Week 5 Lab Part 1

1. Write a program to compute the interest due, total amount due, and the minimum payment for a revolving credit account. The program accepts the account balance as input, then adds on the interest to get the total amount due. The rate schedules are the following: The interest is 1.5 percent on the first $1000, and 1 percent on any amount over that. The minimum payment is the total amount due if that is $10 or less; otherwise, it is $10 or 10 percent of the total amount owed, whichever is larger. Your program should include a loop that lets the user repeat this calculation until the user says she or he is done.

For example:

$1000 balance = 1015 total, $101.50 minimum payment

$50 balance = 50.75 total, $10 Minimum Payment

$1500 balance = 1020 total, $102 minimum Payment

1. The game of “23” is a two-player game that begins with a pile of 23 toothpicks. Players take turns, withdrawing either 1,2, or 3 toothpicks at a time. The player to withdraw the last toothpick loses the game. Write a human vs. computer program that plays “23”. The human should always move first. When it is the computer’s turn, it should play according the following rules:
   1. If there are more than 4 toothpicks left, the computer should withdraw 4 – X toothpicks, where X is the number of toothpicks the human withdrew on the previous turn.
   2. If there are 2 to 4 toothpicks left, the computer should withdraw enough toothpicks to lave 1.
   3. If there is 1 toothpick left, the computer has to take it and loses.

When the human player enters the number of toothpicks to withdraw, the program should perform input validation. Make sure the entered number is between 1 and 3 and that the player is not trying to withdraw more toothpicks than exist in the pile.

1. Write a program that reads in a string and determines if it is a palindrome. A palindrome is a word that is read the same way both forwards and backwards. Allow the user to enter as many times as they wish.
2. Print the pattern like shown below with loops , where the number of stars in first row rectangle is input by user. Dashes will never be on the edges.  
     
   *Example* if no of stars are 12 in first rectangle  
     
   \* - \*\*\*\*\*\*\*\*\*\*\*   
   \*\*\* - \*\*\*\*\*\*\*\*\*  
   \*\*\*\*\* - \*\*\*\*\*\*\*  
   \*\*\*\*\*\*\* - \*\*\*\*\*  
   \*\*\*\*\*\*\*\*\* - \*\*\*  
   \*\*\*\*\*\*\*\*\*\*\* - \*