### **1. Set up the Nao robot and ensure all hardware is functioning (e.g., motors, sensors)**

**As a developer,**I want to set up the Nao robot and verify all hardware components,  
so that I can ensure the robot is fully operational before development.

**Acceptance Criteria:**

* The Nao robot is powered on and connected to the development environment.
* All motors, sensors, and joints are tested for proper functionality.
* Any faulty hardware is identified and reported for troubleshooting.

### **2. Develop basic movements for the Nao robot**

**As a developer,**I want to program basic movements for the Nao robot,  
so that it can perform foundational motions required for dancing.

**Acceptance Criteria:**

* The robot can execute simple motions such as standing, walking, and waving.
* A set of basic dance moves (e.g., swaying, arm movements) is implemented.
* The movements are smooth and balanced without hardware strain.

### **3. Test Robot Movement at Different Speeds**

**As a developer,**I want to test the Nao robot’s movement at different speeds,  
so that I can ensure it can adjust its motion according to the tempo of the music.

**Acceptance Criteria:**

* The robot can perform the same movement at slow, medium, and fast speeds.
* Movement transitions remain smooth and stable at varying speeds.
* The robot maintains balance and does not fall or strain its motors at high speeds.

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### **4. Set up audio input system to receive and process music files**

**As a developer,**I want to set up an audio input system for the Nao robot,  
so that it can receive and process music for analysis.

**Acceptance Criteria:**

* The robot can receive live audio input through its microphone.
* The system supports loading and processing external music files.
* Basic audio processing can be implemented to analyze the song

### **5. Create Simple Dance Move for Slow Music (e.g., Swaying)**

**As a developer,**  
I want to create a simple dance move for slow music,  
so that the Nao robot can gracefully move in sync with slow-tempo songs.

**Acceptance Criteria:**

* The robot can execute a smooth swaying motion from side to side.
* The movement duration and amplitude match slow-tempo music.
* The robot maintains balance and does not exhibit jerky or unnatural motions.