CS311 - Computer Architecture - Spring 2017
Project 2 – MIPS/Binary/Hex Conversion
50 points
Due: Mar. 6

As we've been studying for the last few weeks, the interpretation of a string of binary digits stored in memory depends on the context. It could be interpreted as a numerical value (in which case 2's complement is used to decode it), a machine instruction (in which case we use the MIPS machine language definition to decode it), a character string, a floating point number, or any of numerous other interpretations. For this project you are to write to a simple GUI converter which translates between MIPS assembly language and binary and hexadecimal strings.

1. Download the file `ConversionSkel.java` from the content panel on the D2L page for our course. This code implements a simple GUI converter which allows the user to type in either a MIPS assembly language statement, a hexadecimal string or a binary strings. After this the user can click on one of three buttons:

   Convert – currently this simply copies whatever was typed in one of the text fields to the other two.

   Clear – allows for re-entry of text after the Convert button as been pressed.

   Exit – exits the program.

2. There are four methods that you must modify in order to get the converter to work properly. They are:

   `String convertMipsToBinary(mString)` – converts a MIPS assembly command to the equivalent 32-bit binary string.

   `String convertBinaryToMips(bString)` – converts a binary string to the equivalent MIPS assembly command

   `String convertBinaryToHex(bString)` – converts a binary string to the equivalent 8-character hexadecimal string.

   `String convertHexToBinary(hString)` – converts a hexadecimal string to the equivalent 32-bit binary string.

   Currently all these routines just return the string passed to them. You must replace that code with code that does the appropriate translation. In the case when something cannot be translated, you should output some standard default string like `----` or `****`.

3. You need only translate the MIPS commands listed on the left of the green card in our textbook (feel free to translate other commands not listed there if you wish).