

## Electronic Devices and Circuits Laboratory



### **Background:**

The lab provides the foundation of electronics engineering. This lab aims at providing students the knowledge about various electronic devices. Students are made familiar with electronic circuits and their intended use in various applications. This Laboratory is primarily aimed to meet the requirements of practical work meant for Active Components basic analysis, designing and testing of Amplifier and Oscillators. All basic electronic devices and their characteristics, applications can be studied. Using these devices, the small electronic circuits can be constructed and can be checked.

### **Description:**

Electron devices lab is special and well equipped with the latest signal generators, oscilloscopes, digital trainer kits and measuring instruments. Students of various branches design and test their analog/digital/mixed signals, digital circuits as part of their curriculum. Guidance is provided to the students by a team of expert faculty and lab technicians. The labs are kept open after the college hours to enable the students to engage themselves in designing /testing the circuits in their leisure hours. The lab is used to train the students to implement the basic analog circuits (as a hardware using electronic components) and make experiments to get familiar with the characteristics of electronic components, test the circuit performance and the techniques of making hardware circuits.

**Current Equipment:**

The laboratory is well equipped with a whole range of Analog and Digital Storage Oscilloscopes, VHF Function Generators, Power supplies of various ranges, Multi-meters, volt meters, ammeters, Decade capacitance, inductance and resistance boxes and PCs for electronic system design Frequency counter and a variety of Active and Passive Components, etc.

The lab is having one black board, projector, instructors table and Chairs, 6 fans, 6 lights, 07 windows for good Air circulation and good lighting facility. There are 18 set ups for doing experiments and two students are allotted for each set up.

**Lab investment:** RS. 19,05,216 /-

**Utilization:**

This lab is utilized for conducting the following course(s):  
19PC2EC01-Electronic Devices and Circuits Laboratory

**Location and Hours:**

The electron devices and circuits laboratory is located in room no:A-202  
Open Door Access: 9:00 AM - 6.30 PM  
Scheduled classes take priority

**Contact:**

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## Analog Circuits Laboratory



### **Background:**

This Lab familiarizes the students with the fundamentals of analog electronics. This Lab is equipped with a wide range of devices, which helps the students to undergo intensive training and provides a deep insight into the world of electronics.

### **Description:**

The lab is intended to study the operation, principles of multistage amplifiers, power amplifiers, linear and non-linear wave shaping circuits, operational Amplifiers and 555 timer. In this lab, students perform experiments by designing the analog circuits using simulation tools and implementing the same using discrete components, BJTs, MOSFETs and ICs such as Op-Amps, 555 timer. Purpose of this lab is to make the students familiarized with designing, developing and testing various analog circuits for different applications. The facilities available in this lab is also used to build and test the student projects that involve analog circuits.

**Current Equipment:**

This laboratory is fully equipped with major equipments like Linear Trainer kits, Digital Storage Oscilloscope, Cathode Ray Oscilloscope and Function Generator as listed below. Voltmeters, Ammeters, Digital Multimeter, Dual Regulated DC Power Supply(Fixed& Variable), CRO (20MHz), Digital Storage Oscilloscope (50MHz), Function Generator (3MHz), Decade Resistance Box, Decade Capacitance Box ,Decade Inductance Box, Linear IC Trainer Kit, Probe,IC Tester and Personal Computers.

**Lab investment:** Rs. 15,15,104/-

**Utilization:**

This lab is utilized for conducting the following course(s):  
Analog Circuits Lab

**Location and Hours:**

The Analog Circuits Laboratory is located in room no. A-203  
Open Door Access: 9:00 AM - 6.00 PM  
Scheduled classes take priority

**Contact:**

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## Analog and Digital Communications Laboratory



### **Background:**

The electronic communication is rapidly expanding and the need for new engineering graduates who are prepared to innovate, create, and work with these systems is evident. The communications lab presently serves to give the ECE students a laboratory experience in basic electronic communications systems.

### **Description:**

The concepts of all type of modulation & demodulation can be studied. The recent communication techniques can be demonstrated with available equipment's. Students conduct experiments in a communication lab where they become acquainted with oscilloscopes, functions generators. Measurement of common signals such as sinusoids and periodic square waves are conducted in both the time and frequency domain. The training and experience that ECE students gain in this laboratory enhance their understanding of analog and digital communication systems. This lab has highly advanced digital storage oscilloscopes, RF Signal Generator and spectrum analyzer.

**The Curriculum objectives are:**

To understand basic theories of analog and digital communication.  
To design and implement analog/ digital modulator and demodulator.  
To understand the applications of balanced modulator circuit.

**Current Equipment:**

This Lab has latest and costliest equipment such as Spectrum Analyzer (1.5GHz, 18GHz), Analog Communication trainer kits such as signal sampling and reconstructing unit, pulse amplitude modulation and demodulation unit, Time division and frequency division multiplexing unit, delta / adaptive delta modulation and demodulation unit, Frequency modulation and demodulation unit, SSB and DSB-SC modulation and demodulation trainer kit.

Digital Communication trainer kits such as Data Formatting, Data reforming, Binary data generator, sampling reconstruction, PPM, PAM, PWM modulation and demodulation, ASK,PSK, FSK, QPSK, DPSK PCM Mod & demod, DPCM Mod &demod, Delta and adaptive delta modulation, and equipment's like CRO (20 MHz), Digital Storage CRO (50 MHz), Computers ( Lenovo with Matlab,i5Processor , 4 GB RAM, 500 GB Hard Disk), AM-FM Signal Generator (225 MHz), Function Generator(3MHz-10MHz), RF Signal Generator(9KHz-3GHz).

**Lab investment** :Rs. 44,79,685/-

**Utilization:**

This lab is utilized for conducting the following course(s):  
19PC2EC04-Analog and Digital Communication Laboratory

**Location and Hours:**

The Communication lab is located in room no: A-207.  
Open Door Access: 9:00 AM - 6.30 PM  
Scheduled classes take priority.

**Contact People:**

**K. Sangeetha,**  
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**MANASA Y ,**  
Assistant Professor  
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**V. Dasaradha Ram Kumar**

Senior Skilled Assistant  
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## Microprocessors and Microcontrollers Laboratory



### **Background:**

This is our fundamental laboratory in E.C.E department. This lab has various types of microprocessors, micro controller trainer kits along with interfacing modules to demonstrate the detailed applications of microprocessors. The purpose of this laboratory is to train the students to be familiar with the software and hardware of microprocessors so that they can gain enough experiences to meet the demand of the microprocessor era.

The facilities in the laboratory enable students to build a firm background in microprocessor hardware as well as software. Students learn about assembly language programming, interfacing of programmable chips and peripherals such as stepper motors, analog-to-digital and digital-to-analog converters etc. They acquire the practical skills sufficient to design and realize basic microprocessor-based systems.

### **Description:**

This laboratory is used to provide intensive practical exposure to the students in the field of microprocessor architecture and industrial control through them. Different exercises in this lab includes Serial Data Communication between PC and 8051 microcontroller trainer kit. The lab also provides the facility to interface the microprocessor and microcontroller with different circuits such as A/D converters, stepper motors, DC motors, multidigit displays, etc.

**Current Equipment:**

Microprocessor kit (8086), Microcontroller kit (8051, DMA Controller, Interrupt controller, Timer, ADC, DAC, Serial Communication, Stepper motor, Keyboard and display control, Oscilloscopes, Function generator, power supply, RS 232c cable & connector, Universal programmer, UV EPROM eraser and DSO and logic Analyzer.

This lab is also equipped with one white board, teacher table and Chairs, 5 fans, 15 lights, 6 windows for good Air circulation and good lighting facility as well as 4 AC's for cooling purpose. 36 systems to do the programs and Interfacing kits for doing experiments. Each student has individual system to the programs. Students dump the programs and check the results.

**Lab investment:** Rs. 34,18,890 /-

**Utilization:**

This lab is utilized for conducting the following course(s):

19PC2EC07-Microprocessors & Microcontrollers Lab

19ES2CS01-Programming through C Laboratory

19ES2IT01-Data Structures Laboratory

**Location and Hours:**

The Microprocessor and Microcontroller laboratory is located in room no:A-207

Open Door Access: 9:00 AM - 6.30 PM

Scheduled classes take priority.

Contact:

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## Digital Signal Processing Laboratory



### **Background:**

Digital Signal Processing (DSP) is concerned with the representation of signals as a sequence of numbers and the operations carried out on the signals to extract specific information contained in them. The objective of the laboratory is to enable the students simulate and experiment with digital signals and systems and apply the theory they have studied in DSP courses. Students can implement digital signal processing algorithms using different computational platforms and DSP tools. They can critically analyze the behavior of their implementation, and observe the specific limitations inherent to the computational platform and tools.

### **Description:**

The laboratory combines both hardware and software facilities to understand the principles, design, and implementation of different Signal processing algorithms using simulation softwares such as Code Composer Studio, MATLAB, C++, Simulink and PacketTracer software as well as Hardware realization using DSP processors, Embedded Processors.

### **Current Equipment:**

The lab is equipped with a high end computing systems, Matlab latest version with campus wide license supporting fifty toolboxes. DSP fixed and floating point processor boards such as TMS320C6713, C6711, C5510, C5416, UPS, DSOs, function generators, and Code composer software are available in the lab.

The lab is having one white board, Projector, teacher table and Chairs, 4 ACs, 8 fans, 16 lights, 6 windows for good Air circulation and good lighting facility. There are 72 computers and a total of 14 DSP processor kits for doing experiments and each student is allotted a computer system.

**Lab investment:** RS. 1,56,26,921/-

**Utilization:**

This lab is utilized for conducting the following course(s):

- 19PC2EC06 -Digital Signal Processing Laboratory
- 19ES2IT01-Data Structures Laboratory
- 19ES2CS01-Programming through C Laboratory

**Location and Hours:**

The DSP laboratory is located in room no: C-208

Open Door Access: 9:00 AM - 6.30 PM

Scheduled classes take priority

**Contact:**

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## Microwave Communication Laboratory



### **Background:**

The mission of this lab is to design , analyze the characterization of RF and Microwave components This lab is equipped to carry out basic microwave measurements, such as impedance, power, frequency, VSWR, etc., using waveguide technology. In addition to supporting these courses, the lab also provides the necessary equipment for the students to perform their projects.

### **Description:**

Microwave Laboratory is meant for experiments at the instructional level for undergraduate students. The laboratory is adequately equipped with microwave benches at X-band and K-Band , which includes Klystron tubes, Gunn diodes, Klystron power supplies, modulators, directional couplers, various power energy and VSWR meters. The experiments conducted include S-parameter measurements, radiation and terminal properties of horn, slot, array, reflector, strip and patch antennas, characteristics of active devices and passive components.

### **Current Equipment:**

Klystron Power supply,Gunn Power supply,Solid state VSWR Meter,Frequency meter (Direct and Indirect),E-plane Tee,H-plane Tee,E-H plane Tee,H-plane Tee,Waveguides and lab is equipped with a good number of experimental Bench setups, power supplies, 15MHz/20MHz oscilloscopes, function generator, stabilizer, multi-meters, 0-250 $\mu$ A, 0- 500 $\mu$ A, 0-100 mA Ammeters, and computers.

The lab is having teacher tables and Chairs, 8 fans, 8 lights, windows for good Air circulation and good lighting facility. There are 9 bench set ups, 1satellite communication trainer kit, 2 experiments from ADS Software and three students are allotted for each setup.

**Lab investment:** Rs. 18,96,967/-

**Utilization:**

19PC2EC11-Microwave Engineering Lab

**Location and Hours:**

The Microwave Lab is located in room no: C-208

Open Door Access: 9:00 AM - 6.30 PM

**Contact:**

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## VLSI Laboratory



### **Background:**

VLSI is an assembly of millions of transistors on a single chip that works flawlessly to realize miracles as varied multimedia, mobile communication etc. The VLSI simulation laboratory is established with the aim of conducting research in various aspects of the ever growing field of Very Large Scale Integration (VLSI) and establishing links between industrial companies. This lab provides basic and advanced facilities for coursework related experiments, project works and research facilities in the area of device modeling, simulation and various aspects of advanced VLSI design.

### **Description:**

The students completing this course are expected to understand the principles, design, and implementation of digital circuits using software such as XILINX and Mentor Graphics. The students are able to realize the modules using FPGA kits such as SPARTAN 2 and SPARTAN 6 boards along with CPLD Kits (Cool Runner 2). The lab is equipped with a high end computing systems, XILINX latest version. For implementation of circuits Xilinx and For FSM design and verification, Quartus Tools is available.

### **Current Equipment:**

The lab is equipped with the following workstations and test equipment:

The lab is equipped with a high end computing systems, latest version of Mentorgraphics tools (HEP-1, HEP-2) and 4 CPLG and FPGA kits.

The lab is having one white board, Projector, teacher table and Chairs, 3 ACs, 7 fans, 12 lights, 8 windows for good Air circulation and good lighting facility. There are 36 computers for doing experiments and each student is allotted a computersystem.

**Lab Investment:** Rs. 56,62,518/-

**Utilization:**

This lab is utilized for conducting the following courses:

19PC2EC08-VLSI Design Laboratory  
19PC2EC03-Digital System Design Laboratory

**Location and Hours:**

The VLSI Laboratory is located in room no: A-208  
Open Door Access: 9:00 AM - 6.30 PM  
Scheduled classes take priority.

Contact:

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## Python Programming Laboratory



### **Background:**

Python Programming Lab(PPL) is a general purpose, high-level programming language; other high- level languages you might have heard of C++, PHP, and Java. Virtually all modern programming languages make us of an Integrated Development Environment (IDE), which allows the creation, editing, testing, and saving of programs and modules. Many modern languages use both processes. They are first compiled into a lower-level language, called byte code, and then interpreted by a program called a virtual machine. Python uses both processes, but because of the way programmers interact with it.

### **Description:**

The laboratory provides software facilities Practical aspects are the key to understanding and conceptual visualization Of theoretical aspects covered in the books. Also, this course is designed to review the concepts of Data Structure using C, studied in previous semester and implement the various algorithms related to different data structures

### **Current Equipment:**

The lab is equipped with a highend computing systems installed with IDLE latest version. The lab is having one white board, Projector, teacher table and Chairs, 3 ACs, 5 fans, 9 lights, 8 windows for good Air

circulation and good lighting facility. There are 36 computers are available for executing programs. and each student is allotted a computer system.

**Lab investment:** RS. 35,22,870/-

**Utilization:**

This lab is utilized for conducting the following course(s):

- 19PC2IT02-Digital Signal Processing Laboratory

**Location and Hours:**

The PPL laboratory is located in room no: P-102/1

Open Door Access: 9:00 AM - 6.30 PM

Scheduled classes take priority

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## **Basic Simulation and IoT Laboratory**



### **Background:**

Basic Simulation lab is concerned with the representation of signals as a sequence of numbers and the operations carried out on the signals to extract specific information contained in them. The objective of the laboratory is to enable the students simulate and operate with digital signals and systems and apply the theory they have studied in SS and PTSP.

### **Description:**

This course is expected to understand the principles, characteristics of the different signals and systems. They are able to perform different operations like convolution, correlation etc... on them. Basic Operations on Matrices, Generation of various signals and sequences (Periodic and Aperiodic), such as unit Impulse step, Square, Saw tooth, Triangular, Sinusoidal, Ramp, Sinc., Operations on signals and sequences such as Addition, Multiplication, Scaling, Shifting, Folding, Computation of Energy and Average Power, Finding the Even and Odd parts of Signal / Sequence and Real and imaginary parts of Signal, Convolution between Signals and Sequences, Auto Correlation and Cross Correlation of Signals and Sequences, Verification of Linearity and Time Invariance Properties of a given Continuous / Discrete System, Computation of Unit sample, Unit step and sinusoidal responses of the given LTI system and verifying its Physical realizability and stability properties, Gibbs Phenomenon, Finding the Fourier Transform of a given signal and plotting its magnitude and phase spectrum, Waveform Synthesis using Laplace Transform, Locating the Zeros and Poles and Plotting the Pole-Zero maps in S plane and Z- Plane for the given transfer function, Generation of Gaussian noise (Real and Complex), Computation of its mean, M.S. Value and its Skew, Kurtosis and PSD, Probability Distribution Function, Sampling theorem Verification.

### **Current Equipment:**

The lab is equipped with 36 Lenovo advanced desktops with MATLAB latest version loaded in it. The lab is having one white board, teacher table and required number of chairs.

**Lab Investment:** Rs. 27,13,280/-

**Utilization:**

This lab is utilized for conducting the following courses:  
19PC2EC02-Basic Simulation Laboratory

**Location and Hours:**

The Basic Simulation Laboratory is located in room no: P-202  
Open Door Access: 9:00 AM – 6.30 PM  
Schedule  
d classes take priority.

**Contact:**

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sksbhani  
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# Computer Networks Laboratory



## **Framework:**

The lab provides the foundation of basic networking commands and networking. This lab aims at providing students with practical approach to network communication protocols, understand network layers, structure/format and role of each network layer, the knowledge about various error detection and correction mechanisms. Students are made familiar with network protocols and their intended use in various applications. The objective of this lab course is to get practical knowledge on working principles of various communication protocols. Analyze structure and formats of TCP/IP layer protocols using network tools such as Packet tracer and online network simulators. Implementing various network algorithms such as error control, routine and security related algorithms.

## **Description:**

Computer Networks Laboratory is a modern and well equipped laboratory with advanced development tools to meet current industry needs. Students are able to design and implement various network applications such as data transmission between client and server, file transfer, real-time multimedia transmission, understand the various routing protocols/algorithms and internet working as part of their curriculum. Guidance is provided to the students by a team of expert faculty and lab technicians. The labs are kept open after the college hours to enable the students to engage themselves in various projects in their leisure hours.

## **Equipment:**

The lab is equipped with 33Lenova/ HP advanced desktops with MATLAB latest version loaded in it. The lab is having one white board, teacher table and instructor table, required number of chairs. Each student is allotted with Separate Desktop.

**Lab investment:** Rs. 32,51,028/-

**Utilization:**

This lab is utilized for conducting the following course(s):

- Computer Networks Laboratory
- Signal Processing and Communication Applications Laboratory

**Location and Hours:**

The Computer Networks Laboratory is located in room no: A-209  
Open Door Access: 9:00 AM – 6.30 PM  
Scheduled classes take priority.

**Contact:**

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# Embedded Systems Laboratory



## **Background:**

Embedded Systems Laboratory is an advanced course offered within the context of our Post-Graduate course in M.Tech – Embedded System... Our vision is to set up Research facilities with lab infrastructure and manpower to create exposure and proficiency in Embedded system technology by providing training in all domains of embedded system.

## **Description:**

The curriculum was designed by experts chosen from researchers, industrialists and academicians, to meet the today's demands of the Industry as well as Research Groups Interfacing switch, buzzer, keypad, LCD, elevator, seven segment display, temperature sensor, stepper motor, memory card to the 8051 and ARM microcontrollers, creating time delay using timers, serial transmission and reception, interrupt handling and generation of PWM signal.

## **Current Equipment:**

- ARM7 LPC-2148 development boards,
- ARM 9 Kits, Keil Software,
- Lab VIEW Rio Evaluation Kit,
- TIVA Launch Pad,
- MSP 430G2553 Launch Pad,
- TIVAC Series Dev Kit,

- 8051 Microcontroller Dev Board,
- 3D Printer,
- DSP Processor with EVM along with required accessories,
- E Health sensor platform kit,
- XBEE Pro ZBSMT (ZigBee Development Kit),
- IC Trainer kits,
- DC Regulated Power Supply,
- Function Generators,
- Digital Storage Oscilloscope,
- Digital Video Development platform kit,
- PSOC First Touch kit

**Lab Investment:** Rs. 41,21,313/-

**Location and Hours:**

The Embedded systems Laboratory is located in room no: P-103  
Open Door Access: 9:00 AM – 6.30 PM  
Scheduled classes take priority.

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## VLSI Design Laboratory



### **Background:**

VLSI is an assembly of millions of transistors on a single chip that works flawlessly to realize miracles as varied multimedia, mobile communication etc. The VLSI design laboratory is established with the aim of conducting research in various aspects of the ever growing field of Very Large Scale Integration (VLSI) and establishing links between industrial companies. This lab provides basic and advanced facilities for PG coursework related experiments, M-Tech project works and research facilities in the area of device modeling, simulation and various aspects of advanced VLSI design.

### **Description:**

The lab also has a very rich wealth of state-of-art systems and tools for design and testing which includes Hardware Facilities, EDA tools, and Software's Complete VLSI Design flow for Analog Mixed Signal IC

Design and Synopsys Asia Pac University 3900-0 Product Frontend and 3900-1 Backend. While retaining the salient features of Microelectronics stream, this program includes new lecture and laboratory based courses specially designed to cater to the needs of the industry both in the core program and through electives. We are also offering short term courses designed to cater to the needs of industries from time to time.

### **Current Equipment:**

The lab is equipped with a high end computing systems,

- HP i7 3.2GHz, 1TB HDD, 8GB RAM, keyboard, HPScroll Mouse, 18" LCD Monitor.
- Spartan 3E FPGA Kit, Anvyl, Spartan 605
- Zync board 7000 EPP ZC 702
- XUP V5 FPGA KIT
- Atlys SPARTAN6 FPGA KIT
- ANALOG DISCOVERY KIT, VMOD cam & cable
- ZYNC VIDEO AND IMAGE KIT
- FPGA KIT (AITEK-7 FPGA KIT NEXYS 4DDR)
- ZED BOARD (ZYNC ZED DEVELOPMENT KIT)
- NEXYS 4DDR
- FPGA BOARDS

**Lab Investment:** Rs. 44,25,155 /-

### **Location and Hours:**

The VLSI Design Laboratory is located in room no: P-109

Open Door Access: 9:00 AM – 6.30 PM

Scheduled classes take priority.

Contact:

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## SILACON labLab



**Description:** RFID & WSN Applications Lab is a research lab is focuses on developing the applications in the area of wireless sensors networks and embedded systems. This lab is used to carry out project work and supports new experimental research work and UG and PG students' projects.

### Projects completed

- Automated Commando Training System
- Intelligent and Intuitive Signaling System for On-road Driver assistance
- Weapon Locking & Tracking System (WLTS).
- Virtual Assistant for Mobile Devices using Voice and Gesture Technologies.
- Cough and Wheeze analyzer for Respiratory Digital Health Services.
- Digital Health Advisory System for Chronic Respiratory Diseases.
- Design and development of prototype for secure weapon shooting information system.

**Location and Hours:**

Open Door Access: 9:00 AM - 6.30 PM

**Contact:**

V Naveen Kumar

Assistant Professor

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sksubhani

Skilled Assistant

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## Mobile Vision applications



**Description:** The Mobile Vision Applications Lab is a research lab focuses on artificial vision applied to mobile devices, considering both the case of smartphones and other personal devices equipped with camera. Which converge the natural development of our research in Computer Vision and recognition of forms with the application of such research to the development of applications on mobile devices like smartphones and embedded systems. This lab is used to carry out project work and supports new experimental research work and UG and PG students' projects.

## Projects completed

- FM Based Switch for Street Light Control
- Mobile Image Position and Performance Acquisition System
- Driver safety index using integrated computing system
- ROI Booster

### Location and Hours:

Open Door Access: 9:00 AM - 6.30 PM

### Contact:

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