For this exam I would like you to create a program that shuffles a deck of 52 cards 100 times. The initial deck will be given to you in a text file (Deck.txT) that contains one card per line. Each card will be represented as a string. For example, the King of Clubs will be represented as KC. After you have shuffled the cards 100 times you will save the shuffled deck to a file called ShuffledDeck.txt. Your program should use a "perfect shuffling" algorithm. A perfect shuffling algorithm cleanly interleaves the cards in two halves to form a deck. For example, if the first half contains the cards [AD, 2S, 3C] and the second half contains the cards [KD, 5S, JD], the shuffling algorithm should produce this deck: [AD, KD, 2S, 5S, 3C, JD]. Your program must solve this problem using the following functions:

```
void readFile(const string & file, vector<string> & deck);
```

This function should read a text file and populate the vector "deck" with the cards listed in the file. Each line in the file will have one card.

```
void writeFile(const string & file, const vector<string> & deck);
```

This function should write all of the cards in the vector "deck" to a text file. The resulting text file should contain one card per line.

```
void split(const vector<string> & deck,
           vector<string> & half1,
           vector<string> & half2);
```

This function should split (cut) a deck into two equal halves. When you are done "half1" should contain the first 26 cards in "deck" and "half2" should have the last 26 cards in "deck".

```
void shuffle(const vector<string> & half1,
             const vector<string> & half2,
             vector<string> & deck);
```

This function should perfectly shuffle the cards in "half1" and "half2". The shuffled cards should be placed in "deck".

You **must** use the following main function (unchanged) to solve this problem:

```
int main()
{
      vector<string> firstHalf;
      vector<string> secondHalf;
      vector<string> deck;

      readFile("Deck.txt", deck);

      for (int i = 0; i < 100; i++)
      {
            split(deck, firstHalf, secondHalf);
            shuffle(firstHalf, secondHalf, deck);
      }

      writeFile("ShuffledDeck.txt", deck);
}
```