

Requirement Specification for Smart Fan

Functional Requirements

1. **Fan Speed Control**
 - The fan must support multiple speed levels that can be adjusted manually or remotely. This allows users to select the desired airflow based on their preferences.
2. **Temperature-Based Operation**
 - The fan should have sensors to detect room temperature and adjust speed automatically. This ensures optimal comfort and energy efficiency.
3. **Smart Connectivity**
 - The fan must connect to Wi-Fi or Bluetooth, enabling control via a smartphone app or voice commands through assistants like Alexa or Google Assistant.
4. **Timer Functionality**
 - A scheduling feature to turn the fan on or off at specified times, enhancing convenience and energy savings.
5. **Silent Mode**
 - The fan should offer a noise-reduction mode for quiet operation during sleep hours or in noise-sensitive environments.

Non-Functional Requirements

1. **Performance**
 - The fan should respond promptly to user commands, with a maximum delay of 2 seconds, ensuring a seamless user experience.
2. **Energy Efficiency**
 - Designed to minimize power consumption and meet energy efficiency standards, making it cost-effective for users.
3. **Usability**
 - The app and remote interface should be intuitive, with simple controls and clear labels, ensuring accessibility for all users.
4. **Reliability**
 - The fan should operate continuously without failure for extended periods, guaranteeing durability and reducing maintenance needs.
5. **Security**
 - Secure connections for app control via encrypted data transmission, protecting user data and preventing unauthorized access.