Students will present questions 4 to 7. Please prepare the solutions.

1. (a) A program called kickyou.c is to be executed from a command line. Tabulate the contents of argv[0], argv[1], ..., if relevant, for each of the following command-line instructions.

   i. kickyou \target=leg \strength = strong
   ii. kickyou againand again

(b) Also, fill in the following table for the above command-line instructions.

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2. Write a program called cap.c that takes from the command line several strings and displays them in capital letters on the screen, one on each line. For example, if you type

   cap I eAT an apPLe

The screen output will be

   I
   EAT
   AN
   APPLE

Your program should work for any number of strings.

3. Write a program to accept an unsigned integer from the keyboard and use bit operators to determine if the number of 0-bits in the unsigned integer is even or odd.
4. (i) Evaluate $-99_{(10)} + (-111)_{10}$ by calculator.

(ii) Using 8-bit 2's complement arithmetic, evaluate the above sum again. Show your working in 2's complement, and explain the result.

5. Use the 5-bit two’s complement to compute

$$11_{(10)} + 14_{(10)}$$

and explain the correctness of your result.

6. Suppose you are working on a 2’s complement computer that does not provide bitwise complementation ($\sim$). Assume that $+$ and $-$ operators are available. How do you implement the $\sim$ operator on this platform?

7. Write down the values of the following sequence in decimal numbers.

$$2^0, 2^1, 2^2, 2^3, 2^4, 2^5, 2^6, 2^7, 2^8$$

Repeat the exercise until you can complete it within 10 seconds.