



KIND



POSITIVE



YOURSELF

Higher Homework 1 – Computer Systems

1. Convert the number –120 into 8 bit two’s complement. 1
2. Explain the difference between a public key and a private key when securing the transmission of data. 2
3. Character sets can be represented using either ASCII or Unicode. Describe an advantage of using Unicode over ASCII, making reference to the number of bits used to represent a character in each format. 2
- 4a. The incomplete function shown below performs a linear search to find the position of the target item in the following array of strings. 2

Meena Sean Gianni Ali Nyah Lynn

When Meena is entered as the target item then 0 is returned. If Lynn is entered as the target item then 5 is returned.

```

Line 1 FUNCTION linearSearch(ARRAY OF STRING list)RETURNS
      INTEGER
Line 2  DECLARE index INITIALLY -1
Line 3  DECLARE position INITIALLY -1
Line 4  DECLARE target AS STRING INITIALLY FROM KEYBOARD
Line 5  REPEAT
Line 6    SET index TO index+1
Line 7    IF target=list[index] THEN
Line 8      SET _____
Line 9    END IF
Line 10  UNTIL <end of list> OR _____
Line 11  RETURN position
Line 12 END FUNCTION

```

Complete lines 8 and 10 of the code.

- 4b. State the value that would be returned by the function if the target item was not in the list. 1



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5. Machine code instructions are fetched from memory and executed by the processor. Complete the missing steps of the fetch-execute cycle in the table below. 2
1. The processor places the address of the instruction on the address bus.
 - 2.
 - 3.
 4. Instruction is decoded and executed.