Creating Algorithms: Identify, Sort & Categorize Objects

An algorithm is a repeatable process that delivers an expected result. One way to use an algorithm is to categorize relationships and characteristics of objects in order to identify them. In the example below, a student collected plants at a park over a year. They created an algorithm to help others identify plants they find in the same area by considering what they look like and when and where they were collected.

1 Part 1: Identify Characteristics

Collect the object you want to identify. What do you know about them? Create a data table, list, or chart to help you and similarities and differences.

Checker-bloom
Pink with dark green leaves
Grows March-May
Found in grasslands

California Poppy
Orange
Grows March-November
Found in grasslands

Crimson Columbine
Red with yellow center
Grows March-May
Found in rocky north facing slopes

Western Hound's Tongue
Blue with a white center
Grows January-March
Found in rocky north facing slopes

Blue Eyed Grass
Violet with a yellow center
Grows March-May
Found in grasslands

Bush Moneyflower
Orange
Grows March-November
Found in scrub

Wild Buckwheat
Pink
Grows June-November
Found in rocky north facing slopes

How would you help someone filter through all of the objects to identify a single one?

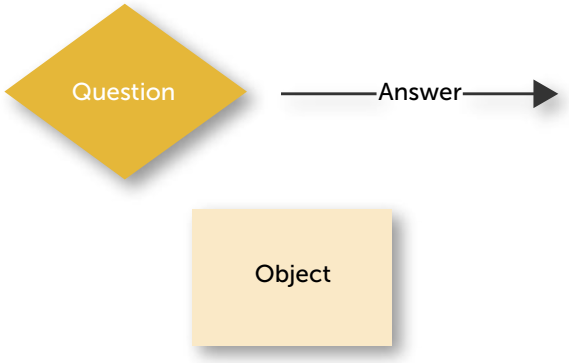
Use the following steps to get started:

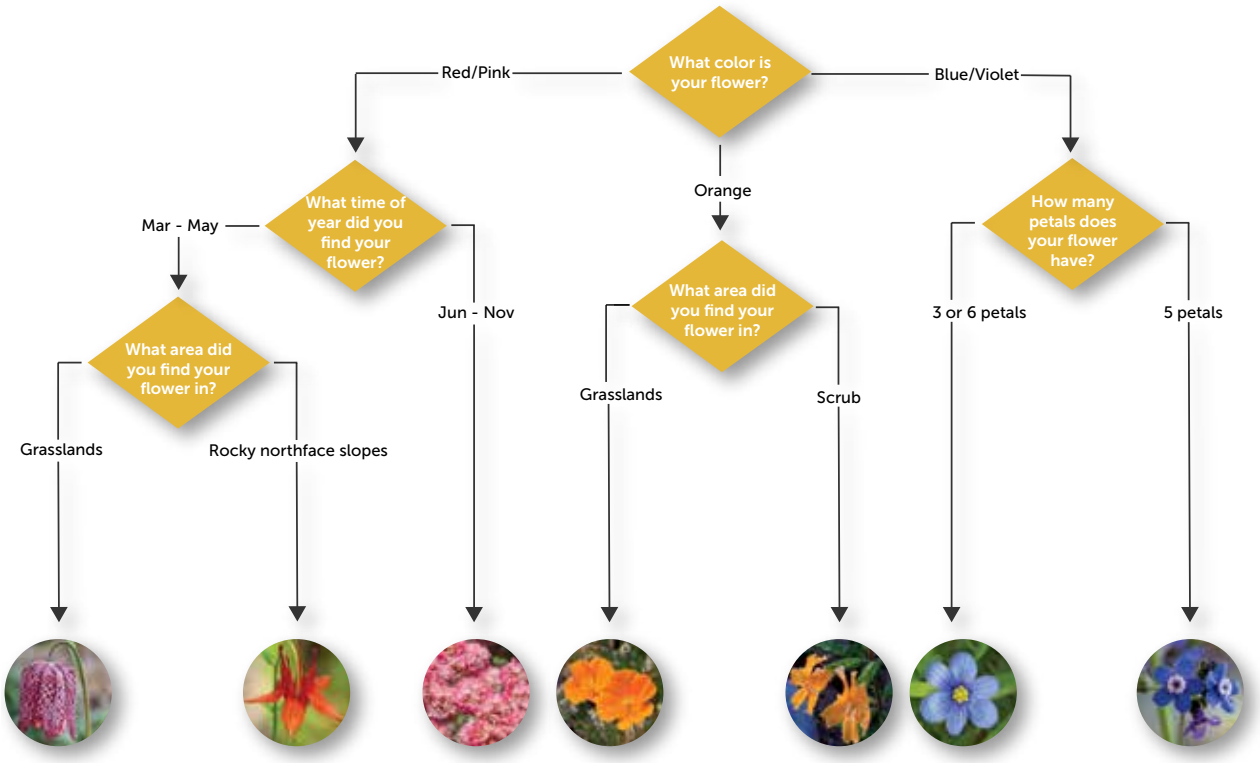
1. Identify a single characteristic that sorts all of the objects into categories of approximately equal size.
2. In each category, identify an another characteristic that sorts the objects into additional subgroups.
3. Repeat until each object is in a single category.

List the characteristics you used to sort each group below.

2 Part 2: Develop Your Algorithm

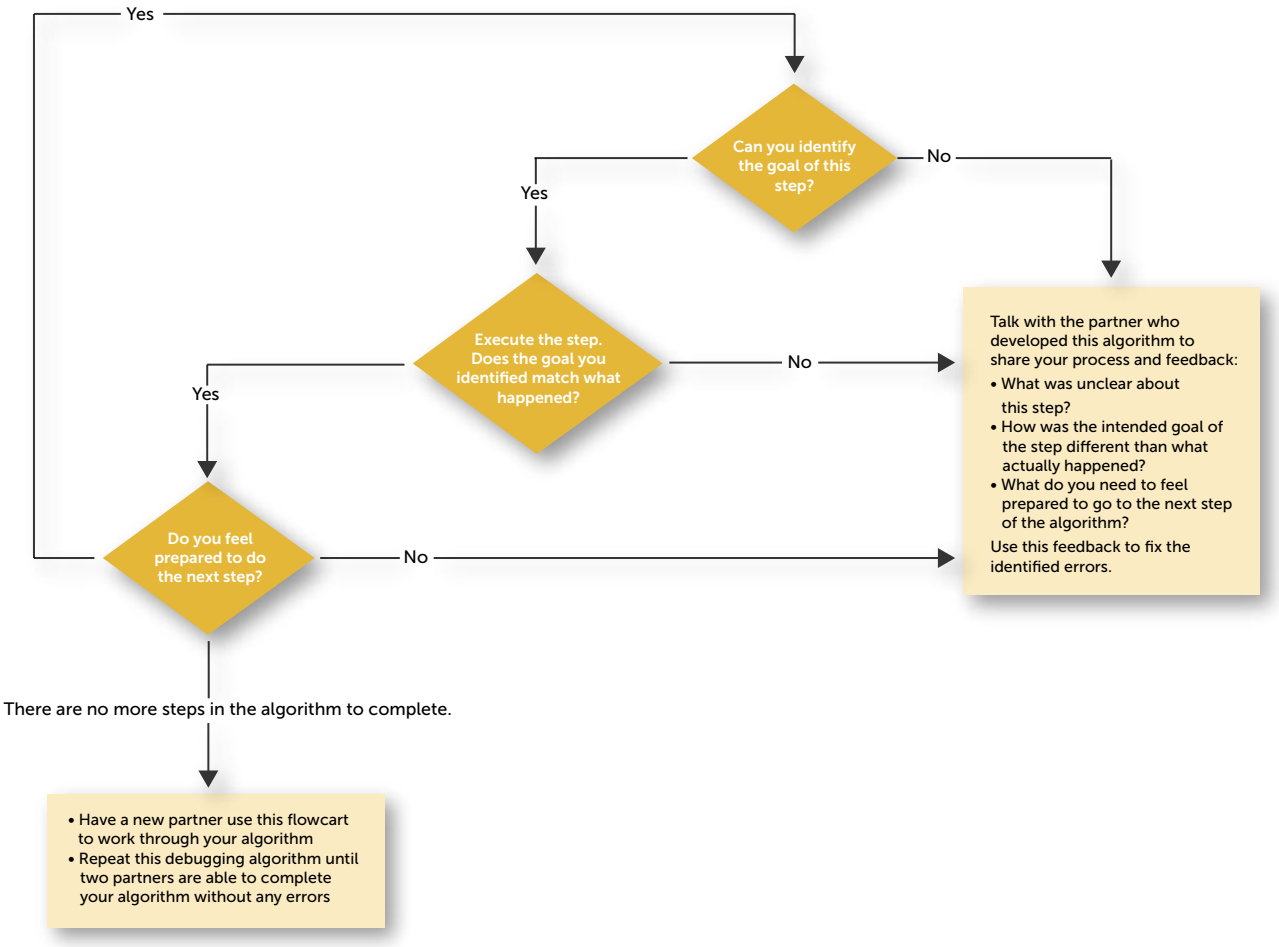
Create an algorithm to help someone filter through all of the objects to identify a single one. Use the key below to use the same shapes as the example in your algorithm and create new shapes to show other types of steps. You can also create your own shapes to draft your algorithm on a computer using a tool such as LucidChart, Smartdraw, or Draw.io.





3 Part 3: Pair Debugging Algorithm

While completing your algorithm, work with a partner to debug -- which is to find and fix errors -- and improve it:



References:

Wild Flowers of Golden Gate
California Plant Finder
Calscape