Department of Electrical and Computer Engineering
ECE 3326: Optimization Methods
Fall 2012

Project #2

Write a program that allows the user to play the card game *flip*. Flip is played by one player with a standard deck of 52 cards. The game has the following steps:

1. The cards are shuffled three times.
2. The player keeps taking cards until the player decides to stop and end the game.
3. To take a card, the player turns over the top card on the deck and
   (a) receives 10 points for an ace,
   (b) receives 5 points for a king, queen or jack,
   (c) receives 0 points for an 8, 9 or 10,
   (d) loses half their points for a 7,
   (e) loses all their points for a 2, 3, 4, 5 or 6, and
   (f) receives 1 point extra, in addition to the above, for a heart.
4. The goal is to end the game with the most points.

Part a

Fully implement a `card` class that stores a single card. A card includes a value and a suit (club, diamond, heart or spade). The class should at least include constructors, set, and get functions, and an overloaded print operator.

Fully implement a `deck` class that stores the cards in a deck in order. A deck of cards should be implemented using a linked list of `nodes`, each of which contains a single card. The `deck` object should contain a pointer to the first card in the deck. The class should at least include a constructor that creates a deck with all the cards in order (2-A, clubs to spades) and an overloaded operator that prints the cards in the deck.

Exceptions should be thrown for all error conditions and all exceptions should be caught.

Include a `main` function that initializes a deck and prints all the cards in the deck.