Dr.SNS RAJALAKSHMI COLLEGE OF ARTS AND SCIENCE
(Autonomous)

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(Recognised by UGC, Approved by AICTE & Affiliated to Bharathiar University)
Coimbatore- 49

DEPARTMENT OF COMPUTER SCIENCE

(ARTIFICIAL INTELLIGENCE & ROBOTICS)

Introducing the robot and our development environment

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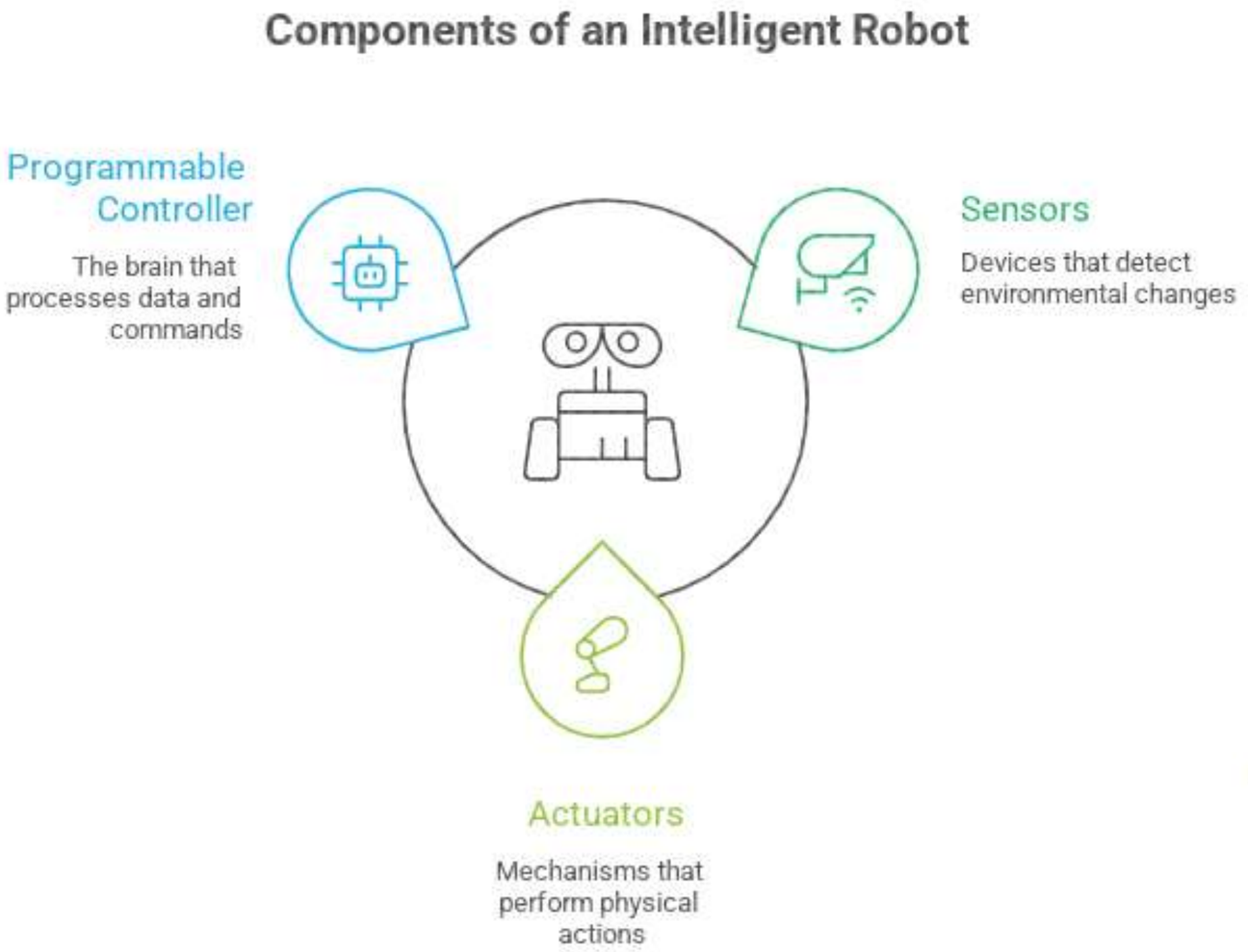
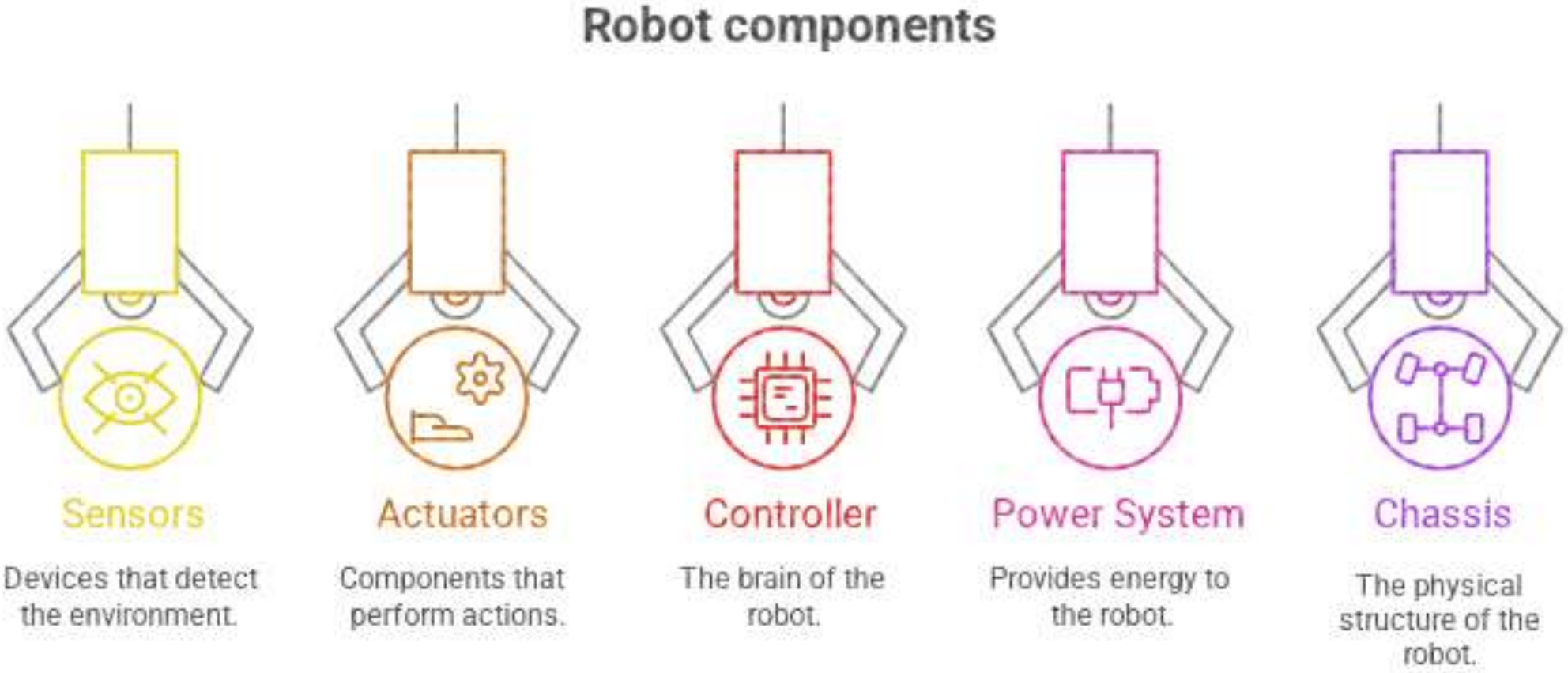
DT- Introducing the robot and our development environment

Stage	Meaning	Example (Robot & Development Environment)
Empathize	Understand what users need from the robot.	Need easy programming, reliable sensors, smooth navigation, simple testing.
Define	Identify the exact problem to solve.	"How can we build a robot that is easy to develop, test, and deploy?"
Ideate	Think of possible design and development solutions.	Choose sensors, select controller (Arduino/RPi), pick ROS, plan features.
Prototype	Build an initial robot setup and environment.	Basic robot model, simple code, simulator setup, ROS nodes.
Test	Check performance and refine the design.	Test movement, sensors, navigation, debugging, improve programming workflow.

Overview of the Robot



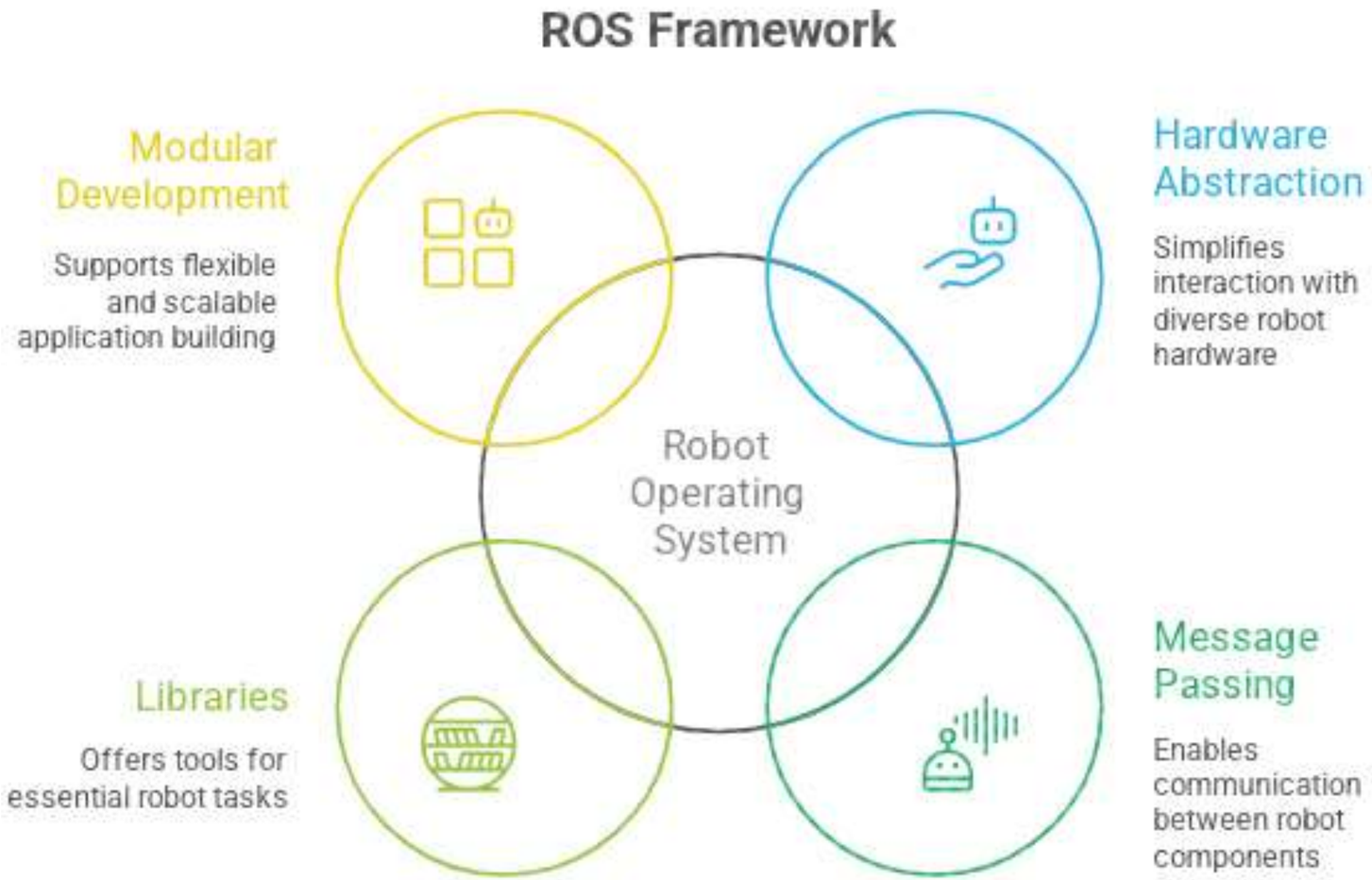
Robot Hardware Components



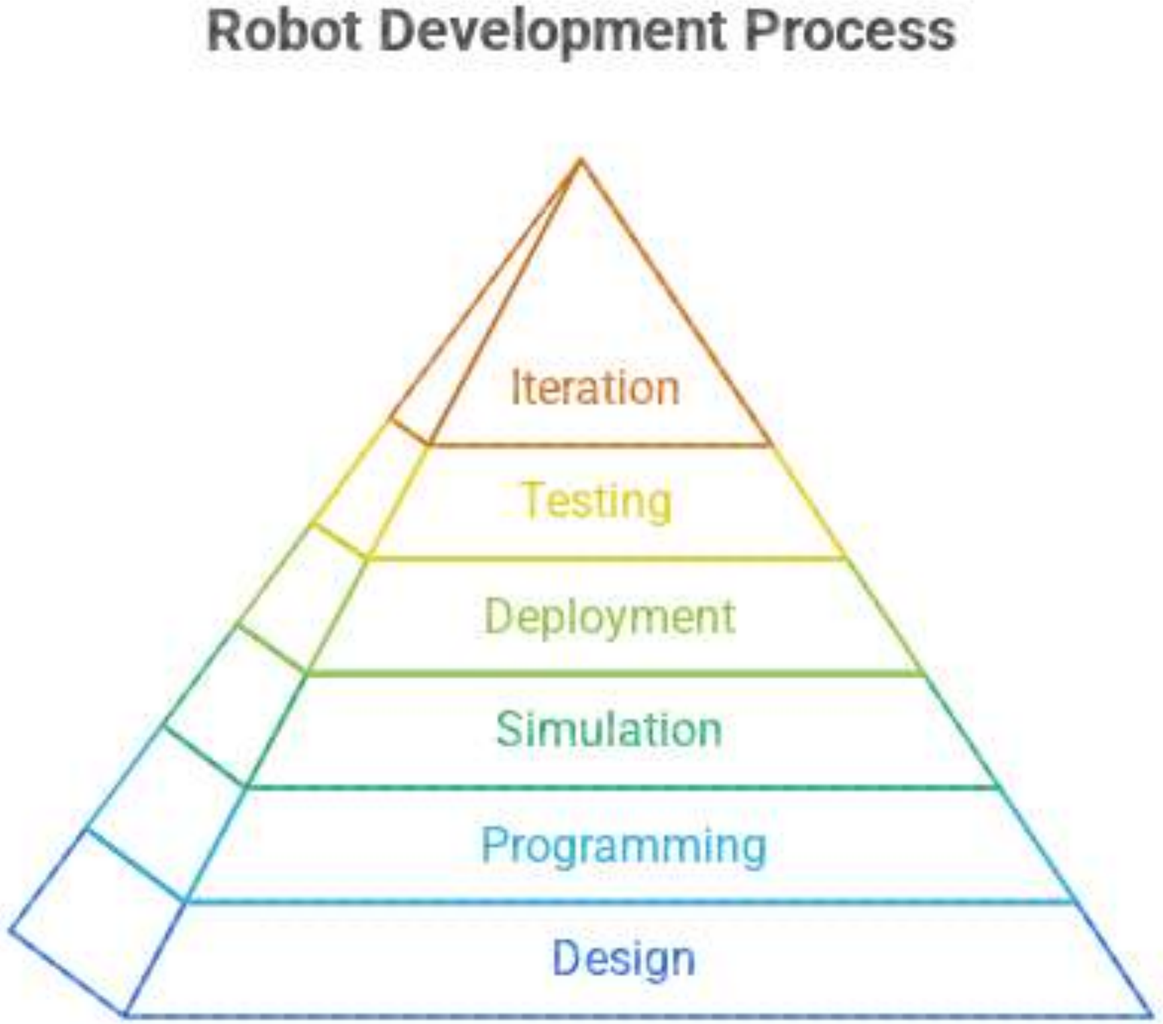
Software & Programming Environment

Components of Robotics Development Environment

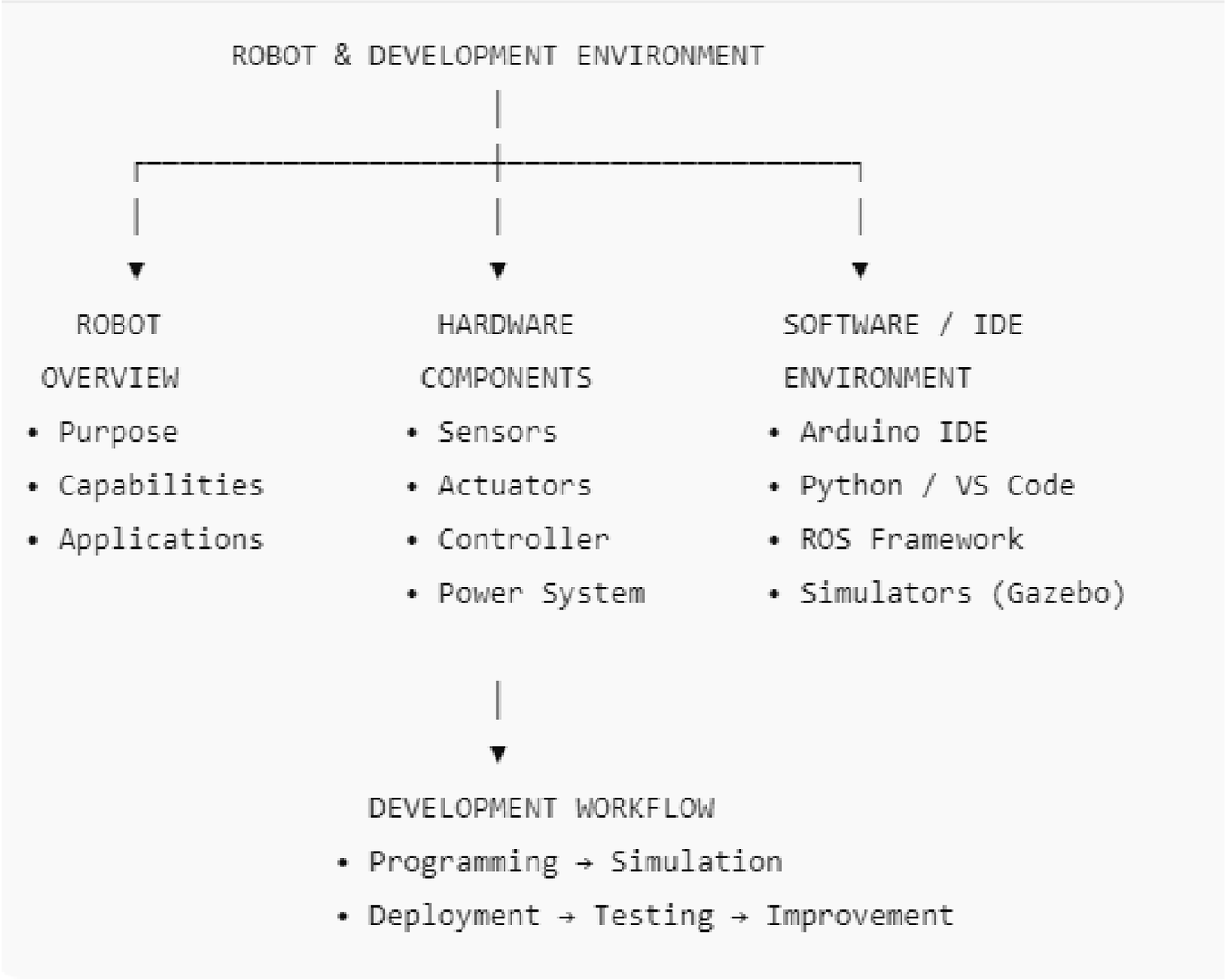
Robot Operating System (ROS)



Development Workflow



Mind Map


ROBOT & DEVELOPMENT ENVIRONMENT
ROBOT OVERVIEW
• Purpose
• Capabilities
• Applications
HARDWARE COMPONENTS
• Sensors
• Actuators
• Controller
• Power System
SOFTWARE / IDE ENVIRONMENT
• Arduino IDE
• Python / VS Code
• ROS Framework
• Simulators (Gazebo)
DEVELOPMENT WORKFLOW
• Programming → Simulation
• Deployment → Testing → Improvement

QUIZ

1. What is the main purpose of sensors in a robot?

A. To store power B. To collect information from the environment

B. C. To increase weight D. To decorate the robot

2. Which controller is commonly used in basic robots?

A. TV remote B. Arduino or Raspberry Pi C. Refrigerator chip D. Hard disk

3. What is ROS used for in robotics?

A. Watching movies B. Operating system for phones

B. C. Framework for building robot applications D. Battery charging

4. What is the purpose of using a simulator (like Gazebo)?

A. For robot coloring B. To test robot behavior virtually

C. To store music D. To increase brightness

5. Which step comes after writing the robot's code?

A. Deployment to robot B. Painting the robot

C. Removing sensors D. Stopping development

QUIZ

1. B. To collect information from the environment
2. B. Arduino or Raspberry Pi
3. C. Framework for building robot applications
4. B. To test robot behavior virtually
5. A. Deployment to robot

THANK YOU