# Lizard Habitat Monitoring System

# Project Overview

## Problem

Lizard habitat conditions such as temperature and humidity are often monitored manually and inconsistently. Small deviations from ideal ranges can negatively impact a lizard’s health, but these issues may go unnoticed until visible stress or behavior changes occur.

## Goal

The goal of this project is to develop an IoT-based system that continuously monitors a lizard’s enclosure and provides clear reports on environmental conditions and basic activity data.

## Why

- Reptiles are highly sensitive to environmental changes.
- Manual checks can miss gradual or temporary condition changes.
- Patterns over time are more informative than single readings.

This project focuses on **awareness and prevention**, not automated diagnosis or medical conclusions.

## System Concept

- Sensors collect temperature and humidity data inside the enclosure
- ESP32 processes and transmits data
- Camera or motion data provides basic activity insight
- Some interface that can relay information

## Metrics for Progress

Project progress will be evaluated using:

- Successful collection of temperature and humidity data
- Reliable data logging over time
- Clear visualization or reporting of habitat conditions
- Completion of sprint goals within the planned timeline

## Learning With AI

I hope to learn better using AI how to perform sensor data analysis.
AI will help explain data-processing concepts, review example code, and help debug logic errors while I verify results myself.

I will use AI to learn how to use sensors to gather accurate data to be processed.
AI will assist with understanding datasheets, wiring diagrams, and example sketches, which I will test and modify on my own hardware.

# Sprint 1

## Goals

- Interface temperature and humidity sensor with ESP32
- Collect and log basic environmental data
- Understand normal habitat condition ranges

## Activities

- Use AI tools to learn sensor libraries
- Prototype data collection code
- Review initial data patterns

# Sprint 2

## Goals

- Improve data reporting or visualization
- Integrate additional sensors or activity tracking
- Refine system reliability

## Activities

- Improve data presentation
- Analyze trends in habitat conditions
- Identify system limitations

## Conclusion

This project explores how IoT sensing combined with AI-assisted development can improve awareness of lizard habitat conditions and support better care through continuous monitoring and simple reporting.