IST-ASM Retake Exam — Fall 2023

Name:

- First, write your name in the box above. Then, have a quick read through all 7 questions.
- In the end, you will write up your answers on this paper.
 - But please make a draft elsewhere first. Only hand in something readable. Really.
- This is an open-book open-laptop exam: you may work on scrap paper and/or on your screen.
- Each question is independent from others, except stated otherwise.

Question 1 For each acronym below, give the full unabbreviated expression.

INSA	Institut National des Sciences Appliquées
CPU	
LR	
PC	
SP	

Question 2 Fill in the following table by converting each value to all notations.

Decimal	Binary	Hexadecimal	
99			
		F1	
		42	
	11111010		

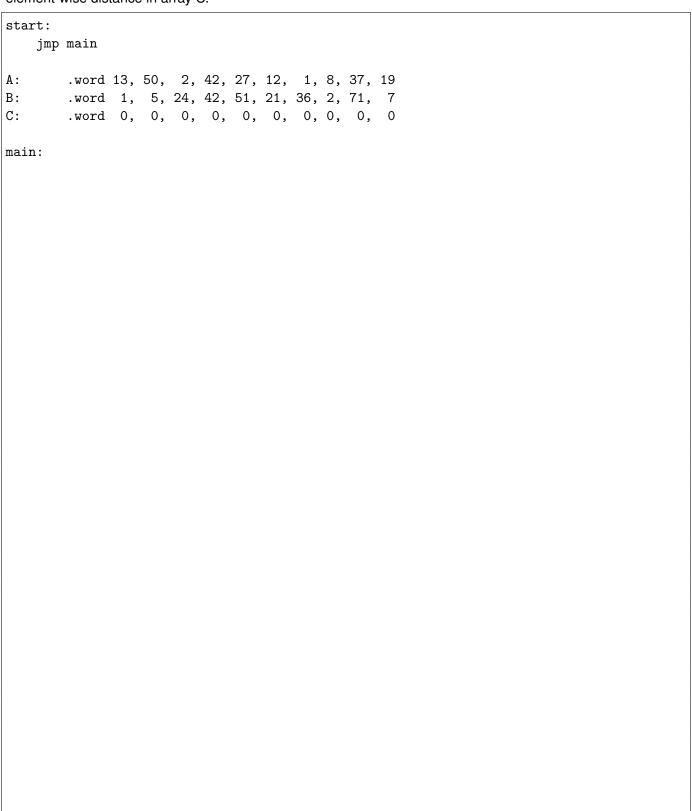
Question 3 In the boxes below, give the full machine language encoding for intruction blt r6, r7, -8.

31 28	24	20	16	12	8	4	0

Question 4	Write a program w	nich sets register 4	to the value 0xCAFE.	You cannot use the leti instruction.
0xFFFFFFF is	. For instance, the	Hamming weight m which compute	t of $42 = 0b101010 i$ s the Hamming weigh	nber of bits equal to one in its binary s three, and the Hamming weight of it of any number (initially stored in R1)
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Question 6 Given two arrays A and B of the same (known) length, we define their *element-wise distance* as the array C such that for all n, C[n] = |A[n] - B[n]|. In other words, each element of C is defined as the absolute value of the difference between corresponding elements of A and B.

The program below allocates two arrays A and B of length 10. Complete the code so that it computes their element-wise distance in array C.



Question 7 In 25 lines or less, write a program which fills the bottom right quarter of the screen in cyan, like illustrated below.

