Postlab Questions

1. What are the GPIO control registers that the lab mentions? Briefly describe each of their functions.
   MODER – sets the type of mode the programmer wants it to be. There are 4 modes: General Purpose Output (push-pull or open-drain logic), Digital Input (floating or internal pull-up/down), Analog Input (connect to analog peripherals instead of digital), Alternate Function (connects to selection of internal peripherals).
   OSPEEDR – controls the speed of the peripherals, which also determines how much power the peripherals use. Lower speeds use less power. Higher speeds use higher power.
   OTYPER – sets the output mode of the pin.
   PUPDR – connects a pin to internal pull-up/down resistors.
   IDR – a read-only register. Reports the logical state of each pin in the GPIO port.
   ODR – output register. Sets the logical state of configured output pins.
   BSRR – write-only register. Sets and clear bits quickly in the output register. Lower half of the register sets bits in the output. Upper half clears/resets them.
2. What values would you want to write to the bits controlling a pin in the GPIOx_MODER register in order to set it to analog mode?
   0x3
3. Examine the bit descriptions in GPIOx_BSRR register: which bit would you want to set to clear the fourth bit in the ODR?
   Bit 19
4. Perform the following bitwise operations:
   - 0xAD | 0xC7 = ?
     0xBF
   - 0xAD & 0xC7 = ?
     0x85
   - 0xAD & ~(0xC7) = ?
     0x28
   - 0xAD ^0xC7 = ?
     0x6A
5. How would you clear the 5th and 6th bits in a register while leaving the others alone?
   Bitmask the 5th and 6th registers only.
   Reg &= ~((1 << 5) | (1 << 6))