# Quiz 3: Arduino Simulink Interface (Sensors & Actuators)

Total points   12/14

The respondent's email (**amlali98eg@gmail.com**) was recorded on submission of this form.

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✓ What type of sensor is commonly used for detecting obstacles and measuring distances in robotics applications?                    *1/1

○ A) Infrared (IR) sensor

◉ B) Ultrasonic sensor                                              ✓

○ C) Bluetooth sensor

○ D) Light sensor

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✓ How does an infrared (IR) sensor detect objects? *                    1/1

○ A) By emitting sound waves and measuring the time for them to return

◉ B) By emitting infrared light and detecting its reflection off objects     ✓

○ C) By measuring the resistance across its terminals

○ D) By detecting changes in ambient light levels

✕    Which Simulink block is commonly used to interface IR sensors with          *0/1
      Arduino for object detection?

   ○   A) Digital Input

   ○   B) Analog Input

   ◉   C) PWM Output                                                                ✕

   ○   D) Digital Output

   Correct answer

   ◉   A) Digital Input

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✓    What is the function of a servo motor? *                                      1/1

   ○   A) To provide linear motion

   ○   B) To convert electrical energy into mechanical energy

   ○   C) To rotate continuously in either direction

   ◉   D) To rotate to a specific angle based on control signals                    ✓

✕   How is the position of a servo motor controlled? *                    0/1

○   A) By varying the voltage applied to it

◉   B) By adjusting the duty cycle of a PWM signal                    ✕

○   C) By sending specific position commands

○   D) By changing its internal resistance

Correct answer

◉   C) By sending specific position commands

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✓   Which Simulink block is used to control servo motors in Arduino projects? *1/1

○   A) Digital Output

○   B) Analog Input

◉   C) PWM Output                    ✓

○   D) Digital Input

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✓   What does PWM stand for? *                    1/1

◉   A) Pulse Width Modulation                    ✓

○   B) Power Wave Modulation

○   C) Programmable Waveform Manipulation

○   D) Phase Width Modulation

✓  Which type of motor is commonly used for precise angular control in          *1/1
robotics and automation?

◯  A) DC motor

⦿  B) Servo motor                                                                        ✓

◯  C) Stepper motor

◯  D) Brushless motor

✓  What does PWM signal control in a DC motor? *                                  1/1

◯  A) Voltage applied to the motor

◯  B) Current flowing through the motor

⦿  C) Speed of the motor                                                                  ✓

◯  D) Direction of rotation of the motor

✓  How is the speed of a DC motor controlled using PWM? *                         1/1

◯  A) By adjusting the voltage applied to the motor

◯  B) By varying the frequency of the PWM signal

◯  C) By changing the resistance in series with the motor

⦿  D) By modulating the duty cycle of the PWM signal                                      ✓

✓   Which component is commonly used for controlling the speed and          *1/1
     direction of a DC motor in Arduino projects?

⦿   A) H-bridge                                                                    ✓

○   B) Relay

○   C) Transistor

○   D) Diode

✓   How does an ultrasonic sensor measure distance? *                         1/1

⦿   A) By emitting and receiving sound waves                                    ✓

○   B) By emitting and receiving infrared light

○   C) By emitting and receiving radio waves

○   D) By detecting changes in magnetic fields

✓   Which Simulink block is used to interface ultrasonic sensors with Arduino *1/1
     for distance measurement?

○   A) Digital Input

○   B) Analog Input

○   C) PWM Output

⦿   D) Ultrasonic Sensor                                                         ✓

✓   What type of wireless communication is commonly used for remote                    *1/1
    control and data transmission in Arduino projects?

○   A) Wi-Fi

◉   B) Bluetooth                                                                          ✓

○   C) Zigbee

○   D) NFC

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