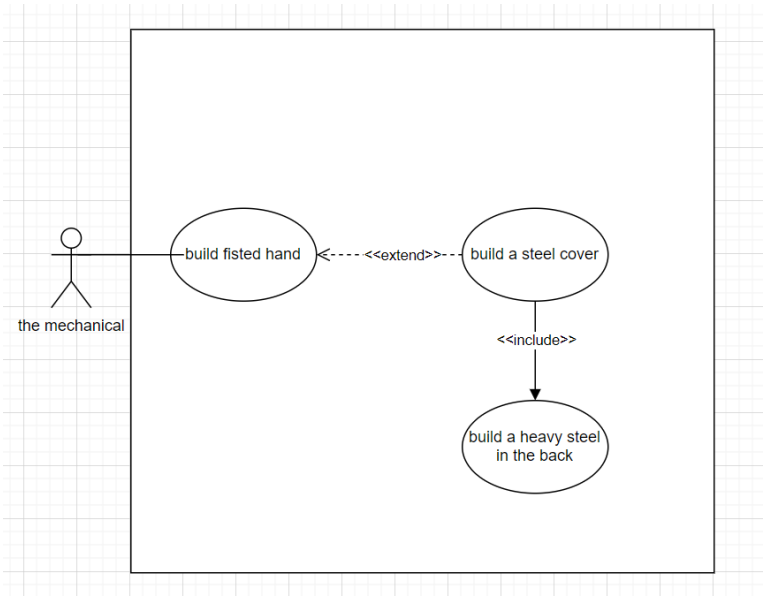
Mechanical :-

Functional:

- **The robot must have slightly fisted hand so that it can fit the dallah's grip.**
- **The robot’s arm must covered by a tough and heavy steel to be able to carry the dallah.**
- **The robot’s back must include a heavy steel to keep the robot in balance.**

Non-functional requirements:

- **The steel in the back of the robot, should weigh at least 80 pounds.**



use case diagram

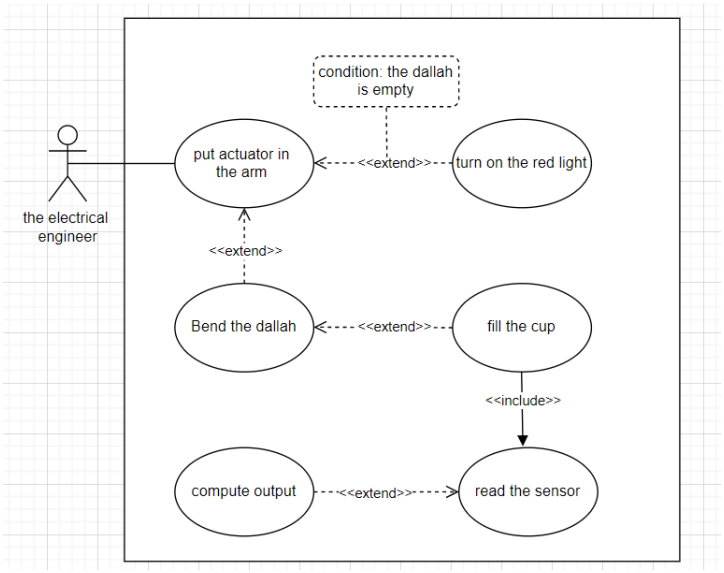
Electronical :-

Functional:

- **When the coffee is almost over, a small red light will appear in the robot's arm to inform the operator about the emptiness of the coffee, by putting actuator in the robot's arm.**
- **The dallah will bend until the cup receive the coffee and then start filling it by reading the sensor and then compute the actuator output.**
- **All the cups will have the same amount of coffee based on a predefined value.**

Non-functional requirement :-

- **The coffee should be filled until the top of the cup.**



use case diagram

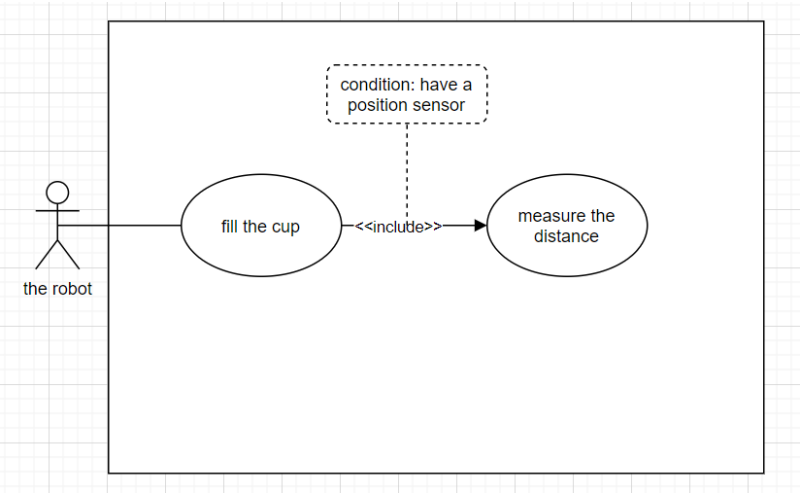
Artificial Intelligence :-

Functional:

- **After the robot fills the cup of coffee; it must measure the distance between itself and the object in front of it by having a position sensor, in order to avoid any collision or spilling of coffee.**

Non-functional:

- **The position sensor should keep 2 meters distance away from any object in front of it.**
- **Temperature sensor must be included inside the 'Dallah' to inform the operator whenever the temperature is less than 100 degrees fahrenheit.**
- **The robot shouldn't ask a child if they want a coffee, by measuring their height.**



use case diagram

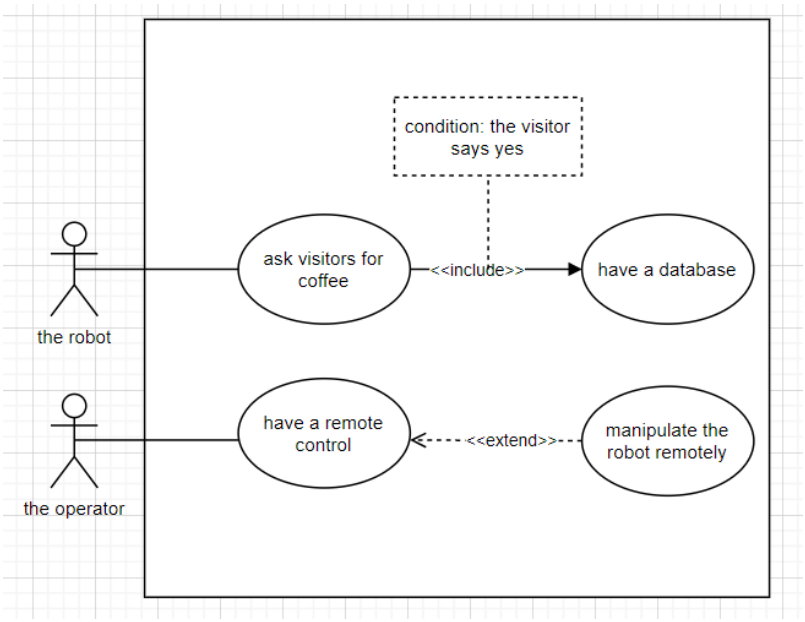
Internet of things :-

Functional requirements:

- **The robot must ask the visitors if they would like to drink a coffee before pour for them by feed it of a database with many related words.**
- **The operator will have a remote control that allow him to manipulate the robot remotely in any cases would happen in the environment.**

Non-functional requirements:

- **The robot should pour the coffee after 2 second of their replying of 'yes'.**



use case diagram