Robotics 1 – Midterm Study Guide

I will also suggest you study the references uploaded every week to understand the subject better.

Arduino Microprocessor architecture

Why robots? The 3 D's in robotics

Arduino Program Structure:

setup() //things here run once

loop() //things here run forever

Control Structures:

if...else

for loop

Further Syntax:

; (semicolon)

{} (curly braces)

// (single line comment)

Comparison Operators:

== (equal to)

!= (not equal to)

< (less than)

> (greater than)

<= (less than or equal to)

>= (greater than or equal to)

What do each of these lines of code do?

Do you put them in setup(), loop(), or before setup()?:

Commands to learn and understand:

Serial.begin(9600); start outputting to the Serial Monitor tool at 9600 bps

int sensorValue = analogRead(A0);

Serial.println(sensorValue); printing a result of a calculation or measure value to the screen on the serial monitor.

delay(100);

int led = 13;

pinMode(led, OUTPUT);

digitalWrite(led, HIGH);

analogWrite (RedPin, 255);

tone(9, 440, 100); // produces a tone if speaker or piezo is connected to pin 9, 440 is the frequency and 100 is the amount of time to be on

Arrays, learn about indexes and how arrays store values. Learn an example of using arrays. Remember the first index value of an array is in position 0.

Examples to study:

Arduino > File > Examples > 1.Basics > Blink

Arduino > File > Examples > 1.Basics > AnalogReadSerial

Arduino > File > Examples > 1.Basics > Fade

Arduino > File > Examples > 1.Digital> Button

Arduino > Tools > Serial Monitor

Basic sensors used in the class

Input: switch (digital), a potentiometer (analog)

Output Devices: LED, Sound

Include understanding the Serial Monitor and how to output to screen results.

Ex. Serial.begin(9600); start outputting to the Serial Monitor tool at 9600 bps

int sensorValue = analogRead(A0);

Serial.println(sensorValue); printing a result of a calculation or measure value to the screen on the serial monitor.

What is a servo and how does it work? duty cycle

main function of PWM, how does Arduino sends PWM via software – learn the code and Fade sample Examples>Basics>fade

learn Examples>Servo>knob and sweep

learn Examples>Analog>fade