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CSD 211: Computer Organization and Architecture
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Worksheet 1

Instructions-

1) **Use only MARS simulator for MIPS32 programming in the lab.**
2) **Programs given for Brainstorming can be submitted later, but other programs you need to code in the lab only.**
3) **Save your programs in a separate folder with .asm extension and delete it from the system after making final submission and before leaving the lab.**
4) **Show the working programs to the TAs available before submitting your word file at blackboard.**
5) **Any doubts should be clarified with the Tas available in labs**

Questions:

1. Write a MIPS assembly language program to print "Hello world".
2. Create a MIPS program that swaps the values of two registers, $s0 and $s1, without using a third register.
3. Write a MIPS assembly program that stores two integers in registers $t0 and $t1, and then stores the result of their addition in $t2 and subtraction in $t3.
4. Write a MIPS assembly program that checks if the number stored in register $t0 is positive, negative, or zero. Store 1 in register $t1 if it's positive, -1 if it's negative, and 0 if it's zero.
5. Create a MIPS program that determines if a number stored in $t0 is even or odd. Set $t1 to 1 if the number is even, and 0 if it's odd.
6. Write a MIPS assembly program that loads the value 25 into register $t0, stores it in memory, and then loads it back into register $t1

Brainstorming Question (HOTS)

1. Write a program to check if the year entered by user as input is a leap year or not.
2. (optional) Write a MIPS assembly program that reverses your roll number stored across two registers, $t0 and $t1. For example, if your roll number is 2210110100, consider the first 8 digits i.e: 22101101, the program should reverse the digits and store 10110122.

NOTE: Write comments to describe each instruction of the above given program. In case any data is missing in the question, kindly take necessary assumptions and write in your README file.