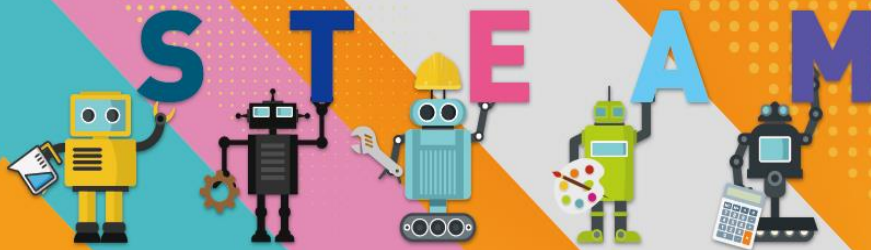


手搖發電暨行動電源

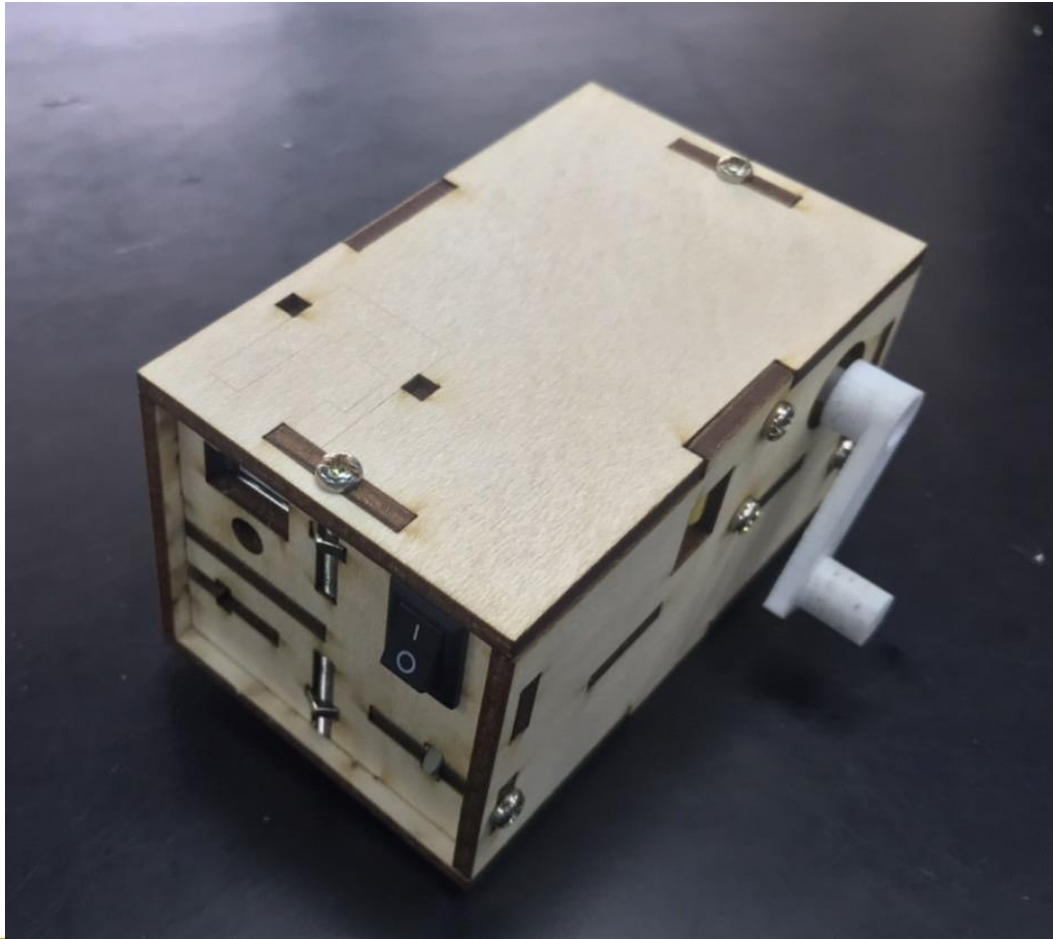
枋中自造團隊



FLSH
Fun Maker



本日作品

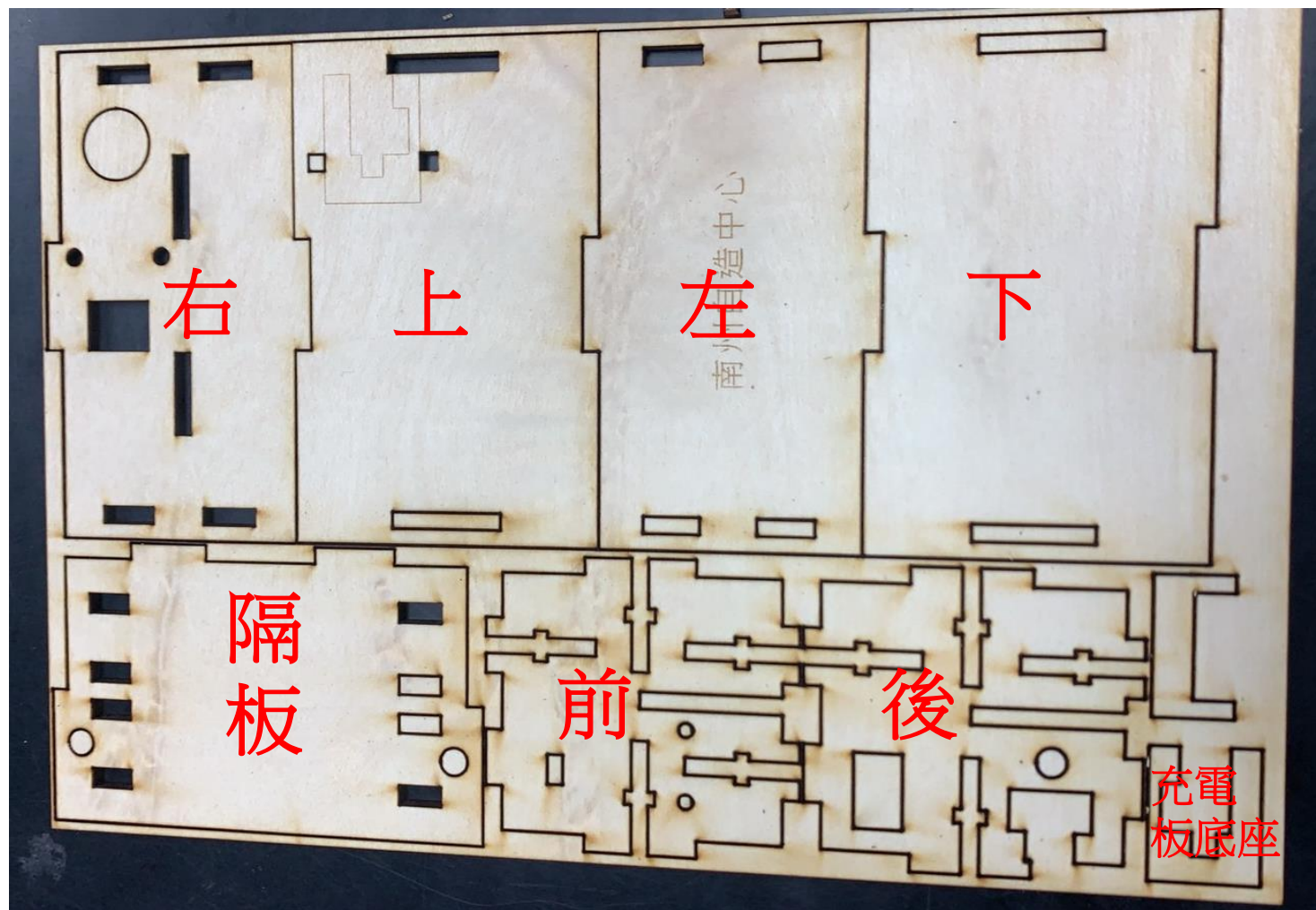


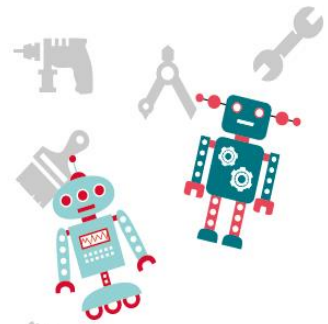
FLSH



Fun Maker

各板名稱

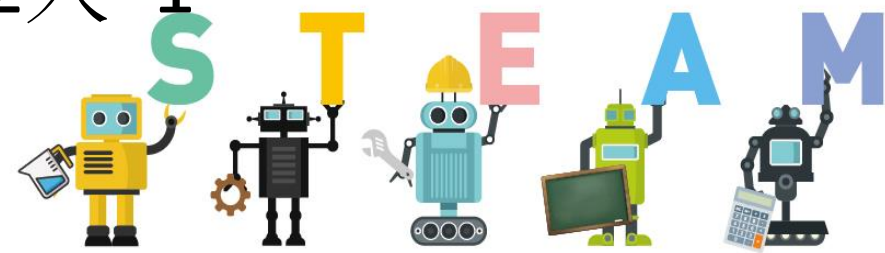




材料清單

- 雷切外盒木板
- 18650電池*2
- TT馬達1:48 *1
- 肖基特二極體*1
- 行動電源充電板
- 開關 *1
- LED燈珠2入*1
- M3*20 螺絲螺帽 10組
- M3*30 螺絲螺帽 2組
- 紅黑電線數條
- (稽納二極體、電阻、5mm LED燈)

FLSH

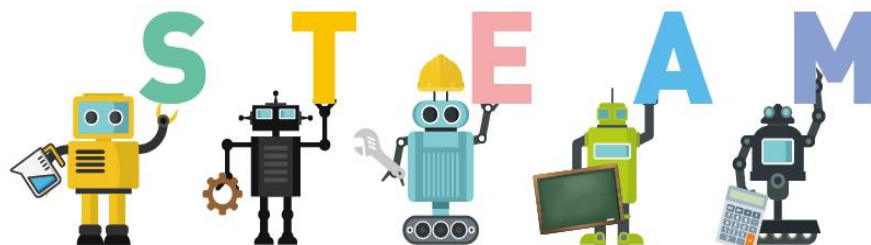


Fun Maker

工具清單

- 尖嘴鉗
- 斜口鉗
- 剝線鉗
- 十字螺絲起子
- 鐸槍
- 熱熔膠槍
- 白膠

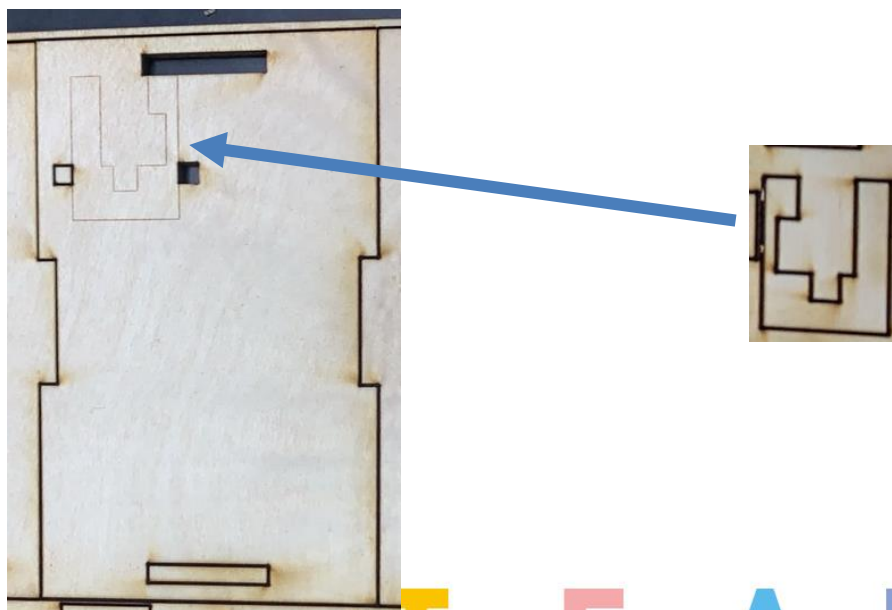
FLSH



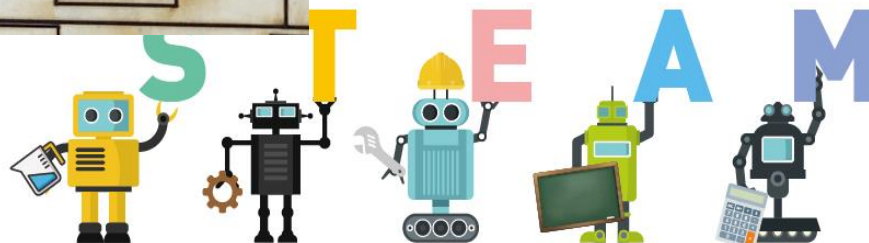
Fun Maker

開始之前

- 取出充電板底座及上板，將底座與上板圖案相同位置上膠固定。



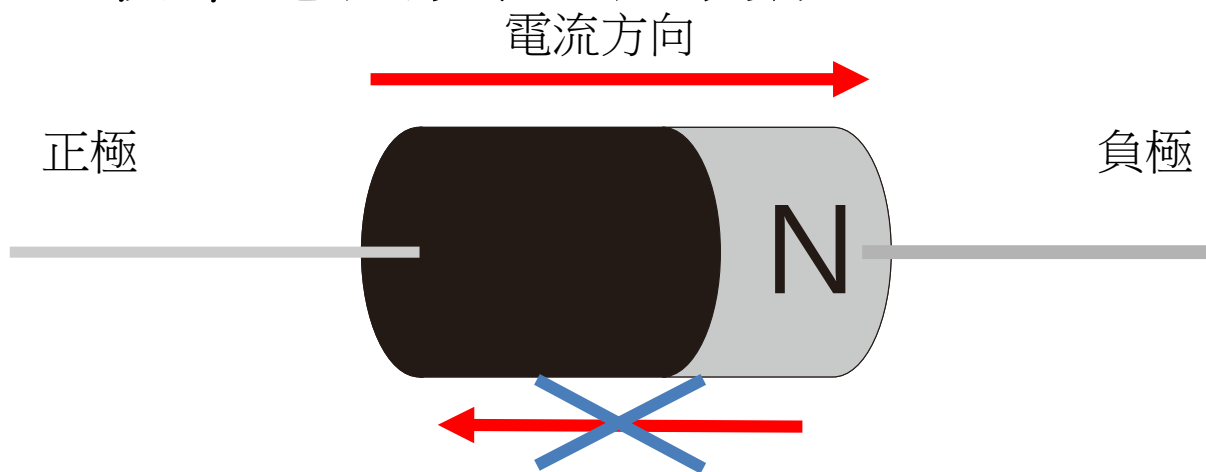
FLSH



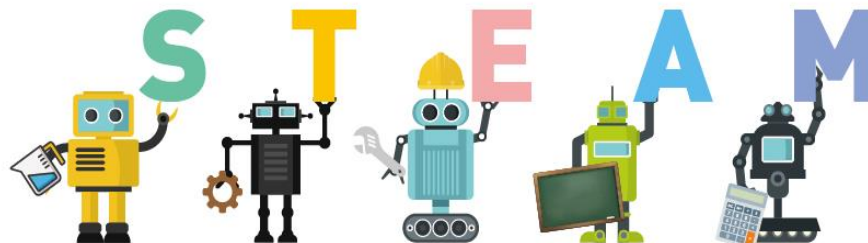
Fun Maker

材料介紹

- 二極體，具有兩不對稱電導的電極（故名「二極」），只允許電流由單一方向流過，所以最常應用其整流功能。



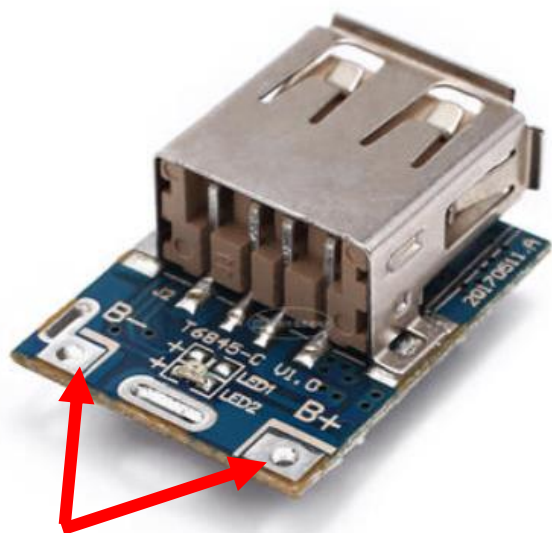
FLSH



Fun Maker

充電板

- 接口：主要分為micro usb及Type C



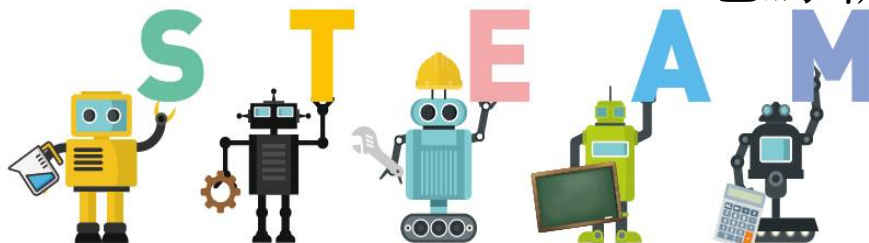
電池接孔



電源輸入

電源輸出

FLSH



Fun Maker

TT馬達(手搖發電機)

- 減速比1:48(請互相輔助測試輸出正負極)



FLSH



Fun Maker

鋰電池介紹

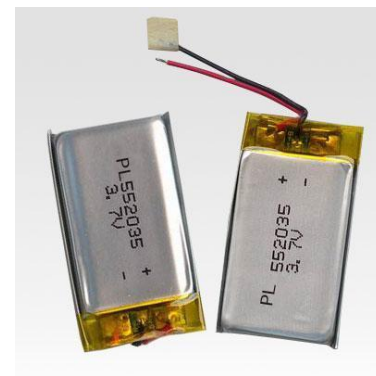
- 常見鋰電池為18650、14500及方形聚合物鋰電池。



18650：直徑18mm
長度65mm
略大於3號電池

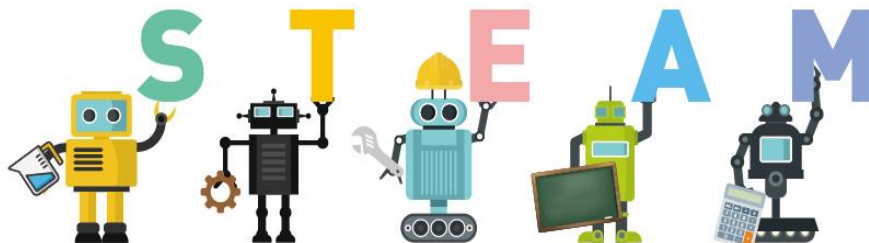


14500：直徑14mm
長度50mm
大小與3號電池相同



方形聚合物鋰電池，大小型號較多樣。

FLSH



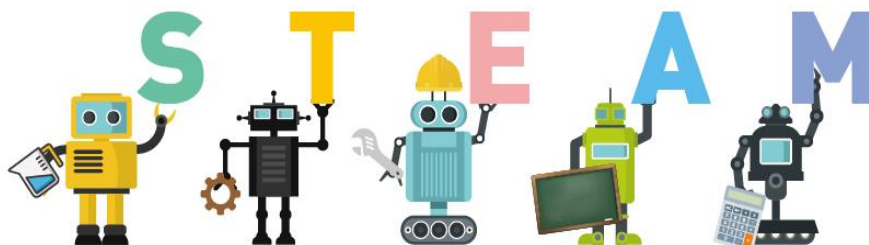
Fun Maker

鋰電池容量

- mAh??

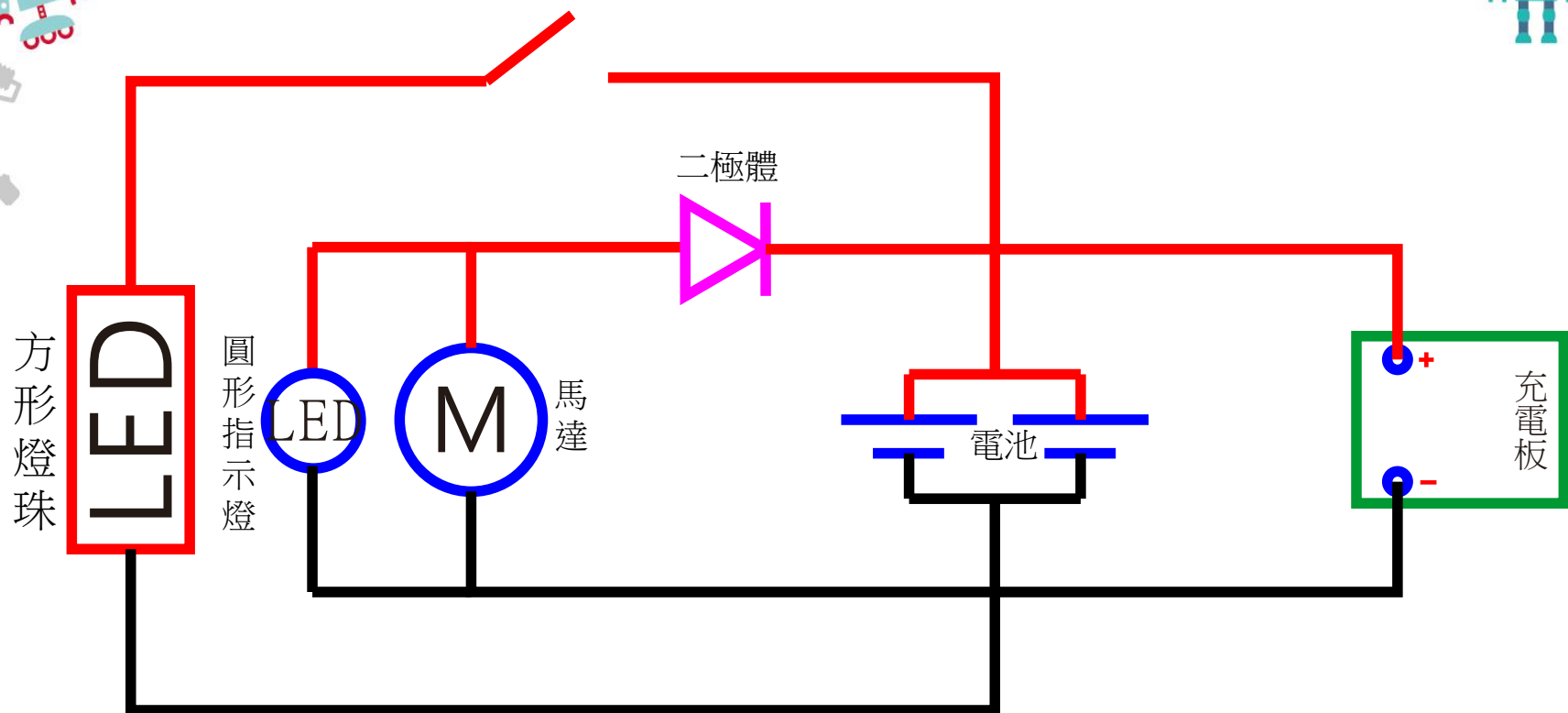
- mAhmAh 毫安培小時 或者又寫作 $\text{mA}\cdot\text{h}$ ，亦簡稱毫安時，1毫安培小時的電量是1毫安培的電流通電1小時的電量。

FLSH

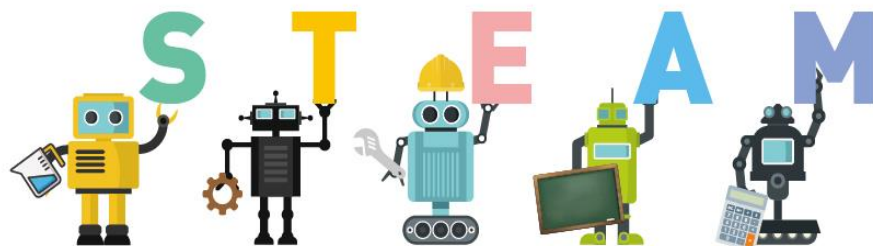


Fun Maker

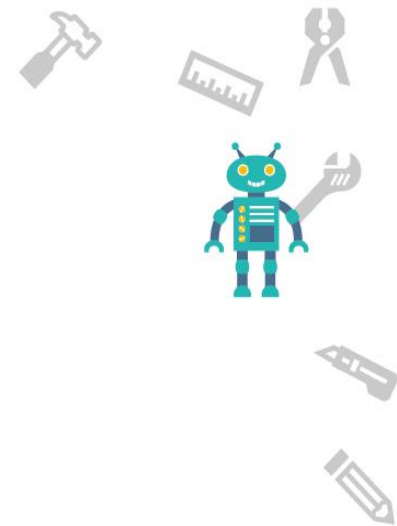
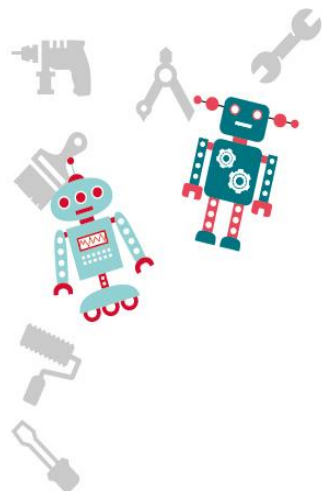
電路圖



FLSH

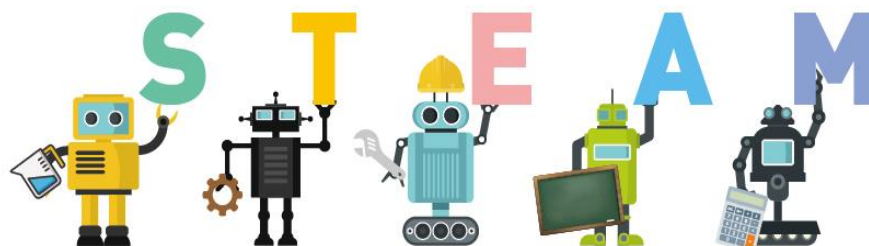


Fun Maker



接下來開始實作囉

FLSH

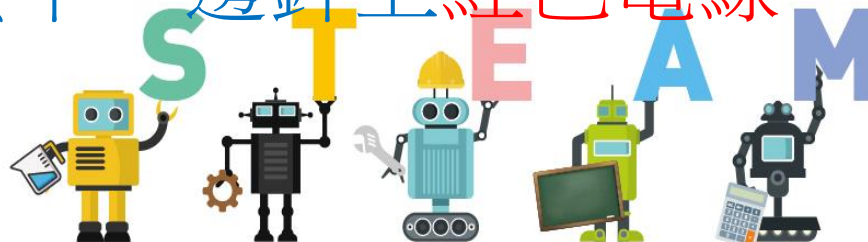


Fun Maker

銲接

- 將所有需要銲接的部分先行銲上電線後，再行組裝。(正極-紅線，負極-黑線)
- 需先銲接清單如下：(電線長度約10CM)
 - 馬達→正極銲上二極體、負極銲上電線
 - 充電板→正負極銲上電線
 - LED燈→正負極銲上電線
 - 電池→正負極銲上電線
 - 開關→其中一邊銲上紅色電線

FLSH



Fun Maker

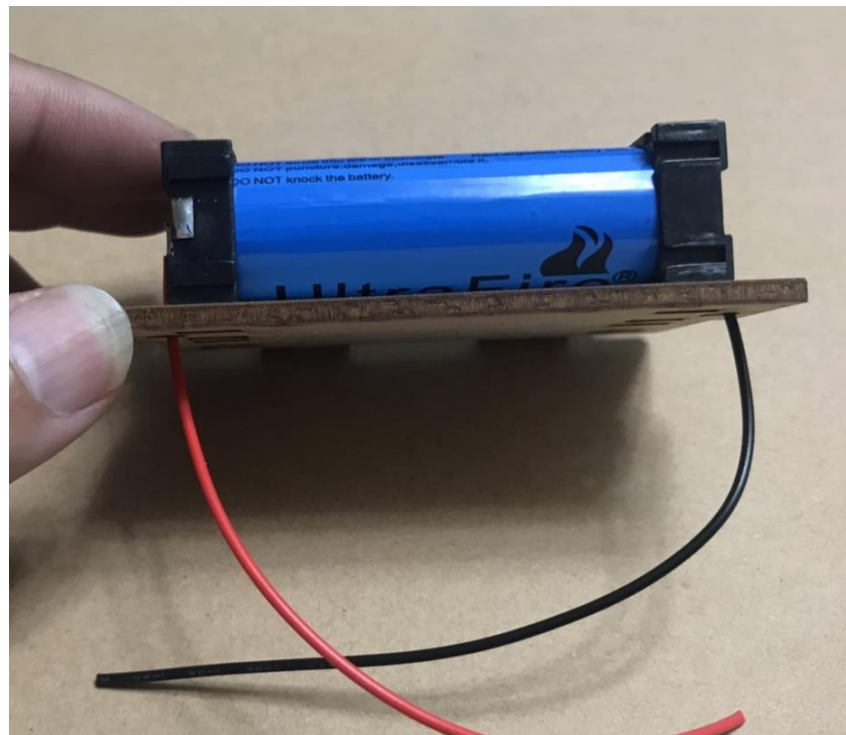
電池銲接圖片如下

- 兩顆電池需並聯(已幫大家點銲完單邊)，確認電線輸出是從那顆電池出來
- 拿出電池隔板，將電池盒公邊完全對準隔板，記下電線銲接位置。
- 右圖圓圈處為電線孔。



電池銲接圖片如下

- 電線需從孔位穿出，因此電線需銲在孔位上方的電池。



電池銲接圖片如下

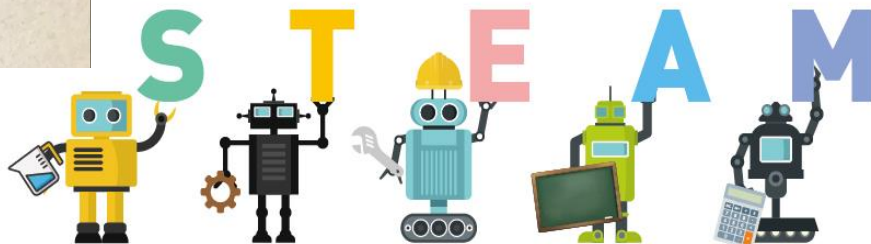
- 電線剝線



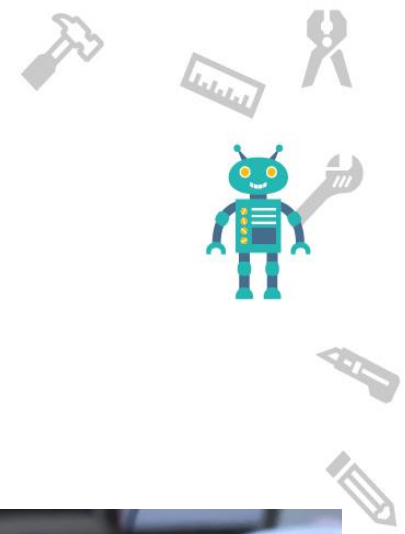
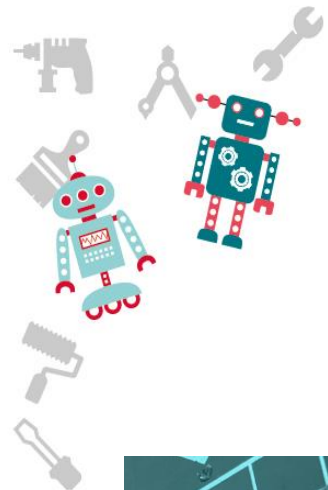
銲接



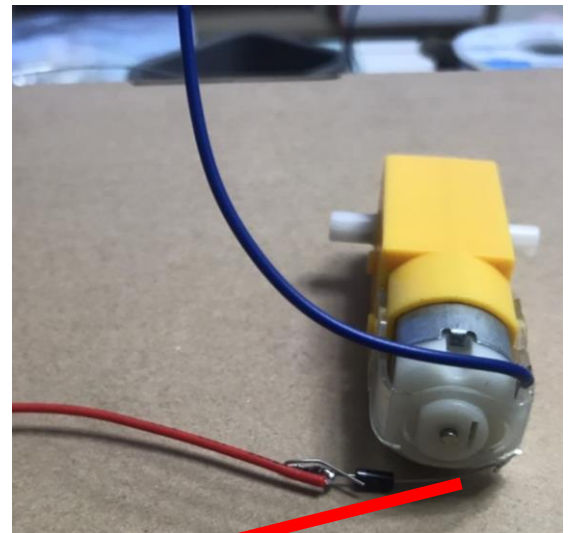
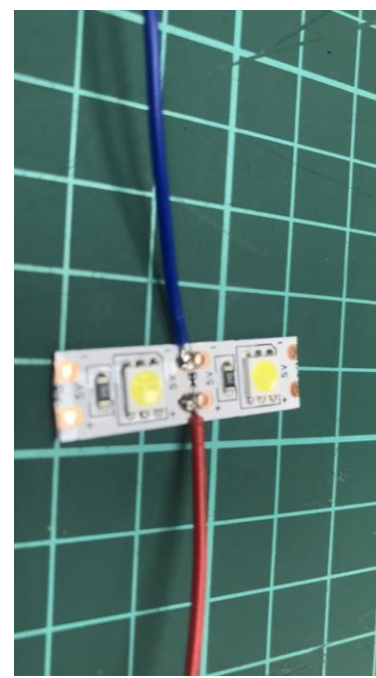
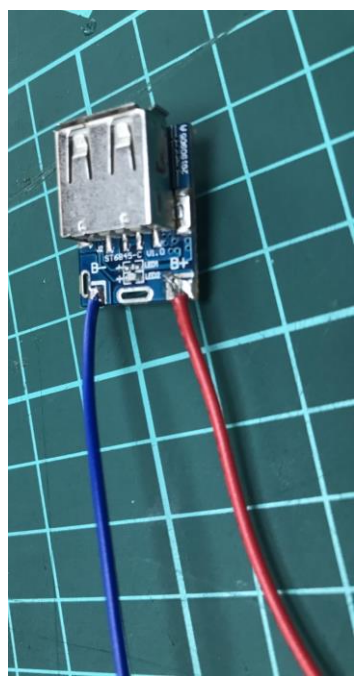
FLSH



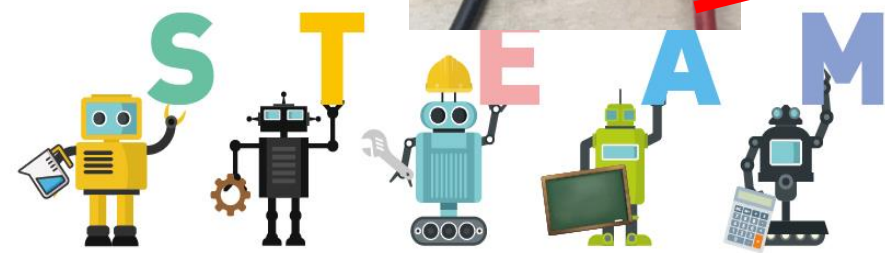
Fun Maker



銲接圖片如下



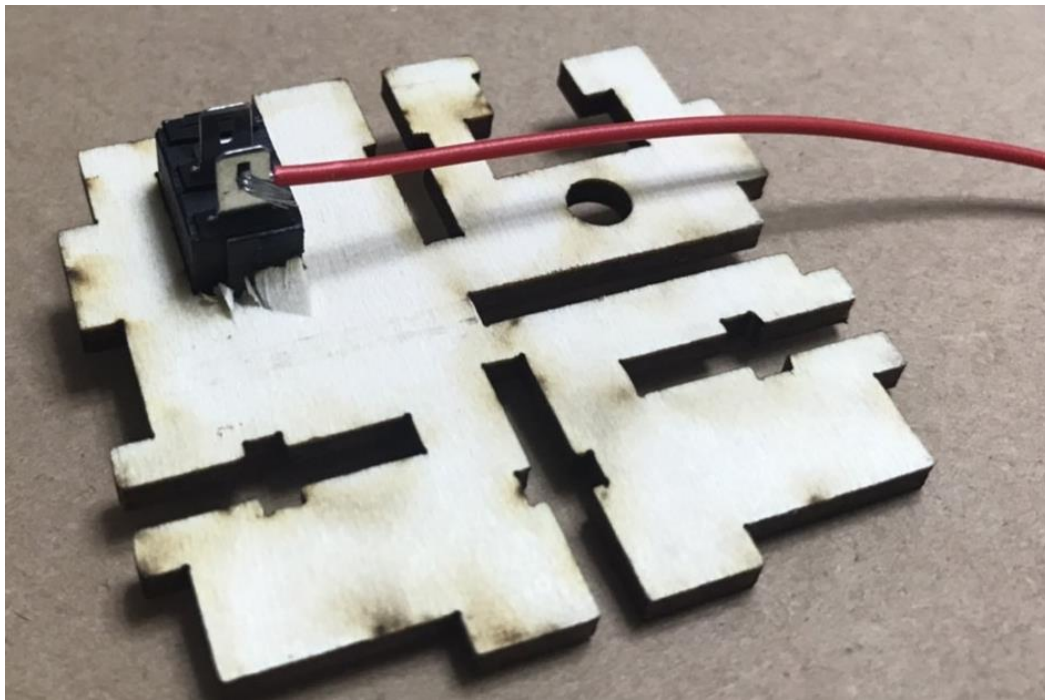
FLSH



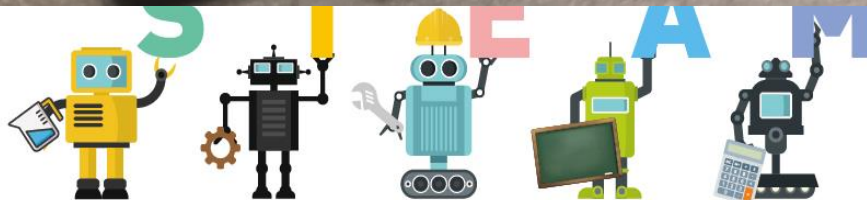
Fun Maker

銲接圖片如下

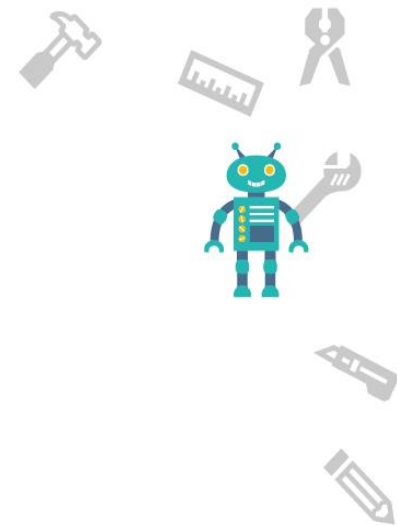
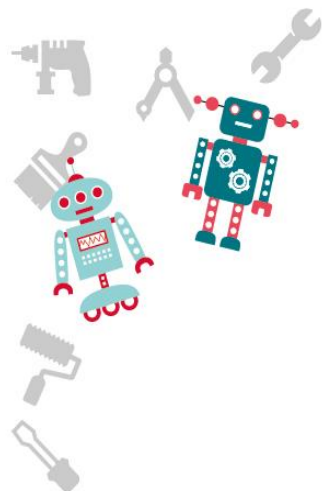
- 開關其中一邊銲上紅色電線



FLSH

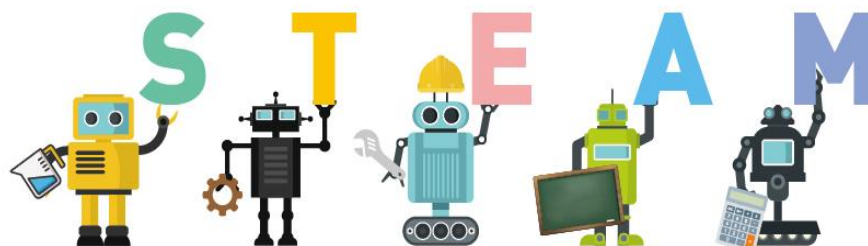


Fun Maker



開始組裝

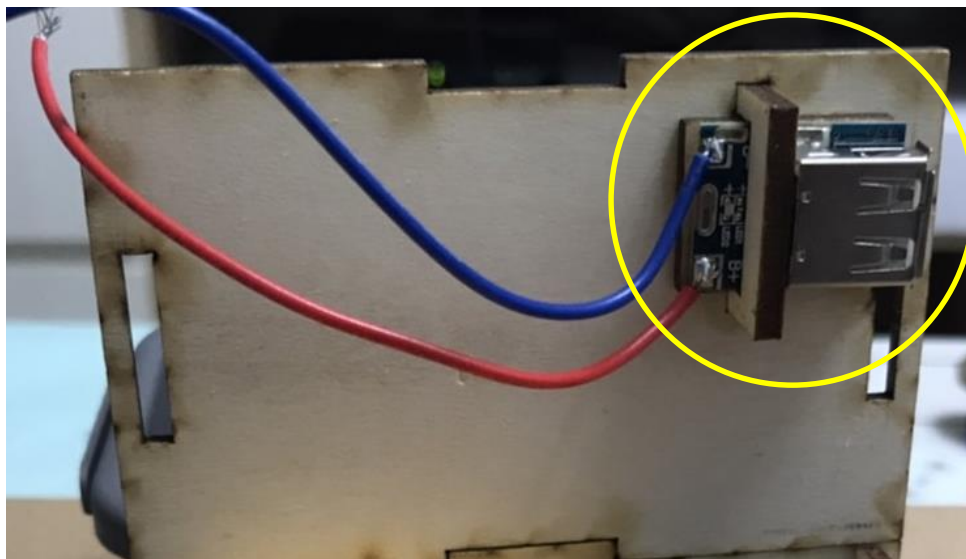
FLSH



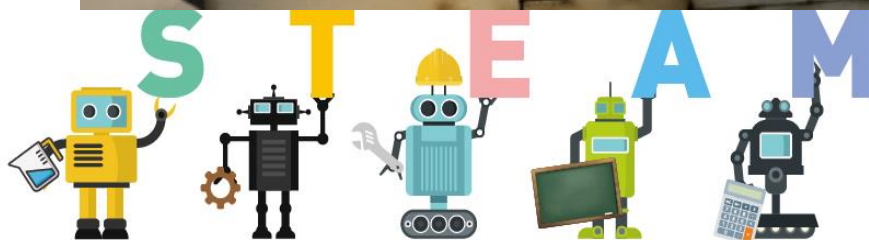
Fun Maker

組裝順序0-上板

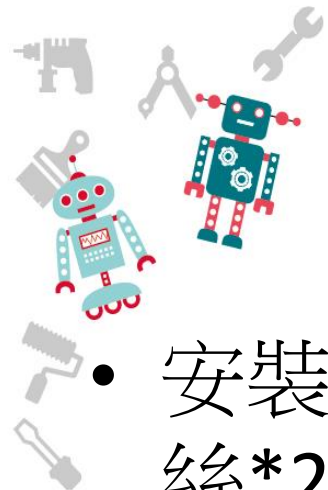
- 將充電板放在上板處(剛剛膠黏處)，再扣上後檔板(需上膠)，再從兩側上熱熔膠固定充電板



FLSH

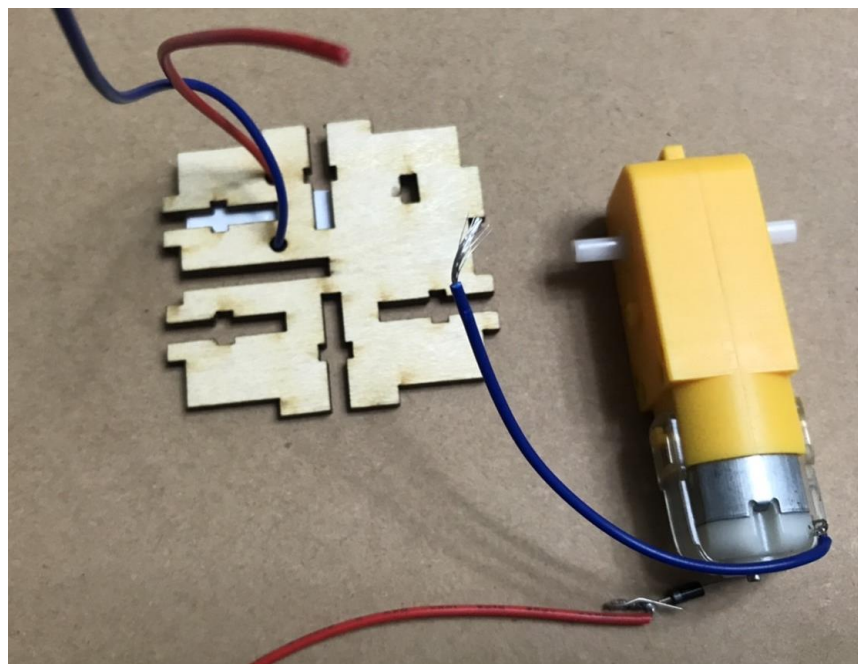


Fun Maker

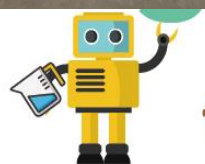


組裝順序1-馬達

- 安裝馬達，請取出下列材料：馬達，3cm螺絲*2，前蓋板，右側蓋板



FLSH

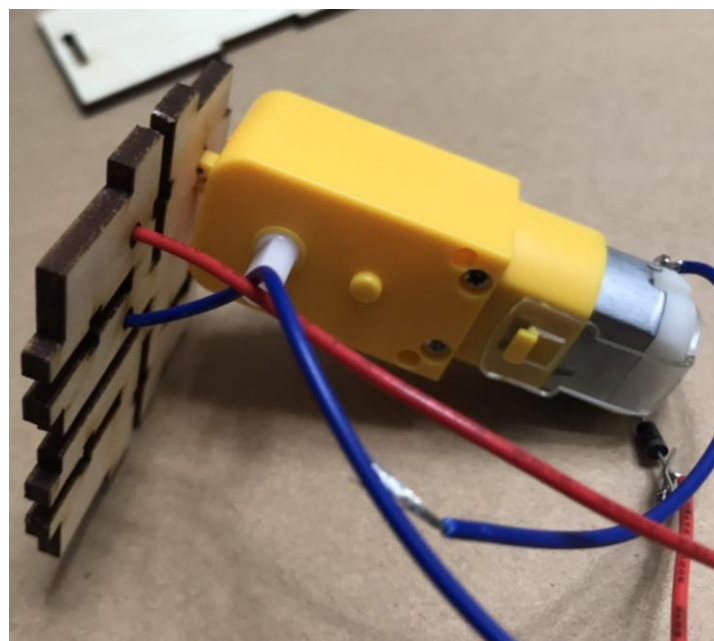
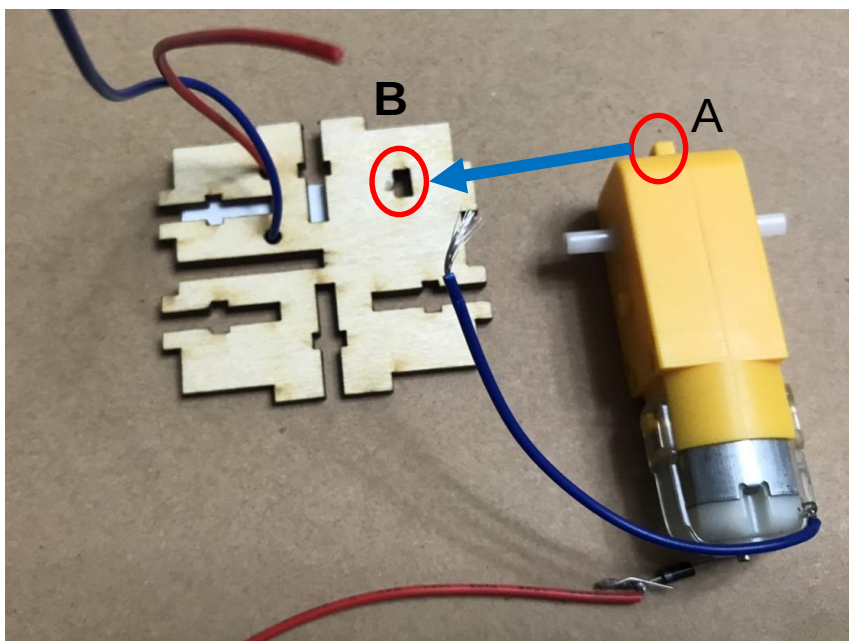


AM

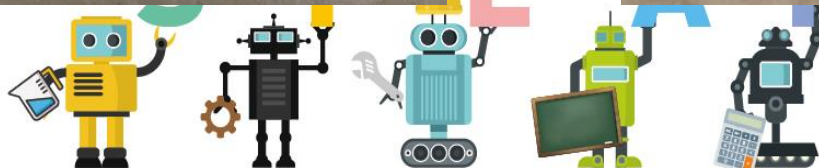
Fun Maker

組裝順序1-馬達

- 位置擺放如下圖，馬達電線置於右側。將圖中箭頭組裝上。A→B



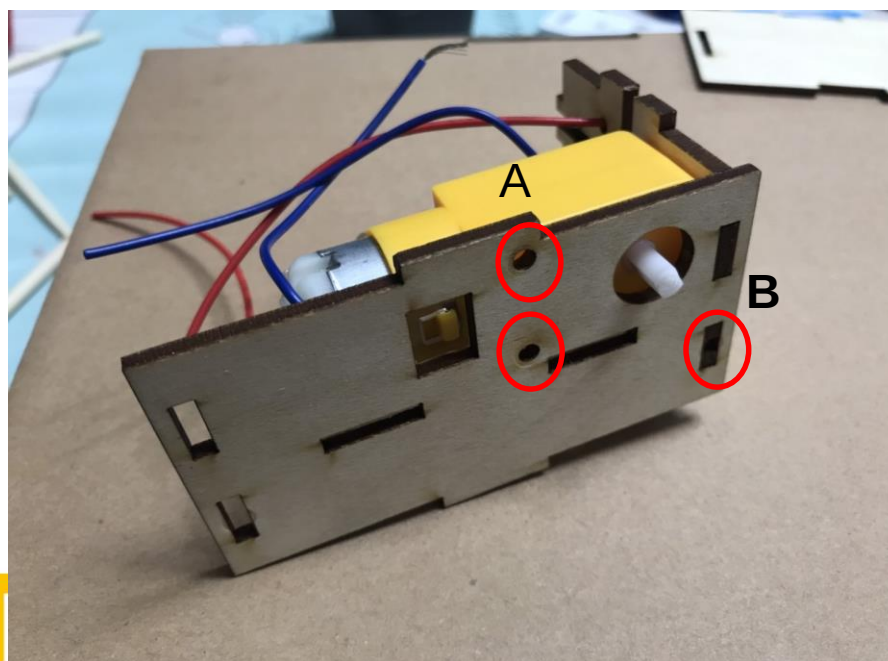
FLSH

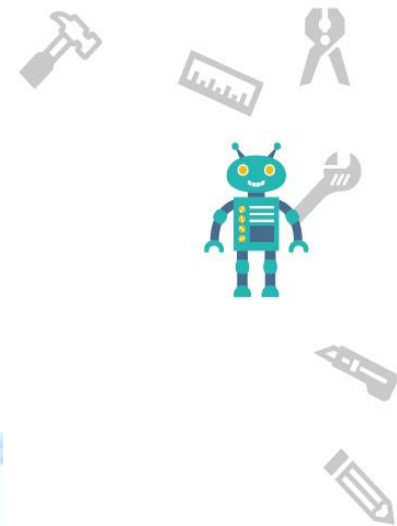
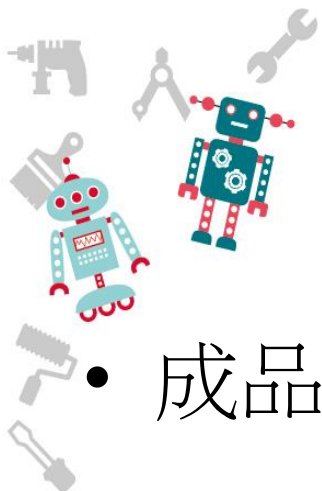


Fun Maker

組裝順序1-馬達

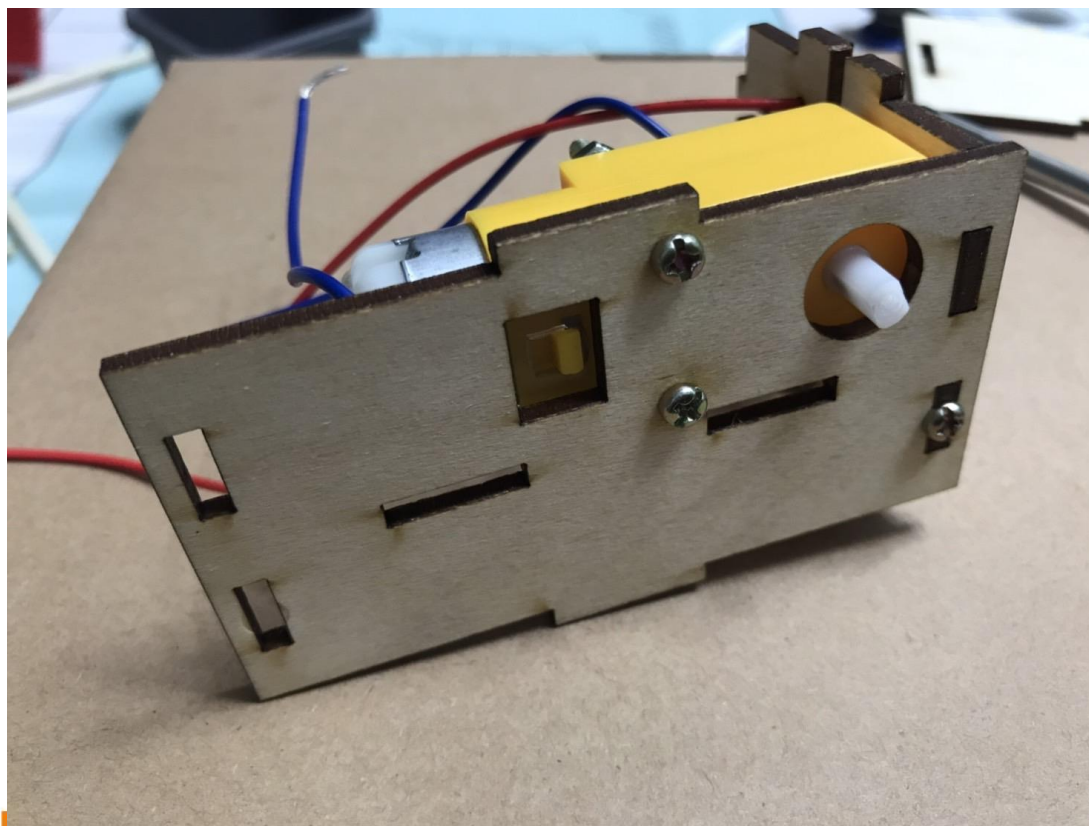
- 取出右板，將右板與前板結合並鎖上螺絲。
- A處鎖3cm螺絲，B處鎖2cm螺絲。





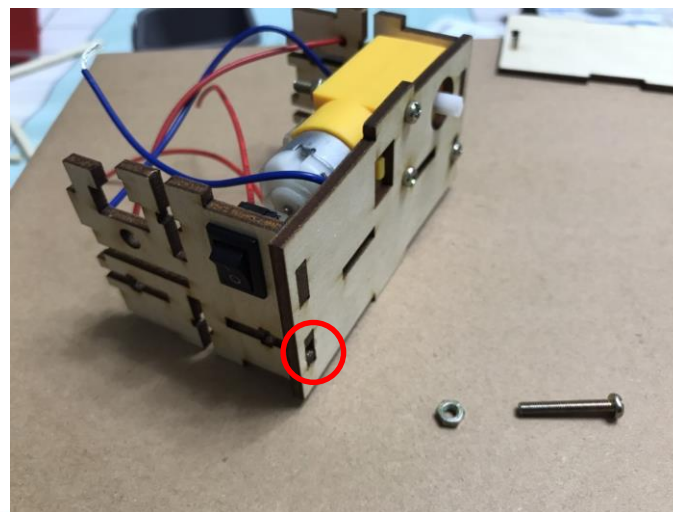
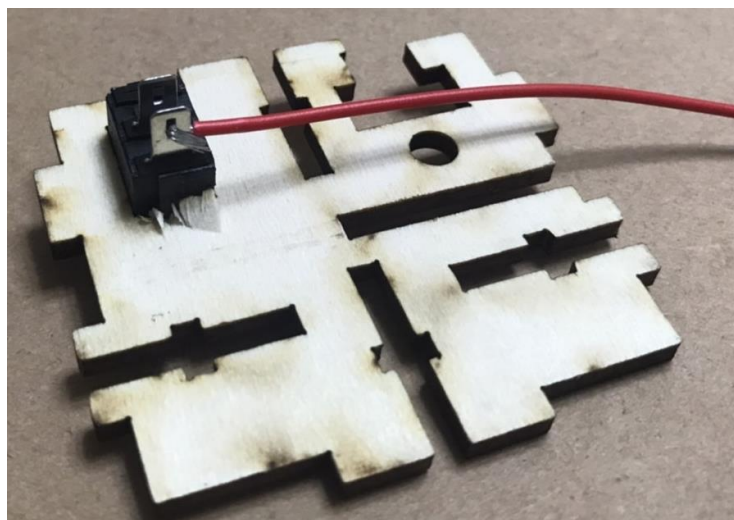
組裝順序1-馬達

- 成品如下圖

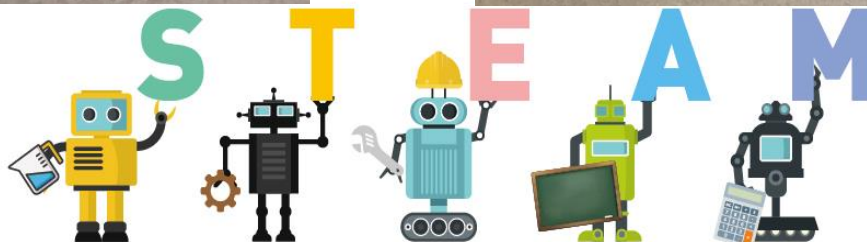


組裝順序2-後蓋板

- 取出後蓋板，將開關嵌入蓋板後，並與右側蓋板組裝。同時並鎖上2cm螺絲



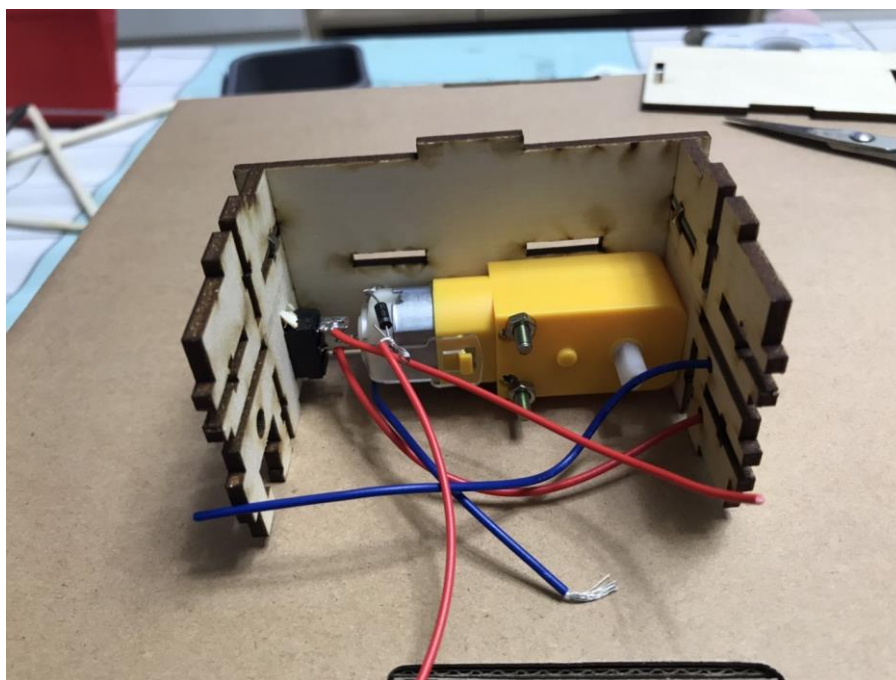
FLSH



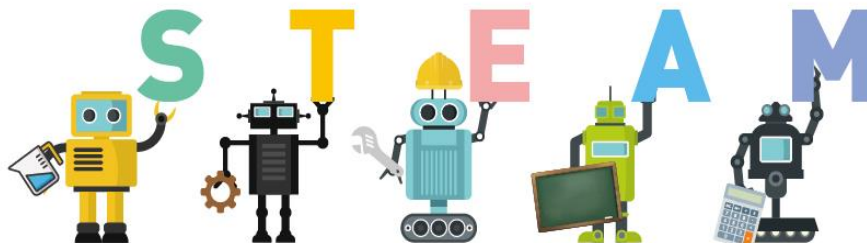
Fun Maker

組裝順序3-電池固定板

- 將前面組好的部份馬達朝下。



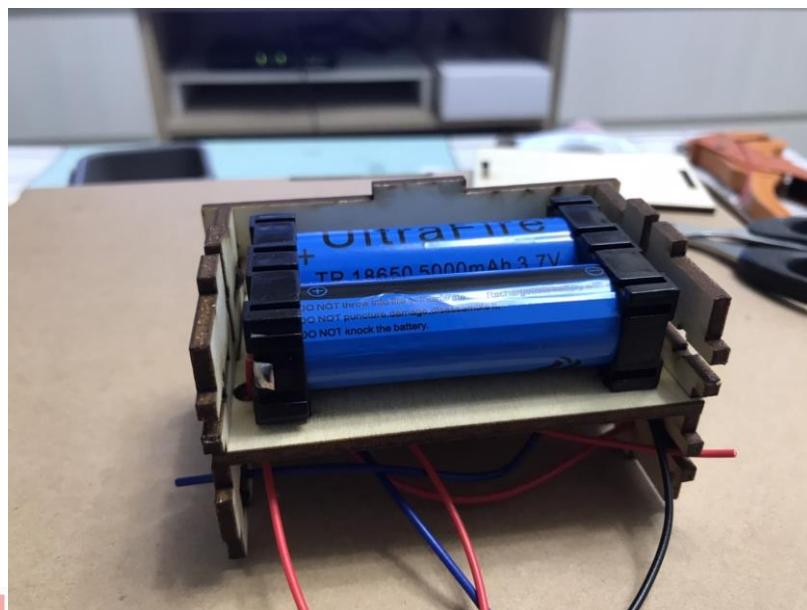
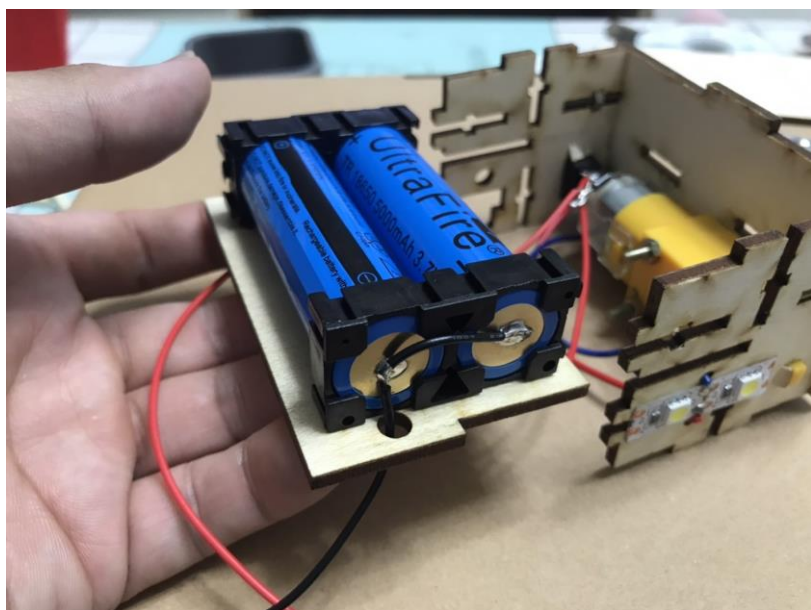
FLSH



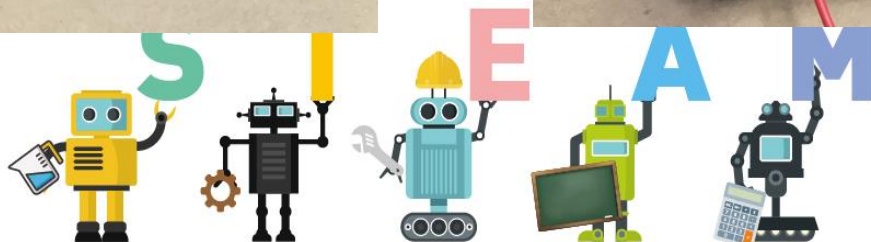
Fun Maker

組裝順序3-電池固定板

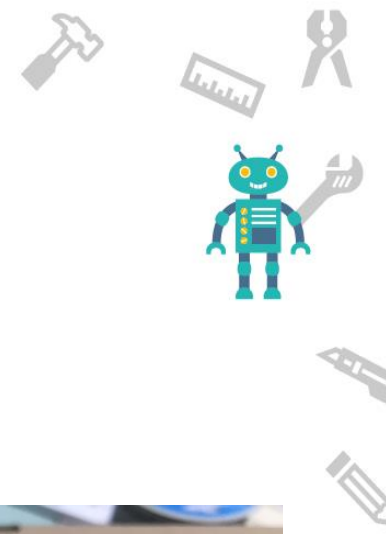
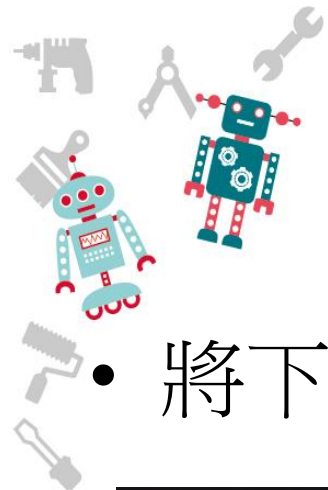
- 將電池扣凸起部分對準固定板，同時將正負極電線穿過兩側圓洞。放入主體。



FLSH

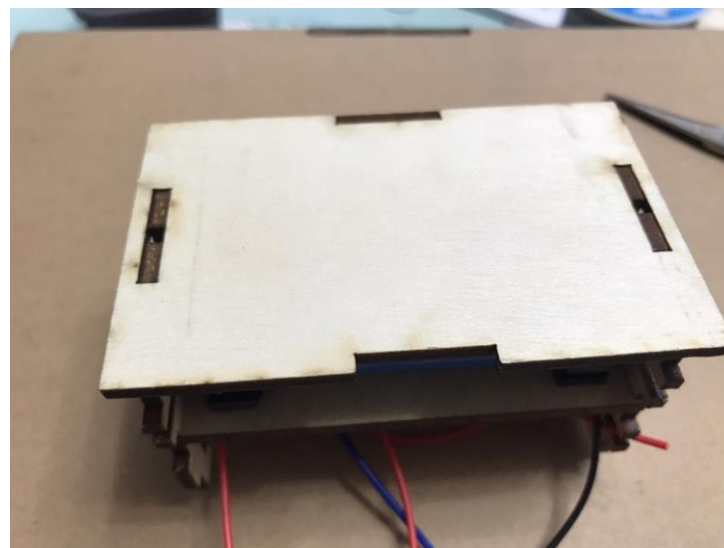
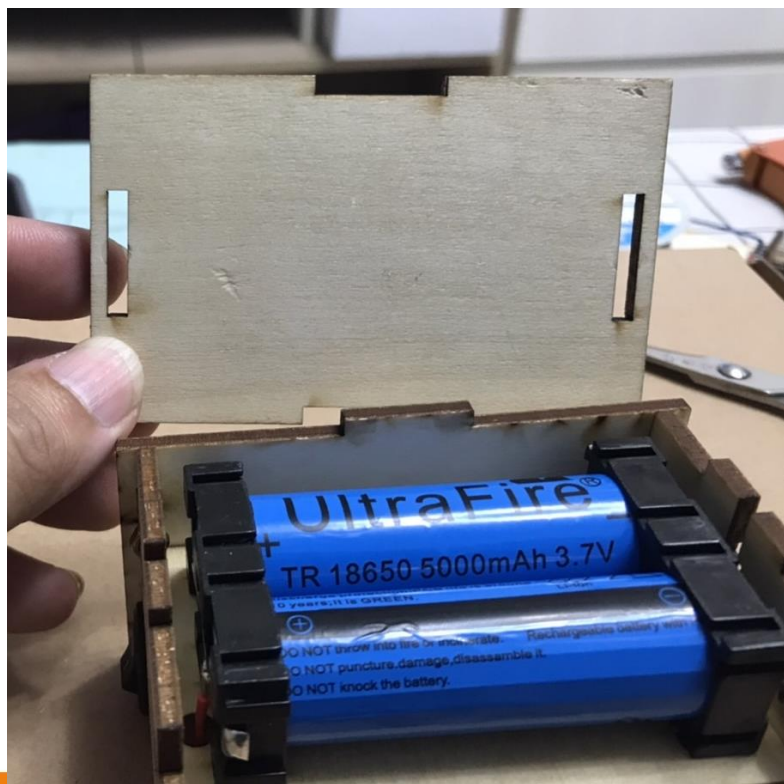


Fun Maker



組裝順序4-下板

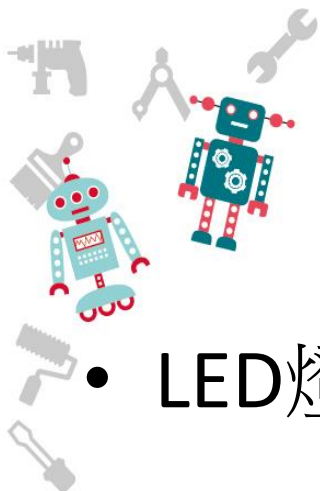
- 將下板裝入後，並鎖上螺絲。



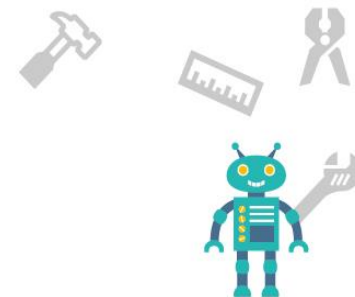
FLSH



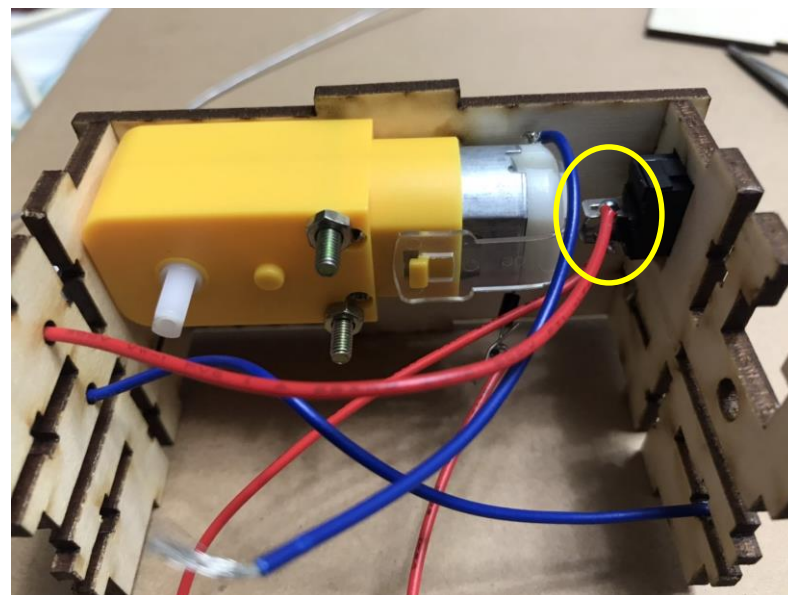
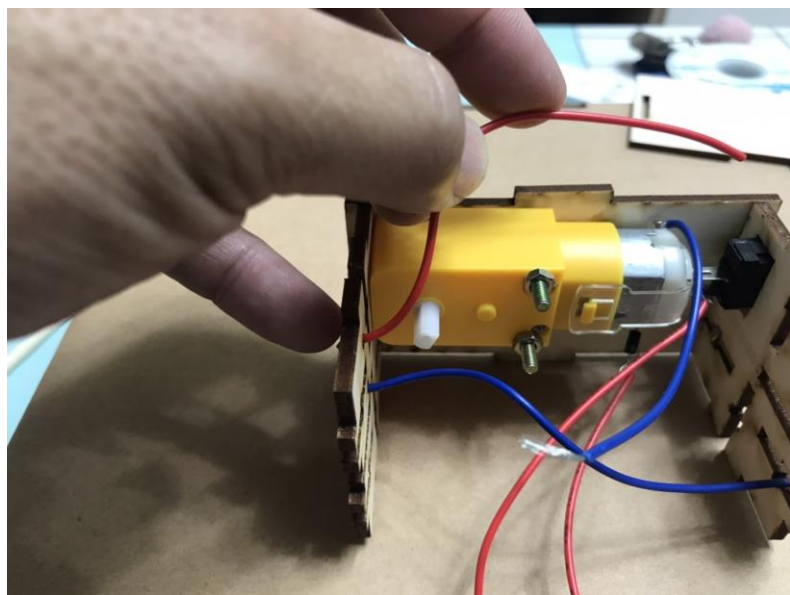
Fun Maker



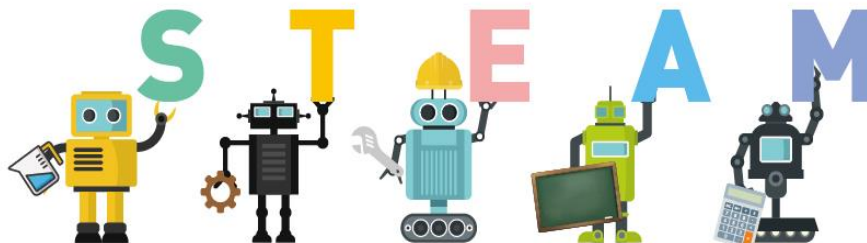
組裝順序5-LED開關



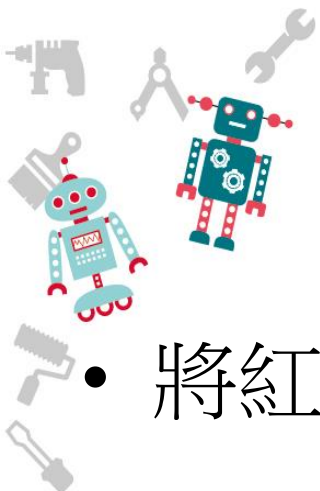
- LED燈正極電線 → 銲至開關未銲接一端



FLSH



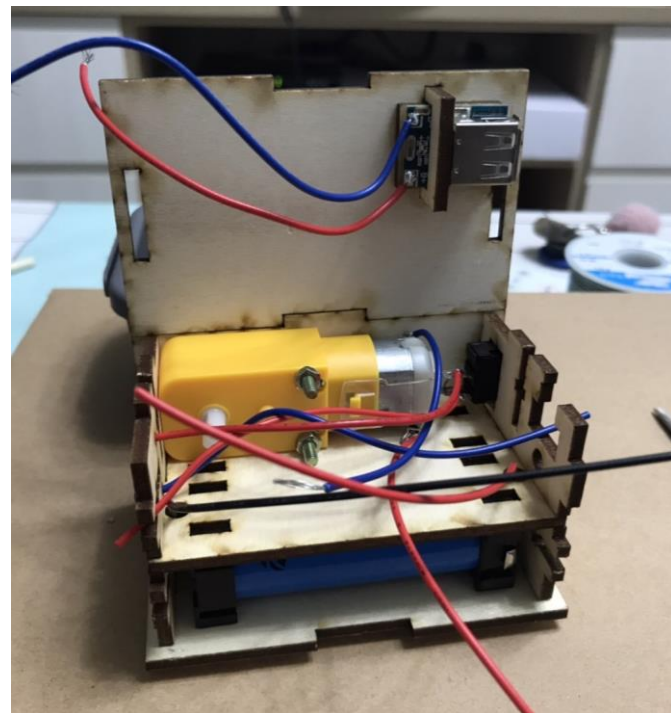
Fun Maker



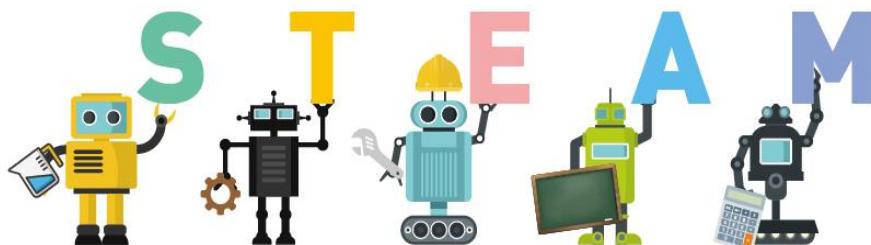
組裝順序6-整線、接線



- 將紅線全部接一起
- 將黑線全部接一起。



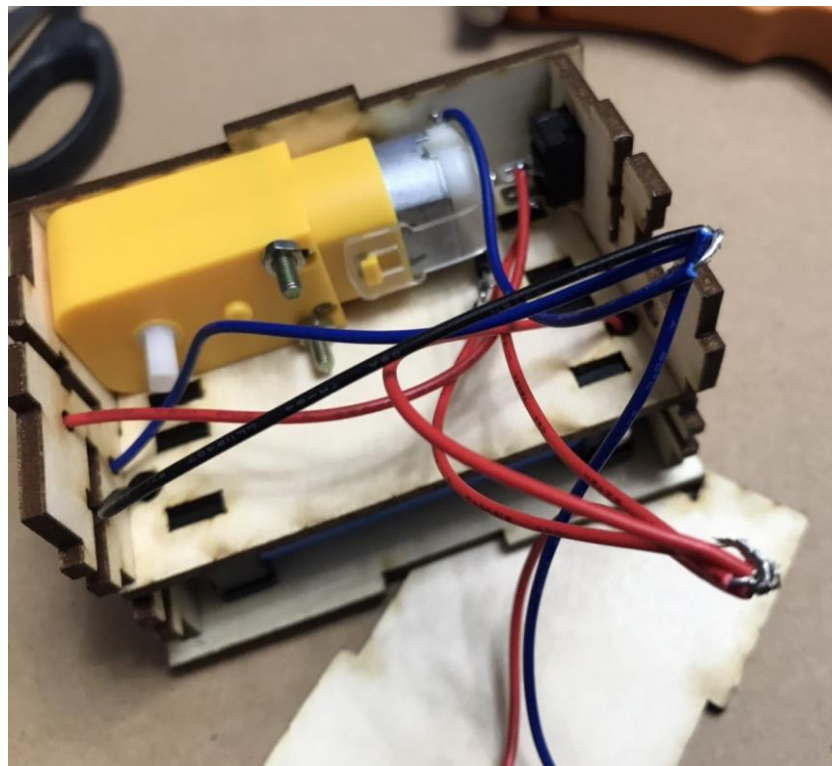
FLSH



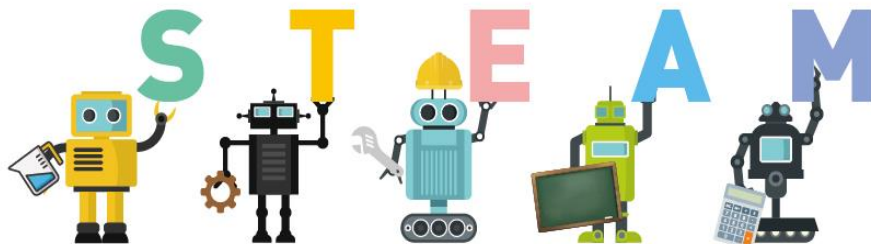
Fun Maker

組裝順序6-整線、接線

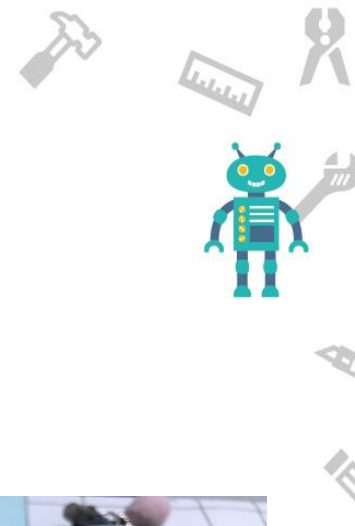
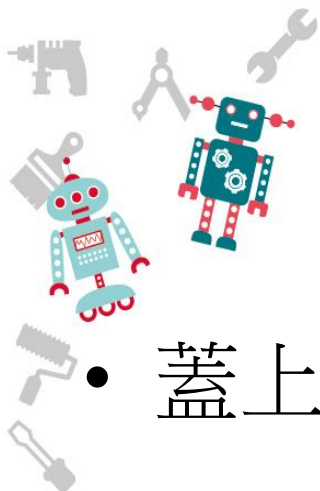
- 將紅線全部接一起
- 將黑線全部接一起
- 電線接點處需纏繞絕緣膠帶



FLSH

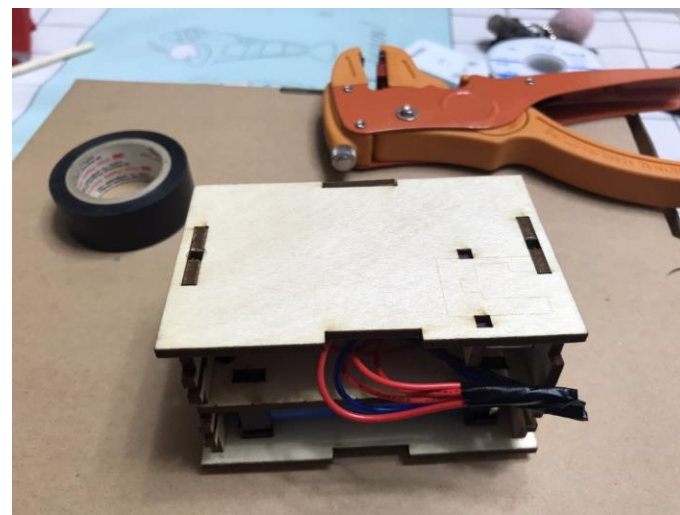
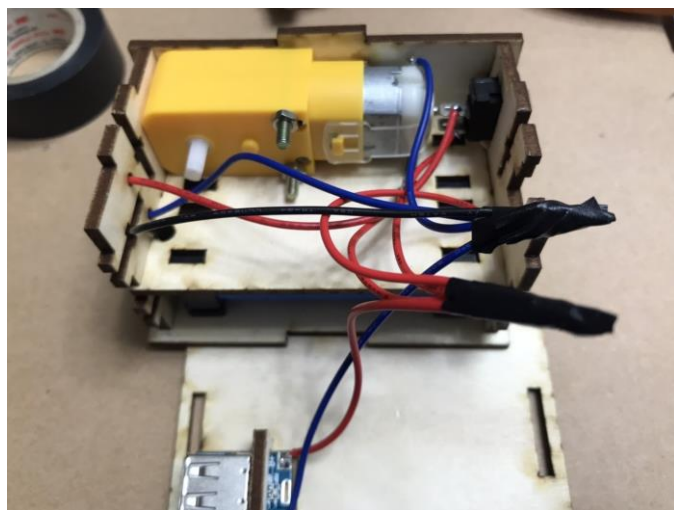


Fun Maker

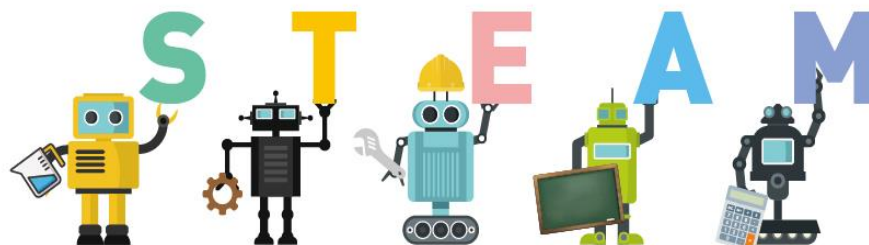


組裝順序7-蓋上板

- 蓋上上板後鎖上螺絲。



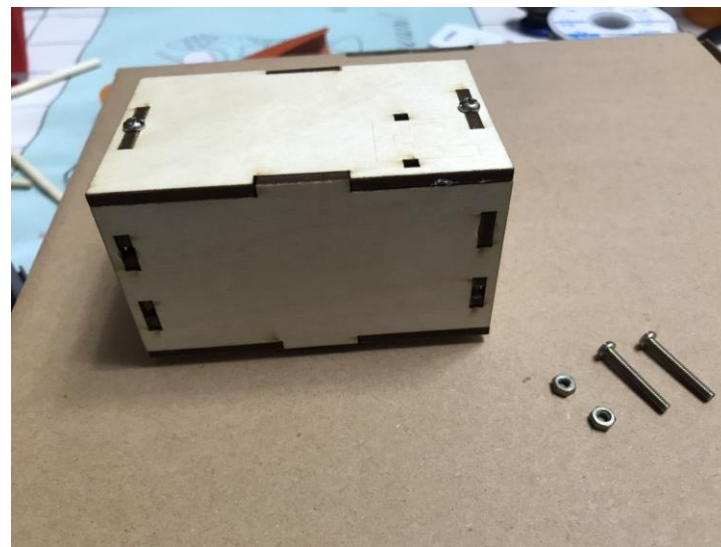
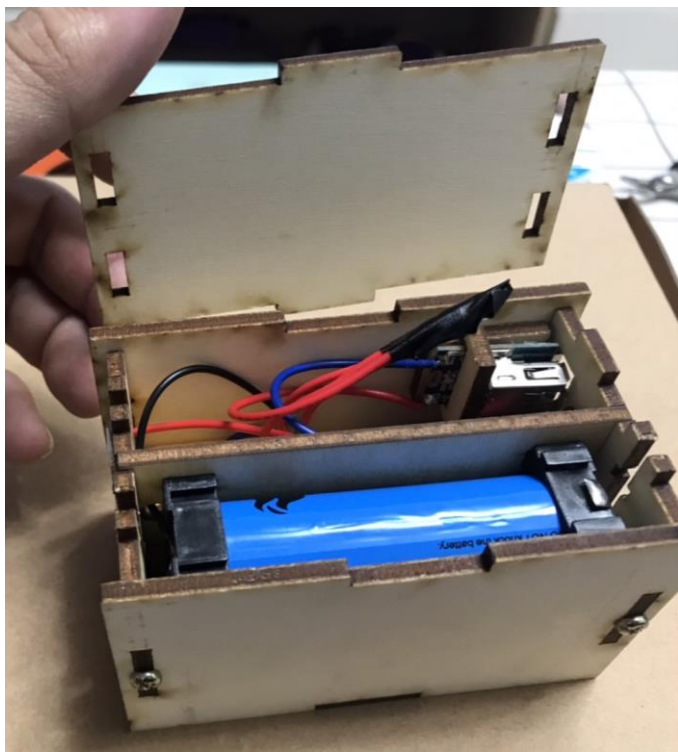
FLSH



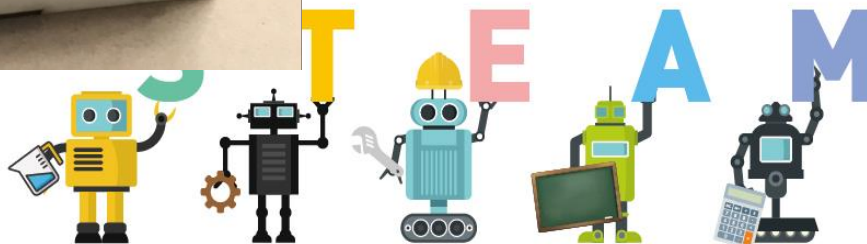
Fun Maker

組裝順序8-蓋左板

- 蓋上左板後鎖上螺絲。



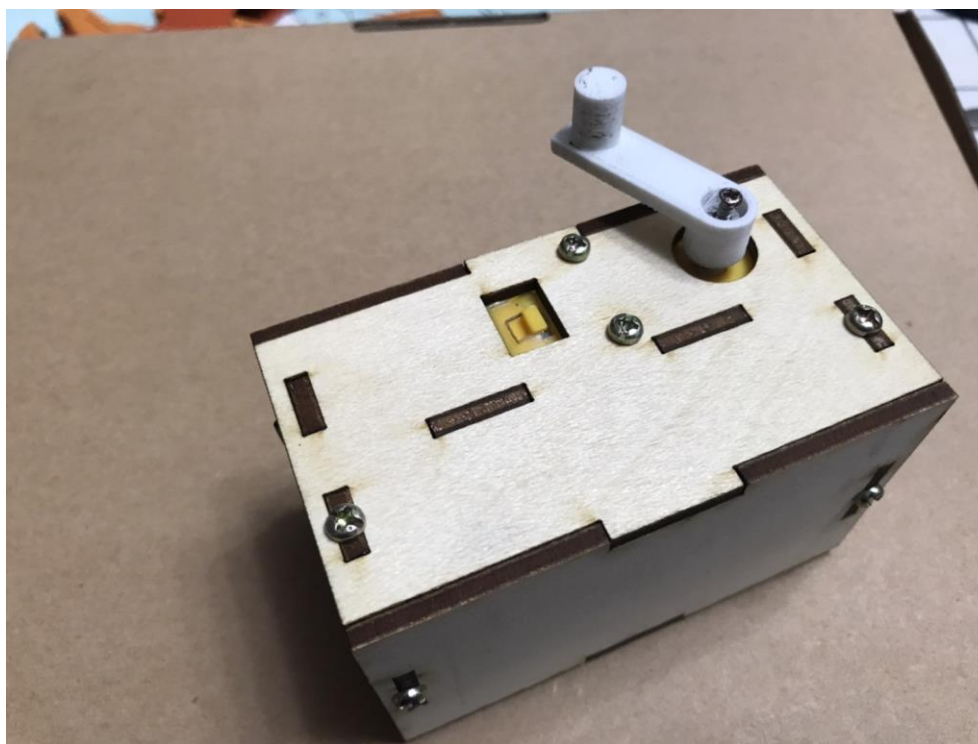
FLSH



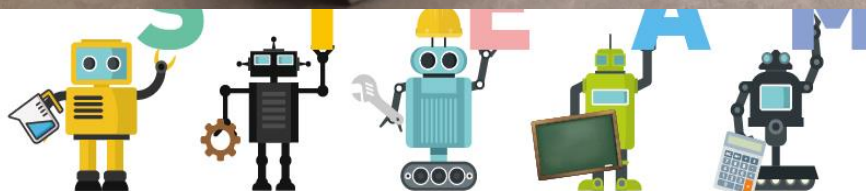
Fun Maker

組裝順序9-手搖桿

- 右側馬達，鎖上手搖桿，即完成本日課程。



FLSH

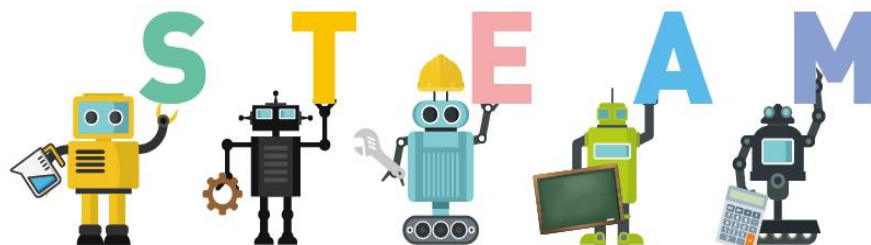


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節能、潔能

- 因面臨全球氣候變遷造成環境惡化，以及能源短缺問題，節約能源及潔淨能源是未來的趨勢，結合課程與實作，讓學生了解能源相關問題。謝謝大家。

FLSH



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