CSE222 Computer Architecture

Homework Set 5

1. Write a MIPS Program to check if computer is a **big-endian** or **little-endian** system.
2. Write a MIPS program:
3. Generate a random number in range [2, 1000]. Display message “the random number is [number]”
4. Use 3 different ways to find if this number is even or odd.
5. Find if this number is divisible by 3 and 5. Display result (“yes” or “no”)
6. Find if this number is divisible by 7 or 9 but not both. Display result.
7. Write MIPS program:
8. Load hexadecimal number 0xA1B3E5F7 into a register.
9. Shift this number to left by 1 bit, display new number in hexadecimal format.
10. Perform logical shift: shift the new number to right by 1 bit, display number again.
11. Perform arithmetic shift: shift the number to right by 1 bit, display new number.
12. Rotate digits in the number (Q3(4)) to the left by 8 bits. Display new number. (Example: if number is 0x12345678, after rotation, the number will be 0x34567812)
13. Filter the number (in Q3(5)) by keeping bits at even places (keeping bits at position 0, 2, 4 …). Display the new number in binary format.
14. Write MIPS program: generate 20 random numbers in range [10, 100]. Find (1) the maximum number; (2) the minimum number; (3) the (integer) average of these numbers. Display message.
15. Translate the following Java program to MIPS fragment:

Random rand = **new** Random();

**int** rn = rand.nextInt(7);

**switch** (rn) {

**case** 1: System.***out***.println("Monday"); **break**;

**case** 2: System.***out***.println("Tuesday"); **break**;

**case** 3: System.***out***.println("Wednesday"); **break**;

**case** 4: System.***out***.println("Thursday"); **break**;

**case** 5: System.***out***.println("Friday"); **break**;

**case** 6: System.***out***.println("Saturday"); **break**;

**case** 0: System.***out***.println("Sunday"); **break**;

}