

WHAT IS A BINARY STAR SYSTEM?



- A binary star is a system of two gravitationally bound stars that orbit a common center of mass called a
- Stars in a binary system do not necessarily have the same mass, size, or brightness.
- The larger star of a binary couple is called the primary star, while the smaller one is known as the secondary star or the companion star.
- Binary stars are double stars, but not all double stars are binary stars.
 - This is because some double stars comprise two stars close enough in the sky over Earth to appear as a single point of light, but they are actually vastly separated in space and not part of a gravitationally bound binary system—these are called optical doubles.
- Unlike the sun, the vast majority of stars have a binary partner. It is estimated that around 85% of stars exist in binary star systems or systems with three or more stars.

Binary star systems can also include systems containing a normal star and a stellar remnant, an object that forms when a star runs out of the fuel for nuclear fusion and collapses under its own gravity.

- These dense and compact star "corpses" can include white dwarfs, neutron stars, and black holes.
- Especially ancient binary systems can contain two stellar remnants orbiting each other.
- In some binary systems, the stars are so close together that they exchange material. This mass transfer occurs when the radius of one star is not much smaller than the orbital separation between the stars.

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BHARAT SEVA KENDRA (BSK)



- It is a **nationwide initiative** launched by the **Chamber of Commerce and Industry (CCI)** of India.
- It is aimed at **providing various government services and benefits to villagers in India.**
- These centers serve as a **one-stop solution for accessing government schemes, services, and information in rural areas.**
- Designed as a grassroots movement, BSK is **backed by a network of 2.5 lakh sarpanches and 5 lakh BSK Sarthis.**
- These individuals will **act as on-ground facilitators**, linking rural citizens directly with welfare schemes related to financial aid, healthcare, education, employment, digital empowerment, and agriculture.
- At the core of the initiative is the goal of **cutting down bureaucratic delays** by offering a **single-window platform for government programs.**
- A key feature of BSK is its **emphasis on digital inclusion.**
 - Equipped with modern infrastructure, these centers **offer digital literacy programs**, enabling villagers to interact with technology and avail themselves of **e-governance services**
- By **working closely with both central and state governments**, BSK aims to streamline service delivery and eliminate the barriers that often prevent rural citizens from benefiting from welfare schemes.

Chamber of Commerce and Industry (CCI) India:

- CCI India is a **national-level autonomous business organization** with clear objectives for the business expansion through policy advocacy, business matchmaking, and making the environment conducive for the investors.

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- It is the **voice of India's business and industry**.
- From influencing policy to encouraging debate, engaging with policymakers and civil society, CCI India **articulates the views and concerns of industry**.
- It serves its members from the **Indian private and public corporate sectors and multinational companies**, drawing its strength from diverse regional chambers of commerce and industry across states.
- It acts as a catalyst for global companies to expand their business and smoothen operations in India and vice versa through joint ventures and market intelligence.

ASIAN PRODUCTIVITY ORGANISATION (APO)



- It is a regional **intergovernmental organization** established in **1961** to **increase productivity in the Asia-Pacific region** through mutual cooperation.
- The APO contributes to the sustainable socioeconomic development of the region through **policy advisory services, acting as a think tank, and undertaking smart initiatives** in the industry, agriculture, service, and public sectors.
- The APO is shaping the future of the region by **assisting** member economies in **formulating national strategies for enhanced productivity** and through a range of **institutional capacity-building efforts**, including research and centers of excellence in members.
- It is **nonpolitical, nonprofit and nondiscriminatory**.
- APO membership is **open to countries in Asia and the Pacific that are members of the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP)**.
- The **current membership is 21 economies**, comprising **Bangladesh, Cambodia, Republic of China, Fiji, Hong Kong, India, Indonesia, Islamic Republic of Iran, Japan, Republic of Korea, Lao PDR, Malaysia, Mongolia, Nepal, Pakistan, Philippines,**

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Singapore, Sri Lanka, Thailand, Türkiye, and Vietnam. India is a founding member of APO.

- These countries/economies **support each other** in their productivity drives in a spirit of mutual cooperation by sharing knowledge, information, and experience and coordinate with the APO through the **designated national productivity organizations (NPOs)**.
- **Headquarters:** Tokyo, Japan
- **Organisational Structure:**
- APO is composed of the governing body, the NPOs, and the secretariat, which is headed by a secretary-general.
- The **Governing Body** is the APO's **highest decision-making authority** and meets annually to set the organisation's strategic direction, approve major proposals, and review Secretariat performance.

CENTRAL BOARD OF FILM CERTIFICATION (CBFC)



- The Central Board of Film Certification (CBFC) is a **statutory body** functioning under the **Ministry of Information and Broadcasting**, Government of India.
- It is **commonly referred to as the Censor Board**, though it functions more as a **certification authority**.
- CBFC operates under the **Cinematograph Act, 1952**, the **Cinematograph (Certification) Rules, 1983**, and the **guidelines issued by the Central Government**.

CBFC's Role and Structure

- The CBFC is responsible for **regulating the public exhibition of films** in India.
- **No film can be exhibited publicly in India without CBFC certification.**
- The CBFC is headed by a **Chairperson**, with **12–25 members** appointed by the **Central Government**.

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- The Board operates through **nine regional offices** located in **Mumbai, Kolkata, Chennai, Bangalore, Thiruvananthapuram, Hyderabad, New Delhi, Cuttack and Guwahati**.
- Film examination is aided by **Advisory Panels**, whose members are **nominated by the Government** from diverse backgrounds for **two-year terms**.

Categories of Film Certification

- **U (Universal)**: Suitable for **all age groups**.
- **U/A**: Universal with **parental guidance for children below 12**.
- **A: Adults only**.
- **S**: Restricted to **special categories** (e.g., **doctors, farmers**)

LITHIUM



- **Lithium** is a **lightweight, silvery-white alkali metal** with the **lowest density among metals**.
- It reacts vigorously with water and makes **alloys with aluminium and magnesium**, enhancing **material strength** and reducing **weight**—ideal for **aerospace and battery technologies**.
- **Lithium**, also known as “**white gold**”, is a **critical mineral** essential for the **renewable energy sector**, especially in the production of **electric vehicle (EV) batteries and energy storage systems**.
- Around **40% of global lithium supply** is derived from **evaporative brine mining** in **salt flats (salar)** of the **central Andes** (Chile, Argentina, Bolivia—“**Lithium Triangle**”) and the **Tibetan Plateau**.

Key Findings

- The study focused on **Salar de Uyuni in Bolivia**, the world’s **largest lithium brine reserve**, located in a **high-altitude arid region**.

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- It was found that, unlike seawater, where **carbonate molecules** dominate pH regulation, the **pH of these brines is controlled almost entirely by boron compounds**.
- **Boron**, present in the form of **boric acid** and **borates**, was found to **determine the pH and alkalinity** of natural brines.
- During brine evaporation in mining ponds:
 - The **concentration of boron increases**.
 - **Boric acid breaks down**, releasing **hydrogen ions**, which **lowers the pH** and makes the brine **highly acidic**.

TRUMP BLOCKS HARVARD FROM ENROLLING INTERNATIONAL STUDENTS: IMPACT ON CURRENT AND FUTURE APPLICANTS

A US federal judge temporarily blocked the Trump administration's move to revoke Harvard University's ability to enroll international students, just a day after the policy was announced.

Harvard called the Trump administration's decision unconstitutional and warned of its severe impact on the university and its global student body. The conflict began when Harvard refused the administration's demands to alter its hiring, admissions, and curriculum policies.

Student and Exchange Visitor Program (SEVP)

- SEVP certification, issued by the U.S. Department of Homeland Security (DHS), allows educational institutions to enroll international students holding F-1, M-1, or J-1 visas.
 - The F-1 visa is for students attending accredited U.S. colleges or universities, or studying English at an accredited institute.
 - The M-1 visa is for students enrolled in non-academic or vocational programs.
 - The J-1 visa is for exchange visitors participating in educational and cultural exchange programs.
- Without SEVP certification, institutions cannot issue **Form I-20** — a crucial document required for international students to obtain and maintain legal student status in the U.S.

Revocation of Harvard's SEVP Certification: Reasons and Allegations

- **Allegations by the DHS**
 - The U.S. Department of Homeland Security (DHS) accused Harvard of:
 - Creating an “unsafe” environment for Jewish students
 - Promoting “pro-Hamas sympathies”
 - Implementing “racial” diversity, equity, and inclusion (DEI) policies
 - Allegedly coordinating with the Chinese Communist Party
- **Official Statement by DHS**
 - As per the Homeland Security, enrolling international students is “a privilege, not a right”.
 - Harvard lost its SEVP certification for “failing to adhere to the law.”
- **Conditions for Reinstatement**
 - DHS gave Harvard 72 hours to comply with six conditions, demanding:
 - Records of illegal, violent, or threatening activity by non-immigrant students over the past five years
 - Evidence of any deprivation of rights involving non-immigrant students
 - Disciplinary records of all non-immigrant students
 - Audio/video footage of protest activity involving non-immigrant students
 - These demands aim to assess Harvard's compliance with federal regulations regarding campus safety and foreign student oversight.

Impact on Harvard University

- **Major Financial Loss**
 - International students are a key revenue source for Harvard, paying higher tuition and fees without federal aid.
 - For the 2024–25 academic year, each student contributes approximately \$82,866.

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- With 6,793 international students, the estimated annual revenue from them is around \$562 million.
- **Growing International Presence**
 - Over the last four years, the number of international students at Harvard has grown by 26.75%.
 - As of September 2024, students came from 146 countries, with China, Canada, and India accounting for 40% of the total international student population.
- **Broader Economic Impact**
 - Beyond Harvard, international students significantly benefit the U.S. economy.
 - As per a report, in 2023–24, they contributed approximately \$43.8 billion through tuition, fees, and living expenses.

BITCOIN HITS RECORD \$110K AFTER MAJOR U.S. CRYPTO REFORM

Bitcoin has surged past the \$110,000 mark for the first time, driven by renewed investor optimism following the progress of a major crypto bill in the U.S. Senate — the **GENIUS Act** (Guiding and Establishing National Innovation for US Stablecoins).

The bill, which focuses on regulating stablecoins, gained **bipartisan support**, with some Democrats who initially opposed it now backing the measure.

This legislative progress is expected to **benefit crypto businesses**, boosting market confidence.

There are, however, **concerns of conflict of interest**, as Trump and Melania, both active in the crypto space and involved with meme coins, could personally gain from the bill's impact on the crypto market.

GENIUS Act

- The GENIUS Act primarily aims to regulate stablecoins—cryptocurrencies pegged to stable assets like the U.S. dollar.
- It marks a significant policy shift, especially by allowing big tech companies to issue stablecoins.
- **Key Provisions of the Bill**

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- **Mandatory Compliance:** Issuers must adhere to anti-money laundering (AML) and anti-terrorism laws, along with privacy regulations under existing banking norms.
- **Full Reserve Requirement:** Stablecoins must be backed 1:1 by fiat currency or high-quality liquid assets.
- **Separation of Funds:** Issuers must keep reserves separate from operational funds.
- **Transparency & Audits:** Regular third-party audits and public disclosures of reserves are mandatory.
- **Political & Ethical Concerns**
 - Some lawmakers have raised concerns about the Trump family's involvement in crypto for personal gain and lack of oversight.
- **Broader Implication**
 - The act is seen as the first major federal step to bring stability and accountability to the rapidly growing crypto sector, while also legitimizing the role of stablecoins in the U.S. economy.

Criticism of the GENIUS Act

- **Inadequate Consumer Protections**
 - It fails to offer consumers the same level of protection as traditional payment systems.
 - Experts argued that the Act falls short of minimum safeguards required for stablecoin users.
- **Risks of Illicit Use and Financial Instability**
 - Stablecoins are already involved in over 60% of unlawful crypto transactions.
 - Rapid growth without robust safeguards could expand their use in illicit activities and threaten financial stability.