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```
classdef TwoPlayerGamemode_exported < matlab.apps.AppBase

    % Properties that correspond to app components
    properties (Access = public)
        UIFigure              matlab.ui.Figure
        Image                 matlab.ui.control.Image
        cardDeck1Image        matlab.ui.control.Image
        HandImage1            matlab.ui.control.Image
        HandImage2            matlab.ui.control.Image
        HandImage3            matlab.ui.control.Image
        HandImage4            matlab.ui.control.Image
        HandImage5            matlab.ui.control.Image
        StartButton           matlab.ui.control.Button
        Hit1Button            matlab.ui.control.Button
        StandButton           matlab.ui.control.Button
        CompHandImage1        matlab.ui.control.Image
        CompHandImage2        matlab.ui.control.Image
        CompHandImage3        matlab.ui.control.Image
        CompHandImage4        matlab.ui.control.Image
        CompHandImage5        matlab.ui.control.Image
        HandDisplayLabel      matlab.ui.control.Label
        CompHandDisplayLabel  matlab.ui.control.Label
        BalanceLabel          matlab.ui.control.Label
        cardDeck2Image        matlab.ui.control.Image
        cardDeck3Image        matlab.ui.control.Image
        Hit2Button            matlab.ui.control.Button
        Hit3Button            matlab.ui.control.Button
        BetEditFieldLabel     matlab.ui.control.Label
        BetEditField          matlab.ui.control.NumericEditField
    end


    properties (Access = private)
        % properties used to store values and objects within app

        % cardDeckMemory = object with class deck
        % Human = object with class player
        % Dealer = object with class player
        % Balance = stored double value
        % Wager = stored double value
        cardDeck1Memory
        cardDeck2Memory
```

```
        cardDeck3Memory
        Human
        Dealer
        Balance
        TempBalance
        Bet

    end


    % Callbacks that handle component events
    methods (Access = private)

        % Code that executes after component creation
        function startupFcn(app)
            % startup is when player clicks play

            % giving cardDecks a placeholder
            cardDeck1 = [];
            cardDeck2 = [];
            cardDeck3 = [];

            % setting akk DeckImages to cardback.jpg
            app.cardDeck1Image.ImageSource = imread('cardback.jpg');
            app.cardDeck2Image.ImageSource = imread('cardback.jpg');
            app.cardDeck3Image.ImageSource = imread('cardback.jpg');

            app.HandImage1.Visible = 'off';
            app.HandImage2.Visible = 'off';
            app.HandImage3.Visible = 'off';
            app.HandImage4.Visible = 'off';
            app.HandImage5.Visible = 'off';
            app.CompHandImage1.Visible = 'off';
            app.CompHandImage2.Visible = 'off';
            app.CompHandImage3.Visible = 'off';
            app.CompHandImage4.Visible = 'off';
            app.CompHandImage5.Visible = 'off';

            % setting decks as a global variable
            % setting deckDraw as a global variable
            % assigning deckDraw value of 3
            global decks
            global cardDecks
            global deckDraw
            global jokers
            deckDraw = 3;

            % hide cardDecks not being used

            switch cardDecks
                case 1
                    app.cardDeck2Image.Visible = 'off';
                    app.cardDeck3Image.Visible = 'off';
                case 2
```

```
                    app.cardDeck3Image.Visible = 'off';
                otherwise
                    app.cardDeck1Image.Visible = 'on';
                    app.cardDeck2Image.Visible = 'on';
                    app.cardDeck3Image.Visible = 'on';
            end

            % assigning objects cardDecks with class deck and amount
of decks
            % depends on how many cardDecks intially set in
gameSettings
            switch cardDecks

                case 1
                    cardDeck1 = deck(decks,jokers);
                case 2
                    cardDeck1 = deck(decks,jokers);
                    cardDeck2 = deck(decks,jokers);
                case 3
                    cardDeck1 = deck(decks,jokers);
                    cardDeck2 = deck(decks,jokers);
                    cardDeck3 = deck(decks,jokers);
            end


            % shuffling the amount of decks we put in per cardDeck
            switch cardDecks
                case 1
                     cardDeck1.shuffleDeck;
                case 2
                     cardDeck1.shuffleDeck;
                     cardDeck2.shuffleDeck;
                case 3
                     cardDeck1.shuffleDeck;
                     cardDeck2.shuffleDeck;
                     cardDeck3.shuffleDeck;
            end

            % setting displays as string(sum of hands)
            app.HandDisplayLabel.Text = "Your Hand: " + "0";
            app.CompHandDisplayLabel.Text = "Dealer's Hand";

            % assigning app.Balance to 5000
            % assigning app.Bet to 0
            % setting displays with respected values
            % hide BetEditField until you click start
            app.Balance = 5000;
            app.TempBalance = app.Balance;
            app.BalanceLabel.Text = "Balance: " + string(app.Balance);
            app.Bet = 0;
            app.BetEditField.Value = app.Bet;
            app.BetEditField.Visible = 'on';
```

```
            % hide all buttons besides start
            app.StandButton.Visible = 'off';
            app.Hit1Button.Visible = 'off';
            app.Hit2Button.Visible = 'off';
            app.Hit3Button.Visible = 'off';

            % storing objects cardDeck within the app
            app.cardDeck1Memory = cardDeck1;
            app.cardDeck2Memory = cardDeck2;
            app.cardDeck3Memory = cardDeck3;

        end

        % Button pushed function: StartButton
        function StartButtonPushed(app, event)
            % assigning the Dealer and Human their hands to start the
round
            [y, Fs] = audioread('flip.mp3');
            sound(y,Fs);
            app.CompHandDisplayLabel.Text = "Dealer's Hand";
            % make sure player bets before round starts
            if app.BetEditField.Value==0
                msgbox('please enter a valid bet','you cheapskate!')
                return
            end

            % lower tempBalance by the input of BetEditField
            % display TempBalance
            % after everything is done, set BetEditField to 0
            app.Bet = app.BetEditField.Value;
            app.TempBalance = app.TempBalance - app.Bet;
            app.BalanceLabel.Text = "Balance: " +
string(app.TempBalance);
            app.BetEditField.Value = 0;

            % setting cardDecks to be a global variable
            global cardDecks
            app.StandButton.Visible = 'on';
            % assigning local objects cardDeck with the stored app
value
            cardDeck1 = app.cardDeck1Memory;
            cardDeck2 = app.cardDeck2Memory;
            cardDeck3 = app.cardDeck3Memory;

            app.HandImage1.Visible = 'off';
            app.HandImage2.Visible = 'off';
            app.HandImage3.Visible = 'off';
            app.HandImage4.Visible = 'off';
            app.HandImage5.Visible = 'off';
            app.CompHandImage1.Visible = 'off';
            app.CompHandImage2.Visible = 'off';
            app.CompHandImage3.Visible = 'off';
            app.CompHandImage4.Visible = 'off';
            app.CompHandImage5.Visible = 'off';
```

```
            app.cardDeck1Image.ImageSource = imread('cardback.jpg');
            app.cardDeck2Image.ImageSource = imread('cardback.jpg');
            app.cardDeck3Image.ImageSource = imread('cardback.jpg');


            % clearing table of cards from previous round
            % depends on how many cardDecks intially set in
gameSettings
            switch cardDecks
                case 1
                    cardDeck1.clearTable;
                case 2
                    cardDeck1.clearTable;
                    cardDeck2.clearTable;
                case 3
                     cardDeck1.clearTable;
                cardDeck2.clearTable;
                cardDeck3.clearTable;
            end


            % if respected carddeck is less then 2
            % reshuffle discard pile into deck
            % logical will equal an array of zeros unless < 2 cards
left
            % if .cards < 2 then an element would = 1
            % if an element equals 1 then reshuffleDiscard will run
            % depends on how many cardDecks intially set in
gameSettings
            switch cardDecks
                case 1 % if cardDecks = 1 only run for cardDeck1
                    logical =  ( size(cardDeck1.cards) < 2 );
                    if sum(logical) == 2
                        cardDeck1.reshuffleDiscard
                    end

                case 2 % if cardDecks = 2 run for cardDeck 1 and 2
                    logical =  ( size(cardDeck1.cards) < 2 );
                    if sum(logical) == 2
                        cardDeck1.reshuffleDiscard
                    end
                    logical =  ( size(cardDeck2.cards) < 2 );
                    if sum(logical) == 2
                        cardDeck2.reshuffleDiscard
                    end

                case 3 % if cardDecks = 3 run for cardDeck 1,2, and 3
                    logical =  ( size(cardDeck1.cards) < 2 );
                    if sum(logical) == 2
                        cardDeck1.reshuffleDiscard
                    end
                    logical =  ( size(cardDeck2.cards) < 2 );
                    if sum(logical) == 2
```

```
                    cardDeck2.reshuffleDiscard
                end
                logical =  ( size(cardDeck3.cards) < 2 );
                if sum(logical) == 2
                    cardDeck3.reshuffleDiscard
                end

            end

            % setting objects to class player
            player1 = player;
            dealer = player;

            % dealing two cards to the player1(Human) and
dealer(Dealer)
            % this is a reach feature because it deals from each ...
            % cardDeck consecutively
            % setting global variable Card as output
            % assinging needCard = 1 so player1 draws first
            [y, Fs] = audioread('flip.mp3');
            sound(y,Fs);
            global deckDraw
            needCard = 1;

            % depends on how many cardDecks intially set in
gameSettings
            switch cardDecks
                case 1 % run game exactly the same as Gamemode1

                    player1 = player(cardDeck1);
                    dealer = player(cardDeck1);

                case 2 % if cardDecks = 2 alternate between 2
cardDecks
                    for i = [1:4] % deal two cards to player1 and two
to dealer
                        if deckDraw == 1
                            deckDraw = 2;
                        else
                            deckDraw = 1;
                        end

                        switch needCard
                            case 1 % player1 draws
                                if deckDraw == 1 % draw from cardDeck1
                                    player1.hit(cardDeck1)
                                else
                                    player1.hit(cardDeck2)
                                end
                                needCard = 2;

                            case 2 % dealer draws
                                if deckDraw == 1 % draw from cardDeck1
                                    dealer.hit(cardDeck1);
```

```
                                else deckDraw == 2 % draw from
cardDeck2
                                    dealer.hit(cardDeck2);
                                end
                                needCard = 1;
                            end
                        end



                    case 3 % if cardDecks = 3 alternate between 3
cardDecks
                        for i = [1:4] % deal two cards to player1 and two
to dealer
                            % alternating which deck to draw from
                            if deckDraw == 1
                                deckDraw = 2;
                            elseif deckDraw == 2
                                deckDraw = 3;
                            else
                                deckDraw = 1;
                            end

                            switch needCard
                                case 1 % player1 draws
                                    if deckDraw == 1 % draw from cardDeck1
                                        player1.hit(cardDeck1);
                                    elseif deckDraw == 2 % draw from
cardDeck2
                                        player1.hit(cardDeck2);
                                    else % draw from cardDeck3
                                        player1.hit(cardDeck3);
                                    end
                                    needCard = 2;

                                case 2 % dealer draws
                                    if deckDraw == 1 % draw from cardDeck1
                                        dealer.hit(cardDeck1);
                                    elseif deckDraw == 2 % draw from
cardDeck2
                                        dealer.hit(cardDeck2);
                                    else % draw from cardDeck3
                                        dealer.hit(cardDeck3);
                                    end
                                    needCard = 1;
                            end
                        end
                end

                app.HandImage1.ImageSource = player1.hand(1).image;
                app.HandImage2.ImageSource = player1.hand(2).image;
                app.HandImage1.Visible = 1;
                app.HandImage2.Visible = 1;
```

```
            app.CompHandImage1.ImageSource = dealer.hand(1).image;
            app.CompHandImage2.ImageSource = imread('cardback.jpg');
            app.CompHandImage1.Visible = 1;
            app.CompHandImage2.Visible = 1;

            % calculate hand values for player1
            % calculate hand values for dealer
            player1.calcHandValue;
            dealer.calcHandValue;

            % display sum of players' hand values
            app.HandDisplayLabel.Text = string(player1.handValue);


            % if cardDeck is empty then reshuffle
            % logical will equal an array of zeros unless .cards = 0
            % if .cards = 0 then an element will equal 1
            % if an element equals 1 then reshuffleDiscard will run
            % depends on how many cardDecks intially set in
gameSettings
            switch cardDecks
                case 1
                    logical =  ( size(cardDeck1.cards) == 0 );
                    if sum(logical) == 1
                        cardDeck1.reshuffleDiscard;
                    end

                case 2
                    logical =  ( size(cardDeck1.cards) == 0 );
                    if sum(logical) == 1
                        cardDeck1.reshuffleDiscard;
                    end
                    logical =  ( size(cardDeck2.cards) == 0 );
                    if sum(logical) == 1
                        cardDeck2.reshuffleDiscard;
                    end

                case 3
                    logical =  ( size(cardDeck1.cards) == 0 );
                    if sum(logical) == 1
                        cardDeck1.reshuffleDiscard;
                    end
                    logical =  ( size(cardDeck2.cards) == 0 );
                    if sum(logical) == 1
                        cardDeck2.reshuffleDiscard;
                    end
                    logical =  ( size(cardDeck3.cards) == 0 );
                    if sum(logical) == 1
                        cardDeck3.reshuffleDiscard;
                    end

            end

            % make buttons visible if being used
```

```
            % depends on how many cardDecks intially set in
        gameSettings
```

app.StartButton.Visible = 'off'

```
            switch cardDecks
                case 1
                    app.Hit1Button.Visible = 'on';
                case 2
                    app.Hit1Button.Visible = 'on';
                    app.Hit2Button.Visible = 'on';
                case 3
                    app.Hit1Button.Visible = 'on';
                    app.Hit2Button.Visible = 'on';
                    app.Hit3Button.Visible = 'on';
            end

            if sum([player1.hand(:).value] == 0) > 0
                if length(cardDeck1)
                    app.cardDeck1Image.ImageSource =
        cardDeck1.cards(1).image;
                end
                if length(cardDeck2) > 0
                    app.cardDeck2Image.ImageSource =
        cardDeck2.cards(1).image;
                end
                if length(cardDeck3) > 0
                    app.cardDeck3Image.ImageSource =
        cardDeck3.cards(1).image;
                end
            end

            % storing objects within the app
            app.cardDeck1Memory = cardDeck1;
            app.cardDeck2Memory = cardDeck2;
            app.cardDeck3Memory = cardDeck3;
            app.Human = player1;
            app.Dealer = dealer;

        end

        % Button pushed function: Hit1Button
        function Hit1ButtonPushed(app, event)

            % drawing a card from respected deck
            % cardDeck1
            [y, Fs] = audioread('flip.mp3');
            sound(y,Fs);
            % assigning local objects with stored app values
            cardDeck1 = app.cardDeck1Memory;
            cardDeck2 = app.cardDeck2Memory;
            cardDeck3 = app.cardDeck3Memory;
```

```
            player1 = app.Human;

            % lower tempBalance by the input of BetEditField
            % display TempBalance
            % after everything is done, set BetEditField to 0
            app.Bet = app.BetEditField.Value;
            app.TempBalance = app.TempBalance - app.Bet;
            app.BalanceLabel.Text = "Balance: " +
string(app.TempBalance);
            app.BetEditField.Value = 0;

            % using function hit to draw a card from the respected
deck
            % calculating player1's hand value
            player1.hit(cardDeck1);
            player1.calcHandValue;

            switch length(player1.hand)
                case 3
                    app.HandImage3.ImageSource =
player1.hand(3).image;
                    app.HandImage3.Visible = 1;
                case 4
                    app.HandImage4.ImageSource =
player1.hand(4).image;
                    app.HandImage4.Visible = 1;
                case 5
                    app.HandImage5.ImageSource =
player1.hand(5).image;
                    app.HandImage5.Visible = 1;
                    app.Hit1Button.Visible = 'off';
            end

            % if deck is empty then reshuffle
            % logical will equal an array of zeros unless .cards = 0
            % if .cards = 0 then an element will equal 1
            % if an element equals 1 then reshuffleDiscard will run
            logical =  ( size(cardDeck1.cards) == 0 );
            if sum(logical) == 1
                cardDeck1.reshuffleDiscard;
            end

            % display sum of Human's hand values
            app.HandDisplayLabel.Text = string(player1.handValue);

            % condition statement to determine if handValue is too
high
            % if too high, you lose
            % Balance is lost
            % if handValues are too high, hide all buttons besides
start
```

this should be a function called from script

```
            if player1.handValue > 21

                msgbox('Tough Luck, You Lose');
                app.Balance = app.TempBalance;
                app.BalanceLabel.Text = "Balance: " +
string(app.Balance);
                [y, Fs] = audioread('defeat.mp3');
                sound(y, Fs);
                app.StandButton.Visible = 'off';
                app.Hit1Button.Visible = 'off';
                app.Hit2Button.Visible = 'off';
                app.Hit3Button.Visible = 'off';
                app.StartButton.Visible = 'on';

            end

            if sum([player1.hand(:).value] == 0) > 0
                if length(cardDeck1) > 0
                    app.cardDeck1Image.ImageSource =
cardDeck1.cards(1).image;
                end
                if length(cardDeck2) > 0
                    app.cardDeck2Image.ImageSource =
cardDeck2.cards(1).image;
                end
                if length(cardDeck3) > 0
                    app.cardDeck3Image.ImageSource =
cardDeck3.cards(1).image;
                end
            end

            % storing local objects within the app
            app.cardDeck1Memory = cardDeck1;
            app.Human = player1;

        end

        % Button pushed function: StandButton
        function StandButtonPushed(app, event)
            % keep current value of hand
            % dealer starts trying to beat you

            % hide all buttons during dealer's turn
            app.StandButton.Visible = 'off';
            app.Hit1Button.Visible = 'off';
            app.Hit2Button.Visible = 'off';
            app.Hit3Button.Visible = 'off';

            % assigning local objects with stored app values
            % setting deckDraw as a global variable
            % setting cardDecks as a global variable
```

```
            cardDeck1 = app.cardDeck1Memory;
            cardDeck2 = app.cardDeck2Memory;
            cardDeck3 = app.cardDeck3Memory;
            dealer = app.Dealer;
            player1 = app.Human;
            global cardDecks
            global deckDraw

            app.CompHandImage2.ImageSource = dealer.hand(2).image;
            pause(1);

            % loop that makes the Dealer play the game til it gets >=
17
            while dealer.handValue < 17

                % using function hit to draw a card from cardDecks
                % consecutively
                % depends on how many cardDecks intially set in
gameSettings
                switch cardDecks
                    case 1 % run exactly like Gamemode1

                        dealer.hit(cardDeck1);

                    case 2 % playing with 2 cardDecks
                        if deckDraw == 1
                            deckDraw = 2;
                        else
                            deckDraw = 1;

                        end

                        if deckDraw == 1 % draw from cardDeck1
                            dealer.hit(cardDeck1);
                        else % draw from cardDeck2
                            dealer.hit(cardDeck2);
                        end

                    case 3 % playing with 3 cardDecks
                        if deckDraw == 1
                            deckDraw = 2;
                        elseif deckDraw == 2
                            deckDraw = 3;
                        else
                            deckDraw = 1;
                        end

                        if deckDraw == 1 % draw from cardDeck1
                            dealer.hit(cardDeck1);
                        elseif deckDraw == 2 % draw from cardDeck2
                            dealer.hit(cardDeck2);
                        else % draw from cardDeck3
                            dealer.hit(cardDeck3);
                        end
```

```
                end

                switch length(dealer.hand)
                    case 3
                        app.CompHandImage3.ImageSource =
dealer.hand(3).image;
                        app.CompHandImage3.Visible = 1;
                    case 4
                        app.CompHandImage4.ImageSource =
dealer.hand(4).image;
                        app.CompHandImage4.Visible = 1;
                    case 5
                        app.CompHandImage5.ImageSource =
dealer.hand(5).image;
                        app.CompHandImage5.Visible = 1;

                end

                % calculating dealer's hand value
                dealer.calcHandValue;

                % if cardDeck is empty then reshuffle
                % logical will equal an array of zeros unless .cards =
0
                % if .cards = 0 then an element will equal 1
                % if an element equals 1 then reshuffleDiscard will
run
                % depends on how many cardDecks intially set in
gameSettings
                switch cardDecks
                    case 1
                        logical =  ( size(cardDeck1.cards) == 0 );
                        if sum(logical) == 1
                            cardDeck1.reshuffleDiscard;
                        end

                    case 2
                        logical =  ( size(cardDeck1.cards) == 0 );
                        if sum(logical) == 1
                            cardDeck1.reshuffleDiscard;
                        end
                        logical =  ( size(cardDeck2.cards) == 0 );
                        if sum(logical) == 1
                            cardDeck2.reshuffleDiscard;
                        end

                    case 3
                        logical =  ( size(cardDeck1.cards) == 0 );
                        if sum(logical) == 1
                            cardDeck1.reshuffleDiscard;
                        end
                        logical =  ( size(cardDeck2.cards) == 0 );
                        if sum(logical) == 1
```

```
                            cardDeck2.reshuffleDiscard;
                        end
                        logical =  ( size(cardDeck3.cards) == 0 );
                        if sum(logical) == 1
                            cardDeck3.reshuffleDiscard;
                        end

                end


                % display sum of Dealer's hand values
                % pause the loop for 1 second

                pause(1);

            end

        % Display objects in the Command Window
        cardDeck1
        cardDeck2
        cardDeck3
        player1
        dealer

        % when dealer is done, make start button visible
        app.StartButton.Visible = 'on';

        % determine a winner of the round using conditional statement
        if dealer.handValue > 21
            msgbox('Winner Winner Chicken Dinner');
            app.CompHandDisplayLabel.Text = string(dealer.handValue);
            app.Balance = app.Balance + (app.Balance -
app.TempBalance);
            app.BalanceLabel.Text = "Balance: " + string(app.Balance);
            app.Hit1Button.Visible = 'off';
            [y, Fs] = audioread('victory.wav');
            sound(y, Fs);
        elseif player1.handValue > dealer.handValue
            msgbox('Winner Winner Chicken Dinner');
            app.CompHandDisplayLabel.Text = string(dealer.handValue);
            app.Balance = app.Balance + (app.Balance -
app.TempBalance);
            app.BalanceLabel.Text = "Balance: " + string(app.Balance);
            app.Hit1Button.Visible = 'off';
            [y, Fs] = audioread('victory.wav');
            sound(y, Fs);
        elseif player1.handValue < dealer.handValue
            msgbox('Tough Luck, You Lose');
            app.CompHandDisplayLabel.Text = string(dealer.handValue);
            app.Balance = app.TempBalance;
            app.BalanceLabel.Text = "Balance: " + string(app.Balance);
            app.Hit1Button.Visible = 'off';
            [y, Fs] = audioread('defeat.mp3');
            sound(y, Fs);
```

```
        else % player1.handValue = dealer.handValue
            msgbox('Draw');
            app.CompHandDisplayLabel.Text = string(dealer.handValue);
            app.BalanceLabel.Text = "Balance: " + string(app.Balance);
            app.Hit1Button.Visible = 'off';
            [y, Fs] = audioread('defeat.mp3');
            sound(y, Fs);
        end

        % storing local objects within the app
        % hide BetEditField until StartButton is pushed
        app.cardDeck1Memory = cardDeck1;
        app.cardDeck2Memory = cardDeck2;
        app.cardDeck3Memory = cardDeck3;
        app.Dealer = dealer;
        end

        % Button pushed function: Hit2Button
        function Hit2ButtonPushed(app, event)

            % drawing a card from respected deck
            % cardDeck2
            [y, Fs] = audioread('flip.mp3');
            sound(y,Fs);
            % assigning local objects with stored app values
            cardDeck1 = app.cardDeck1Memory;
            cardDeck2 = app.cardDeck2Memory;
            cardDeck3 = app.cardDeck3Memory;
            player1 = app.Human;

            % lower tempBalance by the input of BetEditField
            % display TempBalance
            % after everything is done, set BetEditField to 0
            app.Bet = app.BetEditField.Value;
            app.TempBalance = app.TempBalance - app.Bet;
            app.BalanceLabel.Text = "Balance: " +
string(app.TempBalance);
            app.BetEditField.Value = 0;

            % using function hit to draw a card from the respected
deck
            % calculating player1's hand value
            player1.hit(cardDeck2);
            player1.calcHandValue;

            switch length(player1.hand)
                case 3
                    app.HandImage3.ImageSource =
player1.hand(3).image;
                    app.HandImage3.Visible = 1;
                case 4
                    app.HandImage4.ImageSource =
player1.hand(4).image;
                    app.HandImage4.Visible = 1;
```

```
                case 5
                    app.HandImage5.ImageSource =
player1.hand(5).image;
                    app.HandImage5.Visible = 1;
                    app.Hit1Button.Visible = 'off';
            end

            % if deck is empty then reshuffle
            % logical will equal an array of zeros unless .cards = 0
            % if .cards = 0 then an element will equal 1
            % if an element equals 1 then reshuffleDiscard will run
            logical =  ( size(cardDeck2.cards) == 0 );
            if sum(logical) == 1
                cardDeck2.reshuffleDiscard;
            end

            % display sum of Human's hand values
            app.HandDisplayLabel.Text = string(player1.handValue);

            % condition statement to determine if handValue is too
high
            % if too high, you lose
            % Balance is lost
            % if handValues are too high, hide all buttons besides
start
```

this should be a function called from script

```
            if player1.handValue > 21

                msgbox('Tough Luck, You Lose');
                app.Balance = app.TempBalance;
                app.BalanceLabel.Text = "Balance: " +
string(app.Balance);
                [y, Fs] = audioread('defeat.mp3');
                sound(y, Fs);
                app.StandButton.Visible = 'off';
                app.Hit1Button.Visible = 'off';
                app.Hit2Button.Visible = 'off';
                app.Hit3Button.Visible = 'off';
                app.StartButton.Visible = 'on';

            end

            if sum([player1.hand(:).value] == 0) > 0
                if ~isempty(cardDeck1)
                    app.cardDeck1Image.ImageSource =
cardDeck1.cards(1).image;
                end
                if ~isempty(cardDeck2)
                    app.cardDeck2Image.ImageSource =
cardDeck2.cards(1).image;
                end
```

```
                if ~isempty(cardDeck3)
                    app.cardDeck3Image.ImageSource =
cardDeck3.cards(1).image;
                end
            end

            % storing local objects within the app
            app.cardDeck2Memory = cardDeck2;
            app.Human = player1;

        end

        % Button pushed function: Hit3Button
        function Hit3ButtonPushed(app, event)

            % drawing a card from respected deck
            % cardDeck3
            [y, Fs] = audioread('flip.mp3');
            sound(y,Fs);
            % assigning local objects with stored app values
            cardDeck1 = app.cardDeck1Memory;
            cardDeck2 = app.cardDeck2Memory;
            cardDeck3 = app.cardDeck3Memory;
            player1 = app.Human;

            % lower tempBalance by the input of BetEditField
            % display TempBalance
            % after everything is done, set BetEditField to 0
            app.Bet = app.BetEditField.Value;
            app.TempBalance = app.TempBalance - app.Bet;
            app.BalanceLabel.Text = "Balance: " +
string(app.TempBalance);
            app.BetEditField.Value = 0;

            % using function hit to draw a card from the respected
deck
            % calculating player1's hand value
            player1.hit(cardDeck3);
            player1.calcHandValue;

            switch length(player1.hand)
                case 3
                    app.HandImage3.ImageSource =
player1.hand(3).image;
                    app.HandImage3.Visible = 1;
                case 4
                    app.HandImage4.ImageSource =
player1.hand(4).image;
                    app.HandImage4.Visible = 1;
                case 5
                    app.HandImage5.ImageSource =
player1.hand(5).image;
                    app.HandImage5.Visible = 1;
                    app.Hit1Button.Visible = 'off';
```

```
            end

            % if deck is empty then reshuffle
            % logical will equal an array of zeros unless .cards = 0
            % if .cards = 0 then an element will equal 1
            % if an element equals 1 then reshuffleDiscard will run
            logical =  ( size(cardDeck3.cards) == 0 );
            if sum(logical) == 1
                cardDeck3.reshuffleDiscard;
            end

            % display sum of Human's hand values
            app.HandDisplayLabel.Text = string(player1.handValue);

            % condition statement to determine if handValue is too
high
            % if too high, you lose
            % Balance is lost
            % if handValues are too high, hide all buttons besides
start
```

this should be a function called from script

```
            if player1.handValue > 21

                msgbox('Tough Luck, You Lose');
                app.Balance = app.TempBalance;
                app.BalanceLabel.Text = "Balance: " +
string(app.Balance);
                [y, Fs] = audioread('defeat.mp3');
                sound(y, Fs);
                app.StandButton.Visible = 'off';
                app.Hit1Button.Visible = 'off';
                app.Hit2Button.Visible = 'off';
                app.Hit3Button.Visible = 'off';
                app.StartButton.Visible = 'on';

            end

            if sum([player1.hand(:).value] == 0) > 0
                if ~isempty(cardDeck1)
                    app.cardDeck1Image.ImageSource =
cardDeck1.cards(1).image;
                end
                if ~isempty(cardDeck2)
                    app.cardDeck2Image.ImageSource =
cardDeck2.cards(1).image;
                end
                if ~isempty(cardDeck3)
                    app.cardDeck3Image.ImageSource =
cardDeck3.cards(1).image;
                end
            end
```

```
            % storing local objects within the app
            app.cardDeck3Memory = cardDeck3;
            app.Human = player1;

        end
    end

    % Component initialization
    methods (Access = private)

        % Create UIFigure and components
        function createComponents(app)

            % Create UIFigure and hide until all components are
created
            app.UIFigure = uifigure('Visible', 'off');
            app.UIFigure.Position = [100 100 640 480];
            app.UIFigure.Name = 'UI Figure';

            % Create Image
            app.Image = uiimage(app.UIFigure);
            app.Image.Position = [-74 -59 823 578];
            app.Image.ImageSource = 'background.jpg';

            % Create cardDeck1Image
            app.cardDeck1Image = uiimage(app.UIFigure);
            app.cardDeck1Image.Position = [80 349 100 100];

            % Create HandImage1
            app.HandImage1 = uiimage(app.UIFigure);
            app.HandImage1.Position = [24 174 71 76];

            % Create HandImage2
            app.HandImage2 = uiimage(app.UIFigure);
            app.HandImage2.Position = [107 174 73 76];

            % Create HandImage3
            app.HandImage3 = uiimage(app.UIFigure);
            app.HandImage3.Position = [193 174 79 76];

            % Create HandImage4
            app.HandImage4 = uiimage(app.UIFigure);
            app.HandImage4.Position = [59 99 83 76];

            % Create HandImage5
            app.HandImage5 = uiimage(app.UIFigure);
            app.HandImage5.Position = [152 99 85 76];

            % Create StartButton
            app.StartButton = uibutton(app.UIFigure, 'push');
            app.StartButton.ButtonPushedFcn = createCallbackFcn(app,
@StartButtonPushed, true);
            app.StartButton.Position = [465 33 100 22];
```

```
            app.StartButton.Text = 'Start';

            % Create Hit1Button
            app.Hit1Button = uibutton(app.UIFigure, 'push');
            app.Hit1Button.ButtonPushedFcn = createCallbackFcn(app,
@Hit1ButtonPushed, true);
            app.Hit1Button.Position = [79 315 100 22];
            app.Hit1Button.Text = 'Hit1';

            % Create StandButton
            app.StandButton = uibutton(app.UIFigure, 'push');
            app.StandButton.ButtonPushedFcn = createCallbackFcn(app,
@StandButtonPushed, true);
            app.StandButton.Position = [79 33 100 22];
            app.StandButton.Text = 'Stand';

            % Create CompHandImage1
            app.CompHandImage1 = uiimage(app.UIFigure);
            app.CompHandImage1.Position = [348 174 76 76];

            % Create CompHandImage2
            app.CompHandImage2 = uiimage(app.UIFigure);
            app.CompHandImage2.Position = [431 174 78 76];

            % Create CompHandImage3
            app.CompHandImage3 = uiimage(app.UIFigure);
            app.CompHandImage3.Position = [508 174 88 76];

            % Create CompHandImage4
            app.CompHandImage4 = uiimage(app.UIFigure);
            app.CompHandImage4.Position = [381 99 85 76];

            % Create CompHandImage5
            app.CompHandImage5 = uiimage(app.UIFigure);
            app.CompHandImage5.Position = [473 99 92 76];

            % Create HandDisplayLabel
            app.HandDisplayLabel = uilabel(app.UIFigure);
            app.HandDisplayLabel.Position = [107 258 74 22];
            app.HandDisplayLabel.Text = 'HandDisplay';

            % Create CompHandDisplayLabel
            app.CompHandDisplayLabel = uilabel(app.UIFigure);
            app.CompHandDisplayLabel.Position = [417 258 106 22];
            app.CompHandDisplayLabel.Text = 'CompHandDisplay';

            % Create BalanceLabel
            app.BalanceLabel = uilabel(app.UIFigure);
            app.BalanceLabel.Position = [258 63 125 22];
            app.BalanceLabel.Text = 'Balance';

            % Create cardDeck2Image
            app.cardDeck2Image = uiimage(app.UIFigure);
            app.cardDeck2Image.Position = [271 349 100 100];
```

```
            % Create cardDeck3Image
            app.cardDeck3Image = uiimage(app.UIFigure);
            app.cardDeck3Image.Position = [465 349 100 100];

            % Create Hit2Button
            app.Hit2Button = uibutton(app.UIFigure, 'push');
            app.Hit2Button.ButtonPushedFcn = createCallbackFcn(app,
@Hit2ButtonPushed, true);
            app.Hit2Button.Position = [271 315 100 22];
            app.Hit2Button.Text = 'Hit 2';

            % Create Hit3Button
            app.Hit3Button = uibutton(app.UIFigure, 'push');
            app.Hit3Button.ButtonPushedFcn = createCallbackFcn(app,
@Hit3ButtonPushed, true);
            app.Hit3Button.Position = [465 315 100 22];
            app.Hit3Button.Text = 'Hit 3';

            % Create BetEditFieldLabel
            app.BetEditFieldLabel = uilabel(app.UIFigure);
            app.BetEditFieldLabel.HorizontalAlignment = 'right';
            app.BetEditFieldLabel.Position = [272 33 25 22];
            app.BetEditFieldLabel.Text = 'Bet';

            % Create BetEditField
            app.BetEditField = uieditfield(app.UIFigure, 'numeric');
            app.BetEditField.Position = [312 33 68 22];

            % Show the figure after all components are created
            app.UIFigure.Visible = 'on';
        end
    end

    % App creation and deletion
    methods (Access = public)

        % Construct app
        function app = TwoPlayerGamemode_exported

            % Create UIFigure and components
            createComponents(app)

            % Register the app with App Designer
            registerApp(app, app.UIFigure)

            % Execute the startup function
            runStartupFcn(app, @startupFcn)

            if nargout == 0
                clear app
            end
        end
```

```
        % Code that executes before app deletion
        function delete(app)

            % Delete UIFigure when app is deleted
            delete(app.UIFigure)
        end
    end
end
```

```
SWITCH expression must be a scalar or a character vector.

Error in TwoPlayerGamemode_exported/startupFcn (line 92)
            switch cardDecks
```

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