Great Barrier Reef

A UNESCO heritage committee recently stopped short of listing Australia's Great Barrier Reef as a site that is "in danger" but warned the world's biggest coral reef ecosystem remained under "serious threat" from pollution and the warming of oceans.

About Great Barrier Reef:

Location: It lies in the Pacific Ocean off the northeastern coast of Queensland, Australia, in the Coral Sea.
It is the longest and largest coral reef system in the world.
It was designated as a UNESCO World Heritage Site in 1981.

Key Facts about Corals:

- Corals are marine invertebrate animals that belong to the phylum Cnidaria.
- **Coral Polyps:**
  - Corals exist as individual polyps, which are small, sac-like organisms with a mouth surrounded by tentacles.
  - The polyps secrete a hard external skeleton made of calcium carbonate, which forms the basis of the coral structure.
- **Symbiotic Relationship:**
  - Many corals have a symbiotic relationship with single-celled algae called zooxanthellae.
  - These algae live within the coral's tissues and provide them with essential nutrients through photosynthesis.
  - In return, the corals offer protection and a place to thrive in well-lit, shallow waters.
- **What are Coral Reefs?**
  - Coral polyps secrete a hard skeleton made of calcium carbonate, which over time forms the reefs.
- **Coral Bleaching:**
  - When stressed by high temperatures, pollution, or other factors, corals expel their zooxanthellae, leading to coral bleaching.
  - Without their symbiotic algae, corals lose their vibrant colors and become more vulnerable to disease and mortality.

Akira Ransomware:

- It is designed to encrypt data, create a ransomware note and delete Windows Shadow Volume copies on affected devices.
- The ransomware gets its name due to its ability to modify filenames of all encrypted files by appending them with the ".akira" extension.

How does Akira Ransomware work?

- The ransomware is designed to close processes or shut down Windows services that may keep it from encrypting files on the affected system.
- It uses VPN services, especially when users have not enabled two-factor authentication, to trick users into downloading malicious files.
- The ransomware also terminates active Windows services using the Windows Restart Manager API, preventing any interference with the encryption process.
- It is designed to not encrypt Program Data, Recycle Bin, Boot, System Volume information, and other folders instrumental in system stability.
- It also avoids modifying Windows system files with extensions like.syn. .msl and .exe.
- Once sensitive data is stolen and encrypted, the ransomware leaves behind a note named akira_readme.txt which includes information about the attack and the link to Akira's leak and negotiation site.
- Each victim is given a unique negotiation password to be entered into the threat actor's Tor site.
- Unlike other ransomware operations, this negotiation site just includes a chat system that the victim can use to communicate with the ransomware gang.

How does ransomware infect devices?

- Ransomware is typically **spread through spear phishing emails** that contain malicious attachments in the form of archived content (zip/rar) files.

Lokmanya Tilak National Award

The Prime Minister is honoured with the Lokmanya Tilak National Award in pune.

About Lokmanya Tilak National Award:

- The award was instituted in 1983 by the Tilak Smarak Mandir Trust.

- This award is given every year on 1st August, the death anniversary of Lokmanya Tilak, to persons who have made remarkable and extraordinary contributions, working for the progress and development of the nation**.**

Lokmanya Tilak

- Bal Gangadhar Tilak, commonly known as Lokmanya Tilak, was a prominent Indian nationalist, freedom fighter, social reformer, and political leader during the Indian independence movement.
- He was one of the prime architects of modern India and probably the strongest advocate of Swaraj or Self Rule for India.
- He is known for his slogan, "Swaraj is my birthright and I shall have it."
- He was born as Keshav Gangadhar Tilak and his followers bequeathed upon him the title of 'Lokmanya', meaning he who is revered by the people.
- Extremist:
  - He was considered a radical Nationalist.
  - The British Government termed him the "Father of Indian Unrest".
- **Organisations**:
  - He joined the Indian National Congress Party in the year 1890.
  - He also helped found the All-India Home Rule League in 1916–18 with G. S. Khaparde and Annie Besant.
  - Tilak started his Home Rule League in Maharashtra, Central Provinces, and Karnataka and Berar region. Besant's League was active in the rest part of India. It aimed to advocate for self-rule and raise public awareness about India's right to govern itself**.**
- **Literary works:**
  - Tilak was a prolific writer and journalist. He used his newspaper, "Kesari" (meaning Lion) in Marathi and later "Maratha" in English to disseminate nationalist ideas.
  - Some of his notable literary works include "The Arctic Home in the Vedas," where he presented his theory that the Vedas originated in the Arctic region, and "Shrimad Bhagavad Gita Rahasya," an interpretation of the Bhagavad Gita from a nationalist perspective.

- **Educationist**:
  - Established the Deccan Education Society in Pune in 1884.
  - The society founded Fergusson College and the New English School.
  - Tilak taught mathematics at Fergusson College.
- Imprisonments: He was arrested for sedition on multiple occasions. His most prolonged incarceration lasted from 1908 to 1914, during which he wrote the famous book "Gita Rahasya" (The Secret of the Bhagavad Gita).

- In 1916 he concluded the Lucknow Pact with Mohammed Ali Jinnah, which provided for Hindu-Muslim unity in the nationalist struggle.

METAVERSE

- It refers to a virtual or digital universe where people can interact with each other and digital objects in a shared online space.
- Origin of the term: The term "metaverse" first appeared in author Neal Stephenson's 1992 science-fiction novel Snow crash, which describes a future where millions of people use virtual avatars to participate in a cyberspace realm.
- The metaverse is essentially an interconnected network of virtual worlds, augmented reality, and virtual reality environments accessible through the internet.
- In this digital realm, users can create avatars, socialize with others, engage in various activities, explore virtual landscapes, and even conduct business or trade virtual goods and services.
- Elements of the metaverse include virtual reality (VR) platforms, augmented reality (AR) experiences, online games, social media, virtual commerce, and virtual art galleries, among others.
- The metaverse aims to offer a seamless and immersive experience, blurring the lines between the physical and digital worlds.
- Companies such as Meta (formerly Facebook), Microsoft, and Roblox are all investing heavily in the metaverse, and it is seen as a potential major driver of growth in the technology industry in the coming years.

Augmented Reality (AR)

- It is an enhanced version of the real physical world that is achieved through the use of digital visual elements, sound, or other sensory stimuli and delivered via technology.

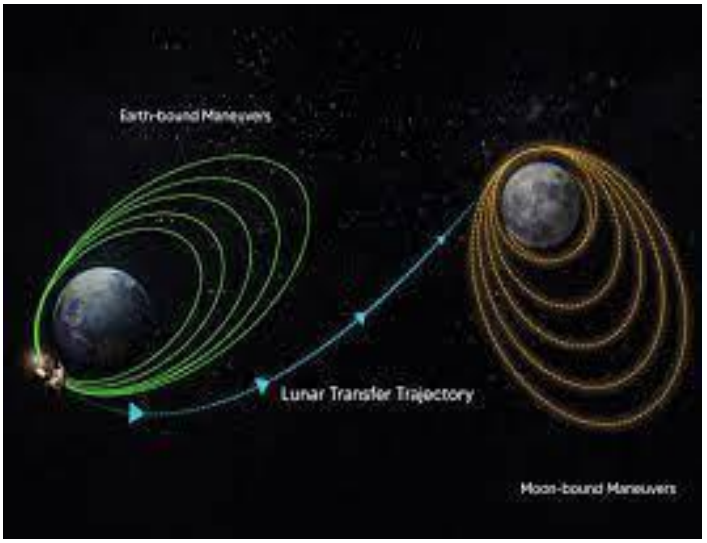
BHOJPATRA TREE

- It is also known as Himalayan Birch and it is widely found in the Himalayas.
- It is a deciduous tree native to the Western Himalayas that grows at elevations of up to 4,500 metres
- It has a high freezing tolerance potential, allowing it to form a tree line in the Himalayan region.
- It is a long-lived species which can survive up to 400 years and the only angiosperm in the Himalaya which dominates an extensive area at sub - alpine altitudes.
- Distribution: It is widely distributed in the altitudinal range from 3100 - 3800 m in North-western Himalaya.

- It contributes to the preservation of the Himalayan ecosystem by reducing soil erosion and creating a bio-shield for the remaining forests and sub-alpine meadows below the tree line.

The bark of this tree was used for centuries in our Country for writing lengthy scriptures and texts in Sanskrit and other scripts, particularly in historical Uttarkhand and Kashmir.

TransLunar Injection (TLI)



- It is a critical maneuver performed during space missions to send spacecraft from Earth's orbit to a trajectory that will take them to the Moon.
- It is a key step in lunar missions, enabling spacecraft to escape Earth's gravitational pull and travel to the Moon.
- When is it performed? The TLI is performed when the spacecraft is at a specific point in its orbit known as the ‘perigee’ or the closest point to Earth.
- How is it done?
    - During a TLI, the spacecraft's propulsion system fires its engines to accelerate the spacecraft.
    - The spacecraft gains enough speed to break free from Earth's gravitational pull and embark on its journey toward the moon.
    - The amount of thrust and duration of the TLI burn depends on various factors, including the spacecraft's mass, its velocity in Earth's orbit, and the specific mission objectives.

What happens next?

- Once the TLI is successfully completed, the spacecraft is put on a lunar trajectory, and it will continue its journey to the Moon without further propulsion from Earth.
- After the TLI, the spacecraft typically enters a transfer orbit, which is an elliptical path that intersects with the Moon's orbit.
- The spacecraft continues to travel in its highly eccentric orbit until it reaches the Moon's surface.
- As the spacecraft approaches the Moon, it may perform additional maneuvers, such as lunar orbit insertion (LOI), to enter into lunar orbit or land on the lunar surface, depending on the mission's goals.
- The TLI burn has been performed successfully on many missions to the Moon, including the Apollo missions, the Change missions, and the Artemis missions.