

## I400 Assignment 4 - Feb. 15, 2007

February 15, 2007

Due Feb. 22, 2007

1) Using the provided tune of "Yankee Doodle" from the website, please provide a version of the song that is transposed up a major 6th, inverted using the first note as a reference, twice the length, and is also a palindrome.

2) Harmonization is the process whereby a melody is played at two different pitches at the same time. Please provide a program to harmonize "Yankee Doodle" in fifths. Use the provided class example as a basis.

3) What happens to a melody if the symbolic pitches are multiplied by a factor? What is the name for the mathematical term for this operation?

4) Due to a clerical error, a passenger on an international flight was lost by baggage handlers for several days. When he turned up, he was found to have lost all identification and, due to the traumatic experiences of the airline process, has lost all of his memories except for a single melody that he keeps humming repeatedly:



Currently, the man has been confined to the international terminal at the airport. Attempts to determine anything about the man have failed. However, from the color of the baggage tag found around his neck, it is assumed he is from one of the following countries: Canada, United States, Russia, Sweden, or Great Britain, and that the melody he insists on humming is related to the national anthem of his country. Please use your melody analysis skills to determine most likely country of origin for the man. Explain your answer in detail, and please hurry: the Starbucks at the airport is already starting to complain about him!

5) Choose one of the national anthems from the previous question and perform an analysis of it, using at least 3 features. One of them should be a pitch histogram. Please create a new tune of your own that has exactly the same values for the same features. In other words, it should meet exactly the same pitch profile. Please submit your answer both on paper and as an email to Kyung.