1 Higher Lower Card Game Program

```python
import random

START_NUM_CARDS = 9
NUM_PLAYERS = 1
MAX_GUESSES = 8
NUM_ROWS = 3
NUM_COLUMNS = 3

def create_deck():
    '''() -> list
    Returns the standard card deck in order
    '',
    # diamonds, clubs, hearts, spades
    suits = "DCHS"
    # face values - this has to be a list because of the 10
    # make sure an example that includes 10 is used
    values = ["A","2","3","4","5","6","7","8","9","10","J","Q","K"]

deeck = []
    # create a card of each face value in each suit
    for suit in suits:
        for value in values:
            deck += [value + suit]

    return deck

def shuffle():
    '''() -> list
    Returns a (pseudo)-randomly shuffled deck of cards
    '',
    ordered_deck = create_deck()
    shuffled_deck = []
    # select and remove random card, add to shuffled deck until no cards left
    while ordered_deck:
        shuffled_deck.append(random.choice(ordered_deck))

    return shuffled_deck
```
card = ordered_deck[random.randint(0, len(ordered_deck)-1)]
shuffled_deck.append(card)
ordered_deck.remove(card)
return shuffled_deck

def setup():
    '''() -> list
Returns a list of the 9 cards dealt facedown for the game board'''
deck = shuffle()

# create empty board
facedown = []

# deal cards to board
for count in range(NUM_ROWS*NUM_COLUMNS):
facedown.append(deck.pop())

# also return rest of deck
return facedown
# for testing purposes
# return ['7 S', 'Q H', '5 H', 'K S', 'A D', '6 D', '8 S', '3 D', '5 S']

def flip_card(board, num_showing):
    '''(list, int) -> str
Flips the next card on the board and prints the board
Returns the current card in play'''
    for i in range(NUM_ROWS):
        for j in range(NUM_COLUMNS):
            card_index = (i*3)+j
            if card_index < num_showing:
                print("{}\t".format(board[card_index]),end='')
            elif card_index == num_showing:
                print("{}\t".format(board[card_index]),end='')
                current_card = board[card_index]
            else:
                print("X\t",end='')
    print(''
    return current_card

def prompt_guess():
    '''() -> str
Prompts the user to guess either higher or lower.
The user may also enter 'q' if they wish to quit.
Checks that the user entered one of the valid inputs,
if not valid function will prompt user until user enters a
valid input.
Returns string that represents a valid guess or 'q'

```
# primes guess with the user's first input
guess = input("Guess (h)igher or (l)ower: ")

# repeatedly prompts user until valid input ('h', 'l', or 'q') is entered
while guess != 'h' and guess != 'l' and guess != 'q':
    print("{} is not a valid guess. Try again.".format(guess))
    guess = input("Guess (h)igher or (l)ower or (q)uit: ")

return guess
```

def face_value(card):
    '''(str) -> int
    Extracts the string representing the face value (and not the suit)
of the str argument card and translates it to its integer value
for the higher or lower game.
Returns the face value in int form.
    '''
    if len(card) == 3:
        face_value = 10
    else:
        face_value = card[0]

    if face_value == 'J':
        face_value = 11
    elif face_value == 'Q':
        face_value = 12
    elif face_value == 'K':
        face_value = 13
    elif face_value == 'A':
        face_value = 1
    else:
        face_value = int(face_value)

    return face_value

def play_round():
    '''() -> int
    Plays one round of higher or Lower
```
Returns the number of cards guessed correctly

board = setup()
guess = 's'
guesses = 0
correct = True

while correct and guess != 'q' and guesses < MAX_GUESSES:
    guess = prompt_guess()
    print(''
    guesses += 1
    previous_card = current_card
    if guess != 'q':
        current_card = flip_card(board, guesses)
        if guess == 'h' and face_value(current_card) <= face_value(previous_card):
            correct = False
        elif guess == 'l' and face_value(current_card) >= face_value(previous_card):
            correct = False
        if guess == 'q':
            return -999
    if not correct:
        return guesses - 1
return guesses

def play_game():
    '''() -> bool
    Plays a single game of Higher or Lower.
    Returns boolean value True if the user won and False if the user quit
    '''

    # setup and play
    num_correct = 0
    num_rounds = 0
    while num_correct != 8 and num_correct != -999:
        if (num_rounds != 0):
            print("You lose! Try again.\n\n")
        num_rounds += 1
        print("Round {}: ".format(num_rounds))
        num_correct = play_round()

    if num_correct != -999:
        print("Game Over! You guessed all 8 cards in round {} of play.".format(num_rounds))
        return True
    return False
def main():
    '''()
−> NoneType
Plays multiple games of Higher or Lower.
After each game, prompts the user to play again.
'''
print("Welcome to 'Higher or Lower'.")
print()
keep_playing = True
while keep_playing:
    user_won = play_game()
    if (user_won):
        keep_playing = input("Do you want to play again? (y)es ") == 'y'
    else:
        keep_playing = False
print("Thank you for playing!")

if __name__ == '__main__':
    main()