**✅ WRO 2025 Future Innovators – Core Task List**

1**. IDEA GENERATION & PROBLEM DEFINITION**

* Brainstorm 5–10 **innovative ideas** related to this year's theme
* Shortlist top 2–3 ideas using criteria:
  + Is it **real-world relevant**?
  + Can it be **solved using robotics**?
  + Is it **technically doable** within 2–3 weeks?
* Finalize one idea
* Clearly define:
  + The **problem**
  + The **target user**
  + Your **proposed solution**

**🔹 2. HARDWARE PLANNING**

* List **components** needed.
* Preparing Circuit of Normal Vehicles.
* Preparing Circuit of Emergency Vehicles.
* Preparing Circuit of Signal Light.
* Preparing Laser Module.
* Preparing Circuit of The Main Robot.
* Make a **hardware connection diagram**
* Plan for **power supply/battery** needs
* Order or gather parts

**🔹 3. SOFTWARE PLANNING**

* Learn:
  + Sensor reading
  + Actuator control
  + Logic/decision-making
  + Communication (Bluetooth/WiFi if needed)
  + OpenCV
  + YoloV8
* Make:

Code for Vehicles (Normal And Emergency With Sound Proof Communication).

Code for Smart Signaling.

Code for Rule Violation Detection Using Lazer Module.

Code for Spike Rising if Rule Violation Is Detected.

Code for blocking the parked cars until paid through RFID.

Create **basic flowcharts** or pseudo-code

**🔹 4. Design**

* Design for Normal Vehicles.
* Design for Emergency Vehicles.
* Traffic Light Box Design.
* Design for Spike.
* Design For The Main Robot.

**🔹 4. Mechanics**

* Spike Rising.
* Blocking The Parked Vehicles Who Didn’t Pay.

**5. Documentation**

**🔹 4. PROTOTYPING & TESTING**

* Assemble a **basic working prototype**
* Program basic functionalities (e.g. move, sense, alert)
* Test each feature individually
* Combine into a full working system
* Iterate: Fix bugs, tune sensor thresholds, improve motor handling
* Log all test results and errors

**🔹 6. PRESENTATION MATERIALS**

* Write a **problem-solution explanation (short + long version)**
* Create **A1/A2 poster**:
  + Title
  + Problem & target audience
  + Innovation + tech used
  + Photos of testing/building
* Prepare 3–5 min **oral pitch**
* Prepare **demo flow**: what the robot will do during judging
* Make a short **video demo** (if needed for online)

**🔹 7. MOCK JUDGING & FINAL PREP**

* Run full **mock presentation + demo**
* Answer **judge-style questions**:
  + Why this idea?
  + What was hardest?
  + What would you do if you had more time?
  + What were the challenges faced?
  + How did u overcome those challenges?
  + What were some last minute changes?
* Final tweaks to:
  + Poster
  + Code
  + Robot wiring/build
* Pack:
  + Robot + charger
  + Backup hardware
  + Poster and documents
  + Tools for on-spot fixing