deployment in 2020. There are also the European Union [Galileo positioning system](https://en.wikipedia.org/wiki/Galileo_(satellite_navigation)), and India's [NavIC](https://en.wikipedia.org/wiki/Indian_Regional_Navigation_Satellite_System). Japan's [Quasi-Zenith Satellite System](https://en.wikipedia.org/wiki/Quasi-Zenith_Satellite_System) (QZSS) is a GNSS [satellite-based augmentation system](https://en.wikipedia.org/wiki/GNSS_augmentation#Satellite-based_augmentation_system) to enhance GNSS's accuracy in [Asia-Oceania](https://en.wikipedia.org/wiki/Asia-Pacific), with [satellite navigation](https://en.wikipedia.org/wiki/Satellite_navigation) independent of GPS scheduled for 2023.  When selective availability was lifted in 2000, GPS had about a five-meter (16 ft.) accuracy. The latest stage of accuracy enhancement uses the L5 band and is now fully deployed. GPS receivers released in 2018 that use the L5 band can have much higher accuracy, pinpointing to within 30 centimetres or 11.8 inches  The Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. GPS was originally intended for military applications, but in the 1980's, the government made the system available for civilian use. GPS works in any weather conditions, anywhere in the world, 24 hours a day, 365 days a year. The 24 satellites that make up the GPS space segment are orbiting the earth about 12,000 miles above us. These satellites are travelling at speeds of roughly 7,000 miles an hour. GPS satellites are powered by solar energy. They have backup batteries onboard to keep them running in the event of a solar eclipse, when there's no solar power. Small rocket boosters on each satellite keep them flying in the correct path. Each satellite weighs about 2,000 pounds and is built to last about ten years.  How Does GPS Work?  GPS satellites circle the earth twice a day in a very precise orbit and transmit signal information to earth. GPS receivers take this information and use triangulation to calculate the user's exact location. Essentially, the GPS receiver compares the time a signal was transmitted by a satellite with the time it was received. The time difference tells the GPS receiver how far away the satellite is. Now, with distance measurements from a few more satellites, the receiver can determine the user's position and display it on the user's electronic map. A GPS receiver must be locked on to the signal of at least three satellites to calculate a 2D position (latitude and longitude) and track movement. With four more satellites in view, the receiver can determine the user's 3D position (latitude, longitude and altitude). Once the user's position has been determined, the GPS unit can calculate other information, such as speed, bearing, track, trip distance, distance to destination, sunrise and sunset time and more. |