CS 121 – Week 3 Worksheet

1. Assume you are working on a calendar application that works from year **1970** and above with a software team and created the following function for validating an inputted date. You've realized that the code looks rather hard to read and doesn't display errors, and would prefer to refactor it before showing the rest of your team. **In pseudo-code, code comments, or jotted notes, explain how you would rewrite the following code segment to improve its cleanliness and readability.**

```
/*
**  verifyDateInput:
**    To verify the date from the user is valid (bool returned determines value)
*/

bool verifyDateInput(int mm, int dd, int yyyy)
{
  if ( !(yyyy >= 1970) )
  {

    return false;
  }

  if(1 == mm || 3 == mm || 5 == mm || 7 == mm || 8 == mm || 10 == mm ||12 == mm)
  {
    if ( 1 > dd || 31 < dd )
    {

      return false;
    }
  }
  else if (4 == mm || 6 == mm || 9 == mm || 11 == mm)
  {
    if (1 > dd || 30 < dd)
    {

      return false;
    }
  }
  else if ( 2 == mm )
  {
    if (29 == dd && !((yyyy % 400 == 0) || (yyyy % 4 == 0 && yyyy % 100 != 0)))
    {

      return false;
    }
    else if ((1 > dd || 28 < dd) && dd != 29)
    {

      return false;
    }
  }
  else {

    return false;
  }


  return true;
}
```

2. Write a function that, given a string, outputs (to console) whether or not it is a palindrome.

   Some notes before working on this:
   - A palindrome is a word or phrase that looks the same when written backwards. *Racecar*, *a but tuba*, and *b* are palindromes, but *palindrome* and *computer* are not.
   - Assume *using namespace std;* is noted before the definition of this function
   - A string's characters can be accessed by subscript (like an array). For instance, to access the second letter of a string called *str* would be *str[1]*.
   - You might want to format the string before checking if it is a palindrome.
   - You can make any number of extra functions to complete this problem.
   - The function is **only** outputting whether or not the word is a palindrome.

3. Explain the difference between implicit and explicit type conversion, and give two example scenarios of when you would perform type conversion.