Review:

The design of a robot reflects the purpose of the robot.

Some elements in Robot Design are:

1. The type of locomotion
2. Style of end-effectors (hands)
3. Appearance

Locomotion:

- Wheels – fast, cheap, energy efficient but limited by terrain
- Tracks – better than wheels on bumpy or soft terrain, but not as good as legs
- Legs – great for rough terrain but slow and inefficient
- Flying – ignores terrain and fast, but limits the weight the robot can carry
- Stationary – lets the work come to the robot which may limit application outside

End-effectors (hands):

- Tools – customized tools to perform task quickly and efficiently
- Simple gripper – can grab most objects but lacks fine dexterity
- Human-like hands – can interact with humans easier and use human centric tools
- Suction cups/bag-like grippers – can pick up fragile items safely

Appearance:

- Human-like is useful for tasks that require interaction with people or operating in the vicinity of humans
- Awkward looking robots are acceptable in industrial and manufacturing environments

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For these questions, think about what kind of design decisions would need to be made for a particular task. For example, a robot operating in Antarctica may have tracks to drive over the snow, while a robot used in your house would need an end-effector capable of opening doors.

Create **two different tasks** for a robot to solve.

	Choose a task for your robot: Examples (don't use these): collecting strawberries, excavating earth for basement, mowing lawn	**Choose your design elements**: * Locomotion * End-effectors * Appearance	**Explain** how those design elements help the robot to perform its job.
Task 1	A robot will carry groceries from the car into the kitchen.	* Legs * Hooks * Coat rack with arms	This robot will need legs in order to walk up the steps that lead to the kitchen. The hooks are needed to snag the plastic grocery bags and place the bags "carry hooks" located on the robot's body. The visual appearance is for the robot to be functional and utilitarian.
Task 2	A robot will open cans, bottles, and other containers in the kitchen.	* Stationary on Countertop * one human hand, one 1/4" collet for accessory tools * Blend in with kitchen by using rectangular shape	This robot will not move from the kitchen so it can save the cost and be stationary. There is a higher level of dexterity needed so a human hand and a "tool" end effector will be needed. The idea is for the robot to look like it is a part of the kitchen and does not visually stick out.

Explain why the two tasks result in different design elements and different robots.

The first task needs a robot with mobility and a low level of dexterity in the end effector. The second task needs a robot with limited mobility and a high level of dexterity.

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