CSI 318
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Problem Set 2

In this problem set you will develop an iOS app that simulates The Missionaries and Cannibals problem. The Missionaries and Cannibals problem is a toy problem sometimes used for illustrating computer science search techniques.

Three missionaries and three cannibals are on the West bank of a river that they need to cross. They have a canoe. The canoe can cross with one or two passengers at a time. However, if more cannibals than missionaries are ever on one bank then the cannibals will eat the missionaries. What are the steps (in terms of crossings) that need to take place for all of the cannibals and all of the missionaries to make it to the East bank of the river?

Utilize the following steps to complete your app:
1. Create a new iOS project in Xcode using the Single View App template.
2. Add images for missionaries, cannibals, the canoe, and the river to your Xcode project's Assets.xcassets file.
3. Add a UIImage View in the middle of your view for the river. Add a UIImageView on each side of the river to hold the canoe when it's on either side of the river.
4. Use UIButtons on both sides of the river (6 on each) to fill with cannibals and missionaries.
5. When buttons holding cannibals or missionaries are clicked, they should be selected for crossing. Somehow show the individuals that are selected. Your app should not allow more than two passengers in the canoe (as per the problem description above).
6. Add a "cross" button that moves the canoe from its current bank to the opposite bank and relocates its passengers to the other bank. There must be one or two passengers for the canoe to cross.
7. Check if the user has "won" if all persons are now on the East bank. Also check if the user has "lost" if more cannibals than missionaries are on either bank. In either scenario, display a popup or message in a UILabel.
8. Add a reset button to your app.
9. Add a UILabel counter for the number of crossings performed thus far (until reset is hit).

How many crossings does it take you to solve the problem?
TIP: Don't be surprised if you need many IBOutlet and IBActions to write this app…