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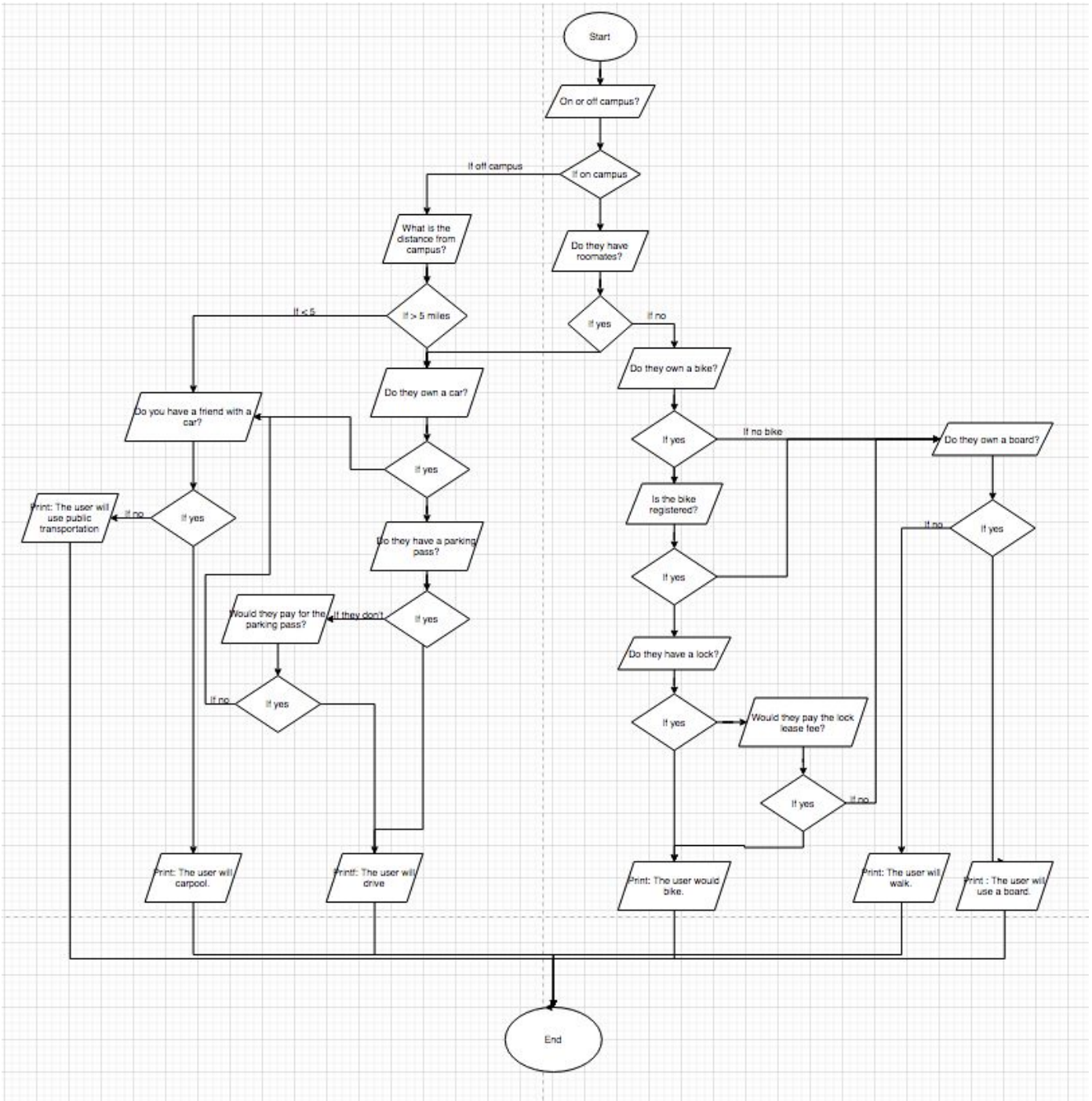
Modeling Problem - Pseudo Code (individual)

Flowchart:



Algorithm:

```
%input if student is on or off campus
%if studentCampus == yes
      %input for if they have roomates
      %if they do have roomates
            %input if they own a bike
            %if they do own a bike
                  %input if the bike is registered
                  %if the bike is registered
                        %input if they have a bike lock
                        %if they don't have a bike lock
                              %input if they want to buy a bike lock
                                    %if they do
                                          %print: the user will bike
                                    %else (they do not)
                                          %input if they will rent one
                                          %if they don't
                                                %input if they have board
                                                      %if yes
                                                            %print: they will
use board
                                                            %else
                                                                  %print: they
will walk
                                          %else (they do not want to rent one)
                                                %input if they have a board
                                                %if they don't have a board
                                                      %print: they will walk
                                                %else (they do have board)
                                                      %print: they will user
board
                              %else (do not want bike lock
                                    %input if they have a board
                                          %if they do
                                                %print: the user will board
                                          %else
                                                %print: the user will walk
                  %else (bike is not registered)
                        %input if they have a board
                        %if they do
                              %print: the user will board
                        %else (they do not have board)
                              %print: the user will walk

            %else (they do not own bike)
                  %input if they have a board
                        %if yes
                              %print: the user will board
```

```
                        %else (no board)
                              %print: the user will walk
      %else (don't have roomates)
            %input if they have a car
            %if they do have a car
                  %input if it is registered
                  %if yes
                        %print: the user will drive
                  %else (not registered)
                        %input if they have a parking pass or want to buy one
                              %if they do
                                    %print: the user will drive

            %else (they do not own bike)
                  %input if they have a board
%else (do not live on campus)
      %input how far they are from campus
      %if the distance is > 5 miles
            %input if they have a friend with a car
            %if they do have a friend with a car
                  %Print: The user will carpool to campus
            %else (they do not have a friend with car)
                  %Print: The user will use public transpo.
      %else (distance <= 5 miles)
            %Input if they own a car
            %if they do own a car
                  %Input if they have a parking pass
                  %if they do not
                        %Input if they do want a parking pass
                        %If they do not want one
                              %Input do if they have a friend with car
                              %if yes
                                    %Print: The user will carpool
                              %else (they do not)
                                    %input if they have a bike
                                          %if they do
                                                %print: user will bike
                                          %else (no bike)
                                                %print: user will walk
                        %else (they do want parking pass)
                              %Print: The user will drive
                  %else (they already have parking pass)
                        %Print: The user will drive
            %else (they do not own a car)
                  %Input if they have a friend with a car
                  %if they do have a friend with a car
                        %Print: The user will carpool
```

Predictions based on my new algorithm:

1. Walk (correct)
2. Walk (correct)
3. Walk (correct)
4. Walk (correct)
5. Board (wrong)
6. Board (correct)
7. Board (correct)
8. Board (wrong)
9. Board (correct)
10. Board (correct)
11. Bike (correct)
12. Bike (incorrect)
13. Bike (correct)
14. Drive (incorrect)
15. Drive (incorrect)
16. Drive (correct)
17. Drive (incorrect)
18. Drive (correct)
19. Drive (correct)
20. Drive (correct)
21. Drive (correct)
22. Drive (incorrect)
23. Drive (correct)
24. Drive (correct)
25. Drive (correct)

Results from my algorithm's predictions:

Based on the predictions of my algorithm, of the 13 students on campus, 10 were correctly predicted which means that my algorithm is correct 77% of the time. For the 11 off campus students, 8 were correctly guessed which means that my algorithm is correct 73% of the time. My algorithm was incorrect when the students were in the range, had a car, but chose to use their bike to get to campus. I believe I can fix this by adding a question between the if statement for their distance from campus and if they have a car or not.