Design and construct the following systems:

1. Memory System: design and implement a memory system for an 8-bit CPU with 16-bit address bus. The memory system is made up of two memory chips. The first chip is a ROM of size 8Kx8 and should have starting address of 0000h. The second memory chip is a RAM of size 4Kx8 and should have starting address of 8000h.

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1. Temperature sensing system: Construct a temperature sensing system by connecting a temperature sensor to an 8-bit CPU with 16-bit address bus using an 8-bit ADC. Show all the necessary connections and select all I/O addresses you may need and state these addresses.

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1. Speed control system: Show how to use the AVR ATmega16 microcontroller to control the speed of a DC motor connected to the microcontroller using an 8-bit DAC. The control operation will be performed using an 8-bit input device (8-binary switches) connected to the microcontroller. Write a micro-C program to read the contents provided by the input device and send it to the DAC. Your program should read the contents of the input device and send it to the DAC every 5 seconds. Use timer0 for the timing process. Draw a diagram to show your connections.

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A screenshot of a cell phone

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