

## **Toy Robot – Offline Working Concept**

### **Objective**

To design a simple toy robot for children (up to 8 years old) that works without internet or external devices, and plays preloaded content (stories, rhymes, fun facts, animal sounds, etc.) stored on an SD card.

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### **Core Components**

1. **ESP32** – The main controller to manage files, buttons, and audio playback.
  2. **Micro SD Card Module + SD Card** – Storage for MP3 audio files (songs, poems, rhymes, fun facts).
  3. **5W Speaker + Amplifier** – Output for sound playback.
  4. **Physical Buttons** – For navigation and control. Example functions:
    - Play / Pause
    - Next / Previous
    - Volume Up / Volume Down
    - Category Selection (Songs, Stories, Animal Sounds, etc.)
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### **How It Works – Offline Mode**

1. **Preloaded Content**
    - Audio files (MP3) are copied into the SD card.
    - Content categories can be organized into folders (e.g., /Songs, /Stories, /Facts).
  2. **Button Control**
    - Child presses Play button → Robot starts playing the audio file.
    - Next / Previous buttons → Move between files or categories.
    - Volume buttons → Adjust loudness of the speaker.
    - Stop button → Immediately halts playback.
  3. **Simple Interaction**
    - No Wi-Fi, no Bluetooth, no app required.
    - Robot works as a standalone audio player for kids.
    - All controls are physical, making it easy for children.
  4. **Child-Friendly Features**
    - Preloaded content ensures kids can use it even without internet.
    - Safe content curation: only music, stories, and sounds that parents approve.
    - Large buttons with simple labels/icons for ease of use.
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### **Key Benefits**

- **Offline Independence** → Works without phone, Wi-Fi, or apps.
  - **Low Budget** → Uses only ESP32, speaker, SD card, and buttons (no extra MP3 modules like DFPlayer).
  - **Educational & Fun** → Plays rhymes, fun facts, animal sounds, etc.
  - **Durable & Simple** → Designed for children under 8 years old.
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#### Example Use Case

- A child presses the “Animal Sounds” button → Robot says “एक गाय कहती है” plays a cow sound.
- Next press → Robot says “शेर दहाड़ता है” Plays a lion roar.
- Another press → Robot says “पक्षी चहचहाते हैं” Plays a bird chirp.
- Switching to “Stories” lets the child listen to preloaded bedtime stories.