



SOLAR CHARGER

DIY (DO-IT-YOURSELF)



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THE LAB BOOK YOU ARE HOLDING IS A SET OF INSTRUCTIONS THAT WILL GUIDE YOU THROUGH THE ASSEMBLING OF THE DIY SOLAR CHARGER, WHICH WAS DEVELOPED IN THE COURSE OF THE FRIDAY ACADEMY - OUR MODEL OF INQUIRY-BASED WORKSHOPS AT THE RAMPA LAB WHICH ARE BASED ON NON-FORMAL AND PEER TO PEER LEARNING METHODS, OFFERING TRANSFER OF KNOWLEDGE ABOUT THE MOST RELEVANT AND MODERN TECHNOLOGICAL TOOLS.

THE SOLAR CHARGER URGES US TO THINK ABOUT SAVING ENERGY. IN FUTURE WE WILL DEPEND ON RENEWABLE ENERGY TO AN EVEN LARGER EXTENT, NEVERTHELESS WE CAN START BUILDING A SOLAR CHARGER AND ITS HOLDER THIS INSTANT AND BY OURSELVES, OPTIMIZING THE EXPOSITION OF THE SOLAR CELLS.

WHAT DO WE NEED?

MATERIALS:

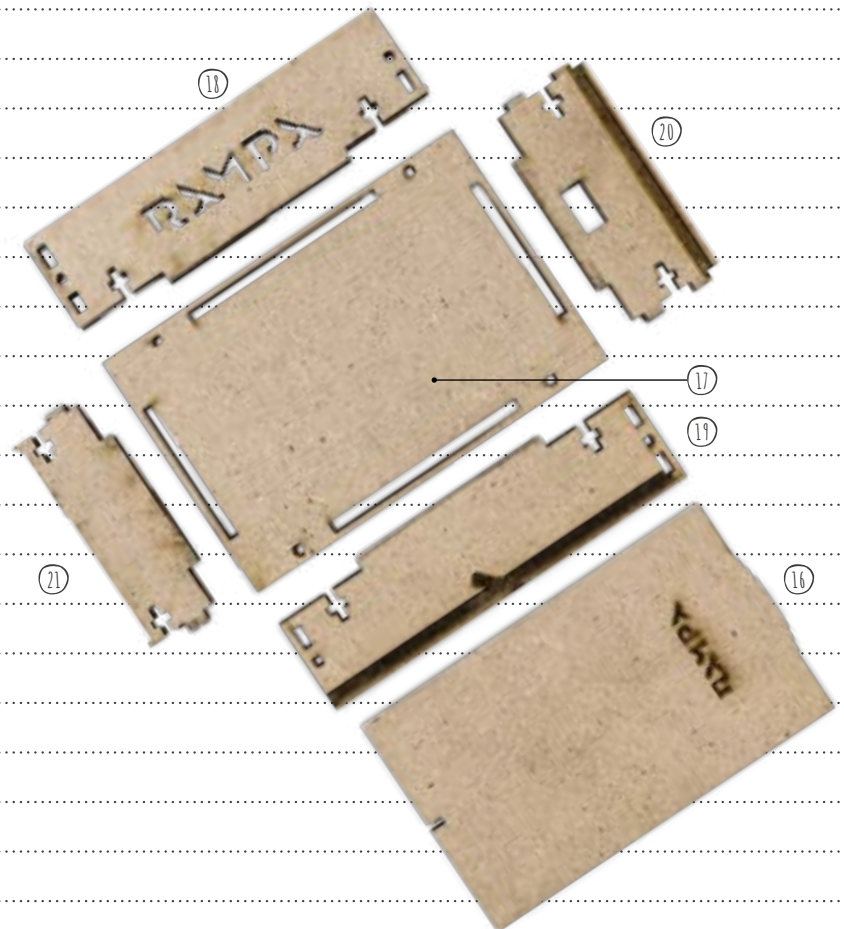
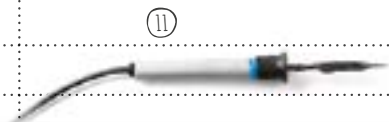
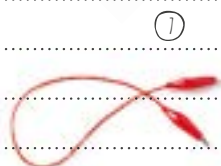
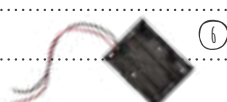
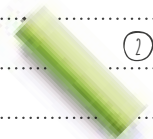
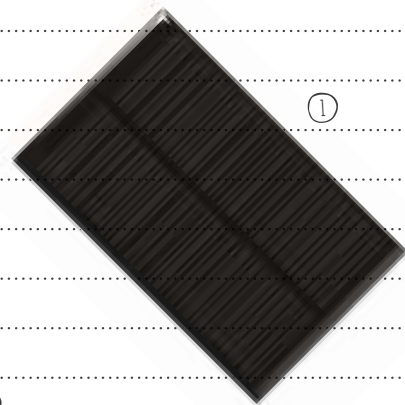
- 1) SOLAR PANEL
- 2) BATTERY (3x)
- 3) WIRES
- 4) USB PORT (STEP UPPER)
- 5) DIODE (2x)
- 6) BATTERY HOLDER
- 7) ALLIGATOR CLIPS (2x)
- 8) LED
- 9) 3V BATTERY

TOOLS:

- 10) MULTIMETER
- 11) SOLDERING IRON
- 12) SOLDER
- 13) HOT GLUE GUN & STICKS
- 14) WIRE STRIPPER
- 15) SCREWDRIVER

CASE:

- 16) TOP
- 17) BOTTOM
- 18) SIDE 1
- 19) SIDE 2
- 20) FRONT
- 21) BACK
- 22) M3 NUT (8x)
- 23) M3x12 SCREW (8x)



STEP-BY-STEP

1) TEST THE DIODE

WHICH SIDE IS PLUS? WHICH SIDE IS MINUS?

CONNECT THE POSITIVE SIDE OF THE BATTERY AND THE LED WITH THE ALLIGATOR CLIPS.

LED:

LONG LEAD = PLUS

SHORT LEAD = MINUS

ATTACH THE DIODE ON THE NEGATIVE SIDE.

TURN THE DIODE UNTIL THE LED TURNS ON. IT TURNS ON WHEN THE NEGATIVE LEAD IS ON THE ALLIGATOR SIDE, WHILE THE POSITIVE LEAD IS ON THE BATTERY SIDE.

2) SOLDER

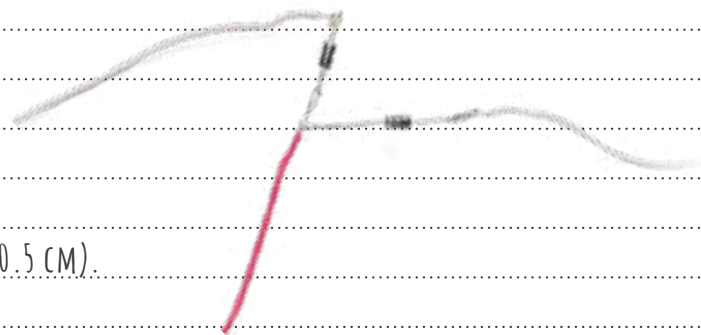
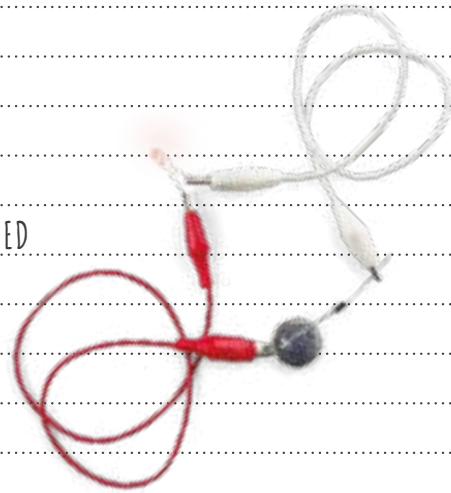
COMPLETE THE ELECTRIC CIRCUIT.

STRIP THE ENDS OF ALL FOUR WIRES (APPROX. 0.5 CM).

WHERE ARE THE PLUSES? WHERE ARE THE MINUSES?

WE ALREADY CHECKED THE DIODE.

THE SOLAR PANEL AND THE USB PORT HAVE MARKED SIDES.



SOLDER AS SHOWN IN THE PICTURE ABOVE.

(PLUS TO PLUSES AND MINUS TO MINUSES)

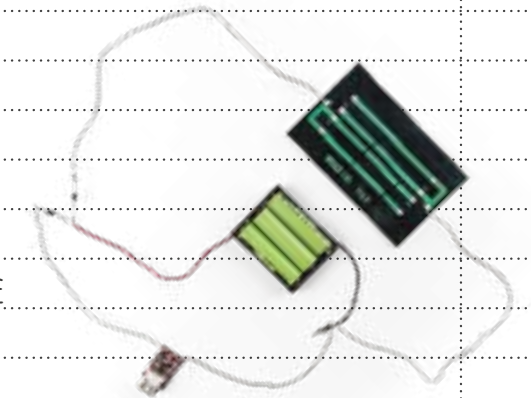
USB PORT - SHORT WIRE - BATTERY -

DIODE - LONG WIRE - SOLAR PANEL

USB PORT + SHORT WIRE + BATTERY + DIODE

- LONG WIRE + SOLAR PANEL

WHEN EVERYTHING IS CONNECTED, PLACE THE CIRCUIT IN THE SUN TO CHECK WHETHER THE BATTERY IS CHARGING.



3) ASSEMBLE THE CASE

TO HIDE THE COMPONENTS

ASSEMBLE THE SIDES:

- MAKE SURE THAT THE SLOTS ARE FACING INWARDS

ATTACH TO THE BOTTOM PART AND SCREW GENTLY (8x).



5) GLUE

GLUE EVERYTHING INTO ITS POSITION WITH A HOT GLUE GUN.

THE USB PORT ONTO THE BOTTOM PART

IN ORDER TO AVOID LOSING THE USB PORT IN THE OPENING WHEN PLUGGING THE USB CHARGER, GLUE THE USB PORT SO THAT 0.5 MM OF IT IS STICKING OUT OF THE OPENING.

THE SOLAR PANEL ONTO THE TOP PART:

- ONTO THE SIDE WITH NO PRINT
- THE WIRES SHOULD FACE THE SLIDE

BATTERIES

- GLUE THEM TO THE BOTTOM PART.



6) USE THE SOLAR CHARGER

PLACE THE SOLAR CHARGER IN THE SUN FOR FEW HOURS. AFTER ALL THE SUNBATHING (WE ADVISE YOU TO STAY IN THE SHADE) TAKE THE CHARGER INTO THE SHADE AND CONNECT IT WITH YOUR PHONE OR ANY OTHER ELECTRONIC GADGET. WHEN THE BATTERIES DISCHARGE, PLACE THE SOLAR CHARGER IN THE SUN AGAIN AND LET THE ENDLESS CYCLE OF COLLECTING THE SOLAR ENERGY BEGIN.



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THE LAB BOOK WAS DESIGNED IN THE COURSE OF THE EUROPEAN COMMISSION PROJECT DITOs (DOING IT TOGETHER SCIENCE) WITH THE PURPOSE TO INFORM THE GENERAL PUBLIC ABOUT MODERN SCIENCE IN EUROPE. THE PROJECT'S AIM IS TO DEEPEN THE INVOLVEMENT OF THE GENERAL PUBLIC IN CO-CREATING THE SCIENTIFIC DEVELOPMENT.

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 Kersnikova

GALERIEA
KAPELICA

RAMPA 

BIO  KENNA