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List five or more Arduino functions that you think will be helpful in programming your robot and describe what they would do for your robot.

`pinMode(pin, mode);` This will initialize digital pins to input or output.
`digitalWrite(pin, value);` This writes high or low values to a digital output pin.
`digitalRead(pin);` This reads values from a digital input pin.
`Serial.available();` This checks if there is data ready to be read from the serial port and how many bytes it is.
`analogRead(pin);` Reads values from an analog pin.
`analogWrite(pin, val);` Writes values to an analog pin.

Based on this semester's competition, discuss how you could use Xbee wireless communication. What commands/information you would send from the Arduino Uno, and at what point during the system's operations? How would your system store this information and/or what actions would it take based on it?

The Xbee wireless communicator could be used to send new instructions to your robot before you start it back up once it's reset. It could also be used to send a start signal to start the process of building a vehicle. Depending on the code it could save the data in a variable, and carry out whatever the code tells it to with that data.

Imagine you need to transmit three pieces of data from an Arduino Uno (being used as a remote control) to an Arduino Mega (which is operating an RC car that you built). The three pieces of information are: a servo angle of 120, a motor power value of 0, and an LED color value of 'r'.

a. Provide code, or pseudocode, for the Uno of how you would package this data to send it.

```
// Begin serial and create mySerial on uno
SoftwareSerial mySerial (pin1, pin2);
Serial.begin(9600);

// Define values
int servoAngle = 120;
int motorPower = 0;
```

```
char LEDColor = 'r';

// Write values to Xbee serial
mySerial.write(255);
mySerial.write(servoAngle);
mySerial.write(motorPower);
mySerial.write(LEDColor);
```

b. Provide code, or pseudocode, for the Mega of how you would receive this data packet and store the correct values in the correct variables.

```
// Begin serial communication
Serial.begin(9600);
Serial1.begin(9600);

//Read values from Xbee
if(Serial1.available() > 3){
     if(Serial1.read() == 255){
          servoAngle = Serial1.read();
          motorPower = Serial1.read();
          LEDColor = Serial1.read();
     }
}
```