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% 2017 Sprint EE 380
% Project 1
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% This function simulates a pokerhand. specifically, four of a kind
function fourOfAKind

% To model a deck of cards, we use a MATLAB array
deck =
 {'AH'; '2H'; '3H'; '4H'; '5H'; '6H'; '7H'; '8H'; '9H'; '10H'; 'JH'; 'QH'; 'KH'; .

  'AS'; '2S'; '3S'; '4S'; '5S'; '6S'; '7S'; '8S'; '9S'; '10S'; 'JS'; 'QS'; 'KS'; .

  'AD'; '2D'; '3D'; '4D'; '5D'; '6D'; '7D'; '8D'; '9D'; '10D'; 'JD'; 'QD'; 'KD'; .

  'AC'; '2C'; '3C'; '4C'; '5C'; '6C'; '7C'; '8C'; '9C'; '10C'; 'JC'; 'QC'; 'KC'};

% The number of trials to run
prompt = 'How many trials would you like to run?\n';
trials = input(prompt);

% The accumulator variable records the number of four of a kind hands
k = 0;

% Use a loop to obtain multiple hands
for i = 1:trials

    % Get an array of random indexes of our cards
    index = randperm(52);

    % Get a hand of cards
    % http://stackoverflow.com/questions/13603713/how-to-select-
random-samples-from-a-dataset-in-matlab
    hand = deck(index(1:5), :);

    % Sort our hand
    sortedHand = sort(hand);
    % disp('sortedHand = ')
    % disp(sortedHand)

    % Using String Compare to find if two values in the hand match
    if (strcmp(sortedHand{1}(1:1), sortedHand{4}(1:1)) == 1 ||
 strcmp(sortedHand{2}(1:1), sortedHand{5}(1:1)) == 1)
        k = k + 1;
    end
end

disp('Number of four of a kind: ')
disp(k)

disp('Number of trials')
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disp(trials)

probability = k / trials * 100;
fprintf('The probability of a four of a kind hand using this
 simulation is: %d %%\n', probability)
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Error using input
Cannot call INPUT from EVALC.

Error in fourOfAKind (line 17)
trials = input(prompt);
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