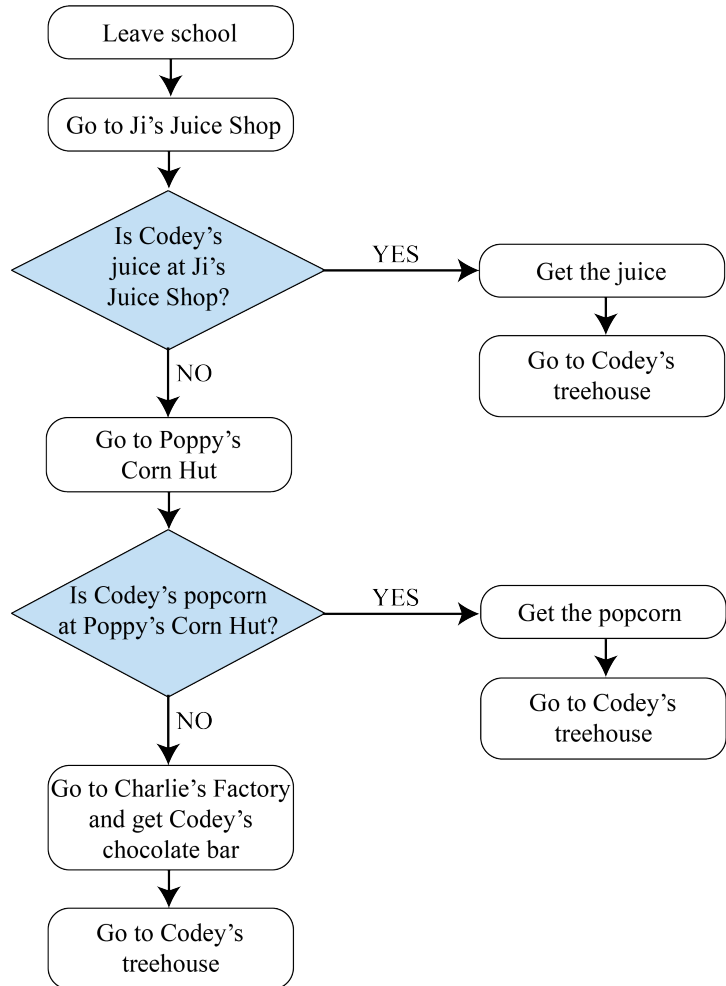# Problem of the Week
Problem B and Solution
Go With the Flow

Problem

Codey has asked three friends to pick up some food on their way from school to his treehouse. At three different stores he has paid for and set aside one item, and he has given his friends instructions to pick these items up using the following flow chart.

```
                          Leave school
                               │
                               ▼
                       Go to Ji's Juice Shop
                               │
                               ▼
                        Is Codey's           YES
                        juice at Ji's  ──────────────►  Get the juice
                        Juice Shop?                           │
                               │                              ▼
                              NO                        Go to Codey's
                               │                          treehouse
                               ▼
                        Go to Poppy's
                          Corn Hut
                               │
                               ▼
                     Is Codey's popcorn      YES
                     at Poppy's Corn Hut? ──────────────►  Get the popcorn
                               │                               │
                              NO                               ▼
                               │                        Go to Codey's
                               ▼                          treehouse
                     Go to Charlie's Factory
                      and get Codey's
                        chocolate bar
                               │
                               ▼
                        Go to Codey's
                          treehouse
```

(a) Raj leaves school first, then Bharti, then Kylie. If they each take the same route and walk at the same speed, which item will each friend bring to Codey's treehouse?

(b) How could you modify the flow chart so that each friend has to go to only one store?

Solution

(a) Since Raj leaves school first, he will arrive at Ji's Juice Shop first so will pick up the juice. Bharti leaves school next, so she will first go to Ji's Juice shop, but since the juice was already picked up, Bharti will then go to Poppy's Corn Hut and pick up the popcorn. Kylie leaves school last so she will first go to Ji's Juice Shop. Since the juice was already picked up, she will then go to Poppy's Corn Hut. Since the popcorn was already picked up, she will then go to Charlie's Factory and pick up the chocolate bar.

So, Raj will bring the juice, Bharti will bring the popcorn, and Kylie will bring the chocolate bar to Codey's treehouse.

(b) To modify the flow chart, we could assign each friend to a particular item. There are many ways to do this, but one way is shown in the flow chart below.