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DHRUV64 Microprocessor: India's Silicon Sovereignty

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Background: Most chips used in India are designed by foreign firms (ARM, Intel), posing a security risk of "hardware backdoors." DHRUV64, developed by C-DAC, is India's first high-performance, domestically designed 64-bit processor.

Basics:

- **Architecture:** Based on RISC-V (Reduced Instruction Set Computer), which is an open-source standard. This means India doesn't pay royalties to foreign companies.
- **Dual Core:** 1.0 GHz frequency, suitable for smart grids, IoT, and defense electronics.
- **DIR-V Program:** Part of the "Digital India RISC-V" initiative.

Significance for UPSC:

- **Strategic Autonomy:** Crucial for defense and telecom infrastructure to ensure data remains secure.
- **Semiconductor Mission:** A major step in India's goal to become a global chip-design hub.

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