

2020

Integrated Design Project – Parts List



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CUED

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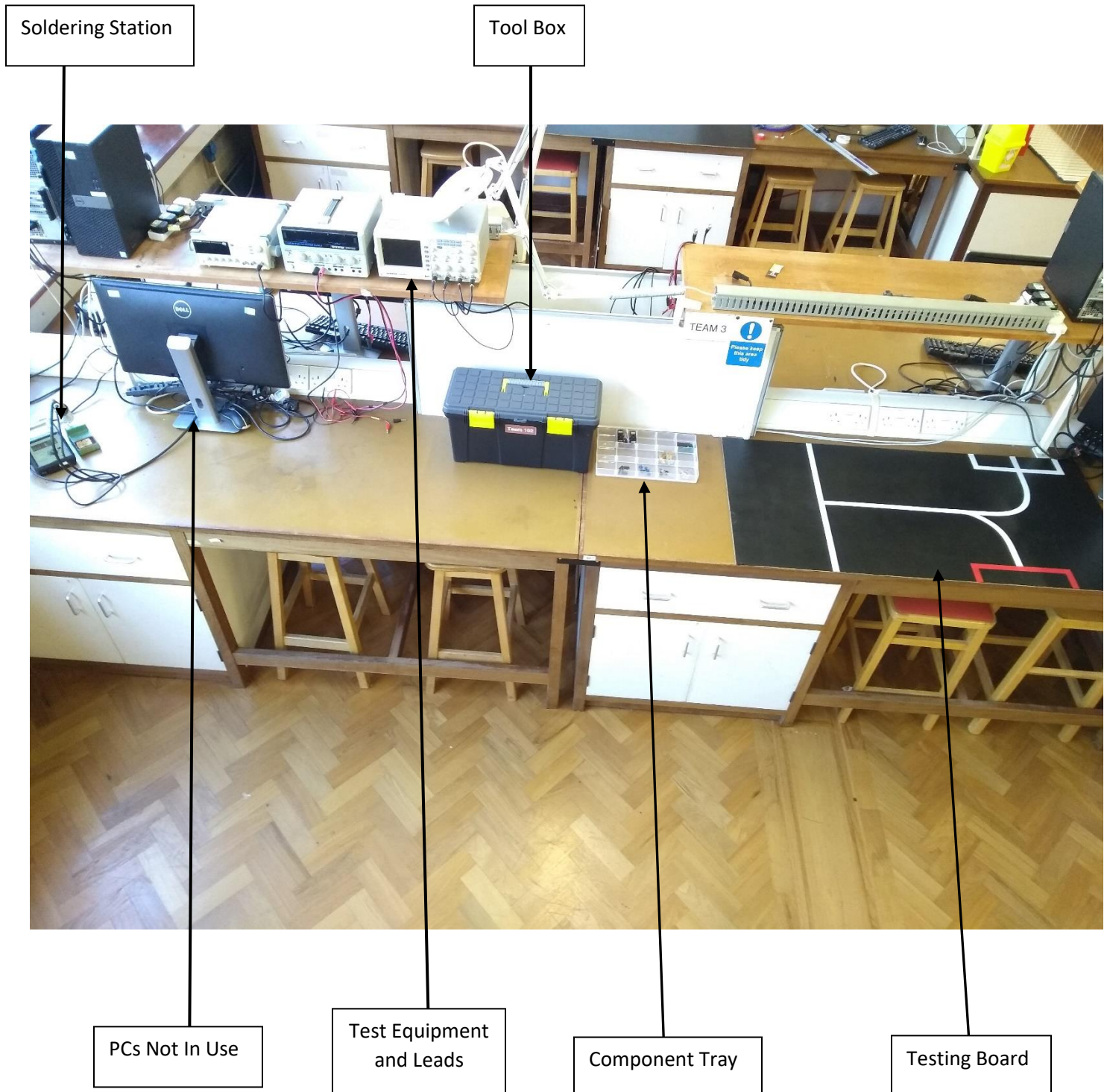
Section 2 EIETL and Dyson Tools and Test Equipment

EIETL- Setup

Teams are responsible for cleaning tools, test equipment and benches after every session.

Teams are to ensure all items are returned to their dedicated location after every session.

Robots may be stored on the bench.



Dyson-Setup

Teams are responsible for cleaning tools, test equipment and benches after every session.

Teams are to ensure all items are returned to their dedicated location after every session.





Description	Supplier and Part Number	Quantity	Location
EIETL-Tools			
Tool Box		1	EIETL Team Bench
Side Cutters	Rapid 49-8544	1	Tool Box
Wire Strippers Draper 19779 150mm	Rapid 86-0334	1	Tool Box
Flat Screwdriver 3mm	Rapid 86-0400	1	Tool Box
Flat Screwdriver 2.5mm		1	Tool Box
Phillips Screwdriver No 1	Rapid 86-0455	1	Tool Box
Phillips Screwdriver No 2	Rapid 86-0460	1	Tool Box
Trimming Tool	Rapid 68-0825	1	Tool Box
Tape Measure	Rapid 89-5124	1	Tool Box
De-Soldering Pump	Onecall SDC01151	1	Tool Box
Track Cutter	Onecall PC01227	1	Tool Box
Chip Lifting Tool		1	Tool Box
Soldering Station		1	EIETL Team Bench
Solder Reel		1	Tool Box
Crimping Tool		1	Tool Box
Heat Gun Station		1	EIETL Team Bench
Scissors		1	Tool Box
Spanners, 5mm,4mm,3mm,2.5mm			Tool Box

EIETL-Test Equipment

Multimeter		1	Tool Box
Oscilloscope	No Longer Current	1	EIETL Team Bench
Signal Generator		1	EIETL Team Bench

Description	Supplier and Part Number	Quantity	Location
Power Supply		1	EIETL Team Bench
Various Test Leads		1	EIETL Team Bench
Mini Testing Board		1	EIETL Team Bench
Arduino USB2 Communications Lead		1	Tool Box

Description	Supplier and Part Number	Quantity	Location
Dyson Tools			
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board
			Tool Board

Section 2 EIETL Electronic Parts

Description	Supplier and Part Number	Quantity	Location
Passive Components			
Carbon Film Resistors 0.25W 5%	Onecall	10R – 1M Kit	Tool Box
Ceramic Capacitors	Rapid	10pF - 220nf	Parts Tray
Capacitors Electrolytic 10uF	Rapid	2	Parts Tray
Capacitors Electrolytic 22uF	Rapid 11-0830	2	Parts Tray
Capacitors Electrolytic 47uF	Rapid 11-0835	2	Parts Tray
Capacitors Electrolytic 100uF	Rapid 11-0875	2	Parts Tray
Cermet Trimmer Pot 1K	Rapid 68-1956	2	Parts Tray
Cermet Trimmer Pot 10K	Rapid 68-1959	2	Parts Tray
Cermet Trimmer Pot 20K	Rapid 68-1960	2	Parts Tray
LEDs			
3mm LED Red	Rapid 55-1776	6	Parts Tray
3mm LED Yellow	Rapid 55-1774	3	Parts Tray
3mm LED Green	Rapid 55-1772	3	Parts Tray
3mm LED Blue	Rapid 55-1762	3	Parts Tray
3mm LED White	Rapid 55-1766	3	Parts Tray
Sensors			
IR Line Sensor OPB704	Onecall SCO1254	4	Parts Tray
IR Distance Sensor GP2Y0A21YK0F 80cm	Onecall 1243869	1	Parts Tray
IR Distance Sensor GP2Y0A02YK0F 150cm	Onecall 070891	1	Parts Tray
IR TSOP4838 Infrared Receiver 38 kHz	Rapid 55-0905	1	Parts Tray
IR KTIR0611S Photo Interrupter	Rapid 58-0942	1	Parts Tray
TSAL6200 5mm 940nm IR Transmitter Diode	Rapid 49-4513	1	Parts Tray
LDR NSL 5112	Rapid 58-0128	2	Parts Tray
Infrared Emitter SFH 485P	Rapid 58-0446	1	Parts Tray
Infrared NPN Phototransistor SFH 313A	RS 6655397	1	Parts Tray
IR TSAL6200 5mm Transmitter Diode	Rapid 49-4513	0	Request

Description	Supplier and Part Number	Quantity	Location
Integrated Circuits			
Dual Comparator LM393P	Rapid 82-0272	2	Parts Tray
Quad Comparator LM339N	Rapid	2	Parts Tray
Quad 2-Input Nand Gate SN74HC00N	Rapid 83-0036	2	Parts Tray
Hex Invertor SN7414N	RS 9232329	2	Parts Tray

Motors, Wheels and Servos			
Large Motor 1308-12-100	Rapid 37-1147	2	Motor Box
Small Motor 1271-1290	RS 245-6102	2	Motor Box
Standard Servo MC-410	Rapid 49-9395	2	Parts Tray
4" Wheel Vex 276-1497		2	Tool Box
4" Wheel Adaptors	Locally Manufactured	2	Tool Box
Ball Caster 3/4" Pololu 995	Rapid 75-0627	1	Tool Box

Switches and Buttons			
Micro switch SPDT MS-118305-A	RS 154-3591	2	Parts Tray
Push Button Black US-101A	Rapid 78-0118	2	Parts Tray

Description	Supplier and Part Number	Quantity	Location
Connectors, Plugs and Sockets			
Crimp Housing 2-Pole JYK	Rapid 22-0905	4	Parts Tray
Crimp Housing 3-Pole	Rapid 22-0910	4	Parts Tray
Crimp Housing 4-Pole	Rapid 22-0915	4	Parts Tray
Header Right Angle 2-Pole	Rapid 22-1005	4	Parts Tray
Header Right Angle 3-Pole	Rapid 22-1010	4	Parts Tray
Header Right Angle 4-Pole	Rapid 22-1015	4	Parts Tray
Crimp Terminals JYK T2500	Rapid 22-1098	20	Parts Tray
Single Row PCB Sockets – 2 Way	Rapid 12-0081	4	Parts Tray
Single Row PCB Sockets – 3 Way	Rapid 12-0082	4	Parts Tray
Single Row PCB Sockets – 4 Way	Rapid 12-0083	4	Parts Tray

Processor, Battery and Motor control

Arduino Uno Wi-Fi Rev2 + 5v Power Supply	RS 1763651	1	
Adafruit Motor Shield V2	Rapid 73-4497	1	
Power Lead	Locally Manufactured	1	Accessories
Battery Pack	Locally Manufactured	1	

Miscellaneous

Light Filters LEF-56SET	Onecall DP264712	Set	Parts Tray
Selection of Heat Shrink Tubing	Rapid 84-0145	Set	

Section 3 Dyson Mechanical Parts

Description	Maximum Quantity	Location
Sheet, Bar, Rod, Angle ETC		
Mild steel sheet, 0.7mm thick	450mm×450mm	Dyson
Aluminum sheet, 1.5mm thick	200mm×150mm	Dyson
Aluminum tube, 19mm diameter, 1mm wall	150mm long	Dyson
Aluminum rod, 8mm diameter	150mm long	Dyson
Aluminum angle, 12.5×12.5×1.6 1 21swg = 0.8mm	600mm Long	Dyson
Mild steel tube (5/16 od × 21swg) 1 18swg = 1.2mm	300mm long	Dyson
Mild steel tube (3/8 od × 22swg) 1 16swg = 1.6mm	300mm long	Dyson
Polypropylene sheet 300×150×1.5 1	300×150×1.5 1	Dyson
Mild steel rod 4mm diameter	300mm long	Dyson
Mild steel rod 5mm diameter	300mm long	Dyson
Mild steel rod 6mm diameter	300mm long	Dyson
Brass rod 6mm diameter	100mm long	Dyson
Brass hex 6 AF	100mm long	Dyson
Gears, Pulleys and Chain		
Spur Gears (exact dimensions to be confirmed)	Available upon request	EIETL
Bevel Gears	Available upon request	EIETL
Rack Gears	Available upon request	EIETL
Worm Gears	Available upon request	EIETL
Compression Springs (in a variety of sizes)	Available upon request	EIETL
Extension Springs (in a variety of sizes)	Available upon request	EIETL
Deep Grove Bearings	Available upon request	EIETL
Flange Bushings	Available upon request	EIETL
Pulley	Available upon request	EIETL

Description	Maximum Quantity	Location
Screws, Fixings and Adhesives		
M2.5 × 12 Socket head Cap Screws (motor mounts)		Dyson
M3/M4/M5/M6 studding		Dyson
M3 × 4, 10, 16, 20 Socket Head Cap Screws		Dyson
Pop rivets		Dyson
M4 × 10, 16, 20, 25 Socket Head Cap Screws		Dyson
M5 × 16, 20, 25 Socket Head Cap Screws		Dyson
M6 × 16, 25, 40 Socket Head Cap Screws		Dyson
No4x25mm Round Head Screws		Dyson
No4x25mm Countersunk Screws		Dyson
M3 Nylon nut, bolts and screws		Dyson
M4 Nylon nut, bolts and screws		Dyson
M5 Nylon nut, bolts and screws		Dyson
M6 Nylon nut, bolts and screws		Dyson
Adhesives (Hot glue, Rapid araldite, White wood glue)		Dyson
Superglue HV (EIETL)		EIETL
Wood Sheet, PLA and Cardboard		
MDF 300mm x 600mm (3mm, 4mm, 6mm) for laser cutting	2 x Sheets Max	Dyson
Plywood 300mm x 600mm (3mm, 4mm, 6mm for laser cutting		Dyson
PLA for 3D printing		Dyson
Cardboard for testing		Dyson

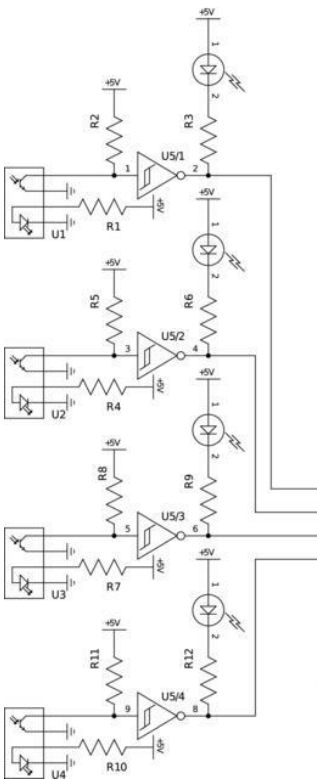
Help and Advice

Getting Started with the Arduino

Some Ideas about Line Following

Read the data sheet then read it again

Designing a robust mounting for your line sensors will improve reliability and repeatability.



Crimping

Soldering

