1. For each of the following, state whether the instruction is an R-format instruction or an I-format instruction and show its machine language representation in binary.

   (a) sub $t2,$s0,$t3

      Type of instruction: _______________________
      ------------------------------------------

   (b) addi $t3,$t0,241

      Type of instruction: _______________________
      ------------------------------------------

   (c) lw $s3,24($t1)

      Type of instruction: _______________________
      ------------------------------------------

2. .data
   checks: .word 123 24 46
   deposit: .word 83 90 35 85 72 44
   withdraw: .word 60 77 83 29 84 27

   (a) At what memory address is the first element of withdraw stored?

      Answer: _________________________

   (b) Consider the following pseudoinstruction: la $t2,deposit

      What assembly language code results?

      __________________________________
      __________________________________

   (c) Give the machine language representation of these instructions in binary.

      __________________________________
      __________________________________

3. Consider the following instruction: lw $t2,-52($gp)

   (a) Give the machine language representation of this instruction in binary.

      Type of instruction: _______________________
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   (b) What is the address of the memory word whose contents are loaded into $t2?

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