**IR CAR Report**

**Components:**

## To create the frame of the car without any sensors I use the Wheel Robot Chassis Kit that comes with nuts, bolts and spacer, two acrylic frames, two wheels, two DC motors and one caster. For the controlling aspect of the car (which aren’t included in the kit) you need a V1838B TL1838 Infrared Sensor, male-to-male wires, an Arduino Nano, a breadboard, a motor controller (h-bridge), 2x 9V batteries and a breadboard power supply module.

**Connections:**

Basic Structure – Spacers in all 4 corners of the board for space for the batteries and motors. 1 DC motor, 1 9V battery and 1 wheel on each side. Also attach the caster at the front of the car for easier movement. Screws, nuts and bolts will be needed for the above.

Connections – One battery is used to power the motors from the motor driver and the other for the Arduino board and the breadboard power supply module. The module converts the 9V received into 5V, which is appropriate for the board. Then Signal, Ground and 3.3V are connected to the Arduino Nano so it works. Once run, this module can save to code so the car never needs a laptop again unless the you want to change the code.

**Communication Technology:**

I used Infrared, which basically means data is conveyed through radiation. Also known, as electromagnetic energy at wavelengths and the wavelength we used is 940nm from a TV remote. We used the arrow buttons to control the movements of the car.

Everything that has some form of heat energy (even ice) emits infrared radiation and usually humans emit infrared at wavelength measuring 0.001cm. IR also helps in night-vision, tracking, weather satellites and new Japan called FIR (Far Infrared Radiation) that can be used in therapy for asthma, colds, flu, bronchitis and sinusitis.

All the buttons on the TV remote we used, has a specific value, which is set in the code so if that value is received it completes a set of actions. I used the arrow buttons and the OK button for stop.

**Limitations:**

First and foremost the range of this sensor is only 10-15 meters and IR controller in this case a TV remote also has a range of only 10-15 meters. So sending transmissions over a distance more than that is not possible which limits the practical uses of the car. Secondly, objects, walls and people can easily block the signal sent. Sometimes even harsh wind or dust can block the signal. The speed of the transmission is not as slow as Bluetooth but the remote buttons must be pressed somewhat in line with the sensor. Even with these limitations it is used in many real life systems like, printers, home security and car locking systems.