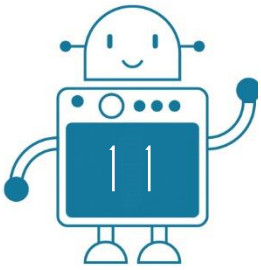


MENTALIST MBOT

STEMJAM Teaching Guide

Developing make spaces to promote creativity around STEM in schools

Acronym: STEMJAM
Project no. 2016-1-ES01-KA201-025470

www.stemjam.eu

Co-funded by the Erasmus+ Programme of the European Union

MENTALIST MBOT

ABSTRACT

The activity consists in asking “yes” or “no” questions to the mBot, and this will answer us. This activity is born before the need to introduce the programming in the students.

DIDACTIC OBJECTIVES

TECHNOLOGY

- Create a programming base for students.

STEM Subject: Science☐ Technology ☒ Engineering☐ Mathematics☐

Education Level: 12-14 years☒ 14-16 years☒

PROBLEM STATEMENT

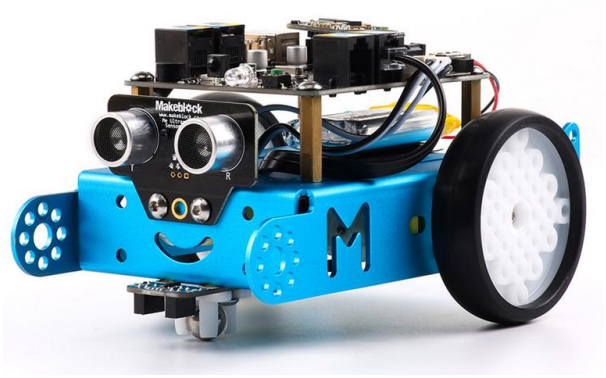
Need to create a programming base for students.

The students who study computer science generally have the problem of not knowing programming, so to do dynamic activities, simple that gradually increase the difficulty, awaken the curiosity and the desire to learn students' programming.

In this way, it will create a knowledge base in programming that will avoid starting a university career without having any knowledge.

BOM (Bill of Materials Needed)

- mBot => Ref. 90054



ACTIVITY DESCRIPTION

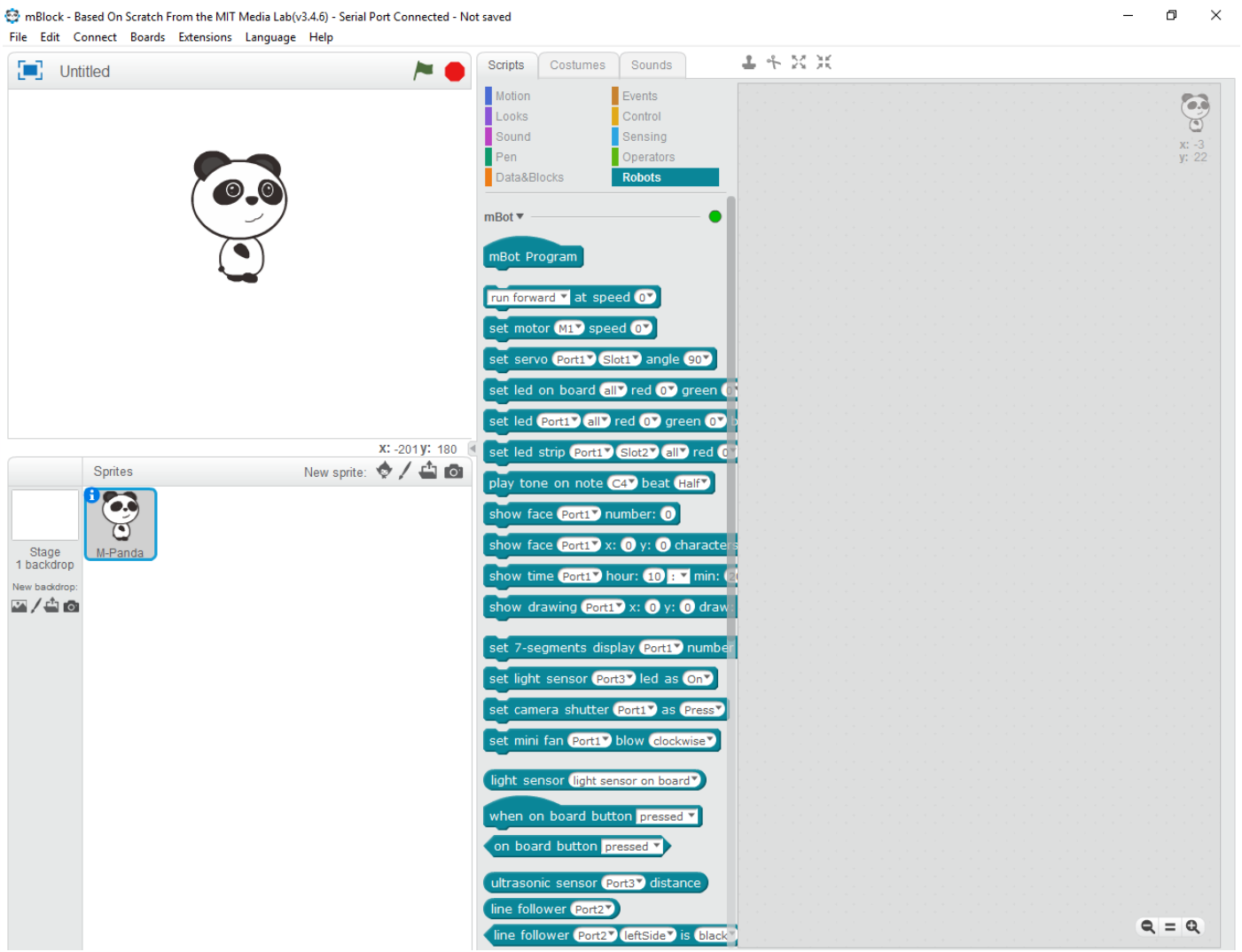
This activity consists of asking “yes” or “no” questions to mBot, and this answer us. mBot will emit two colours, red and green, and when we approach our hand or other object during one of the two colours, MBOT will save the answer.

If we pass the hand when the red colour appears, mBot save “no”, and if we pass it when the green colour is active, mBot will save “yes”.

In this way, we can fool people saying that the mBot can read the mind or tell the truth, or rather, that we want it to say :D

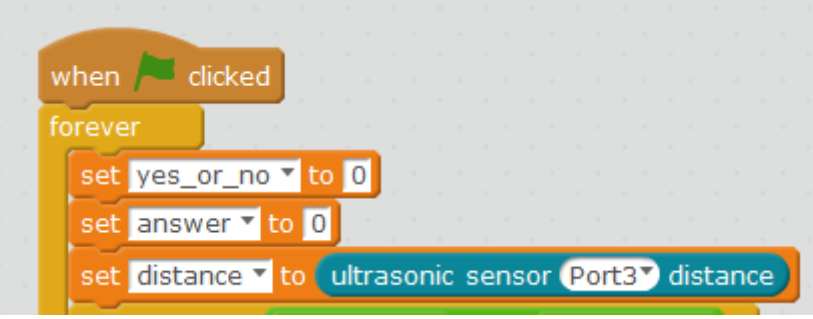
First of all, we will have to program the instructions to mBot.

For do this, we use mBlock software (http://www.mblock.cc/download/)



First, we paired the MBLOCK software with MBOT. For do this, we use the 2.4G Wireless[1] Serial Port. Then we proceed to perform the programming:

1. Create the variables:

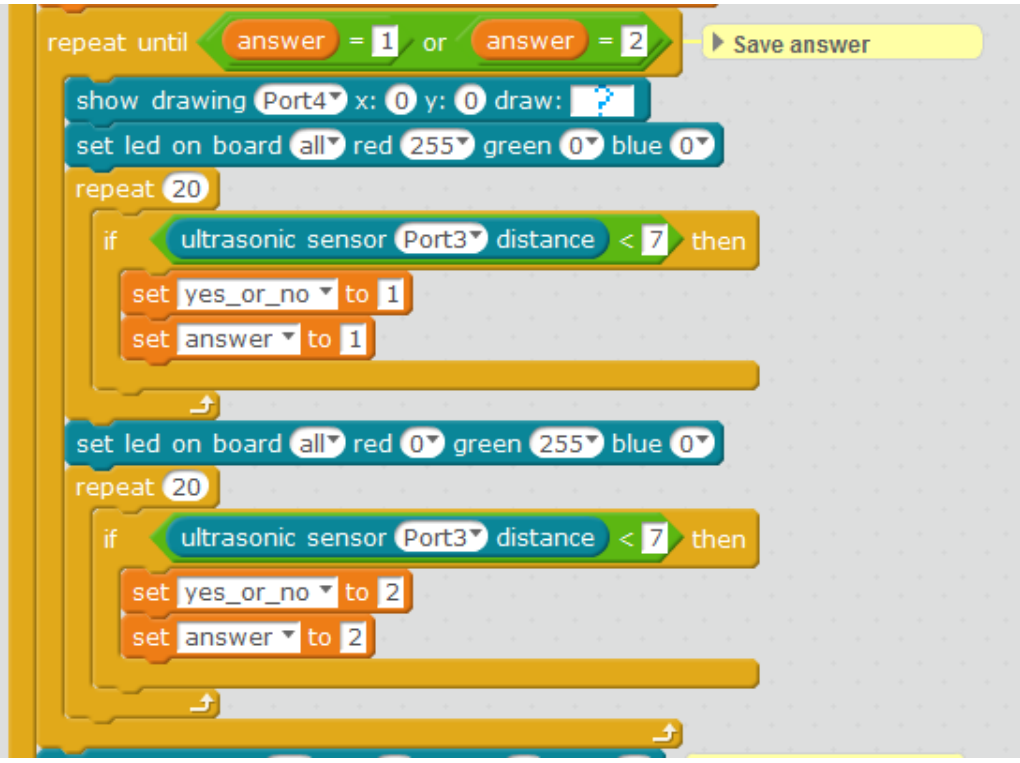


The variable “yes_or_no” save the value of the answer that the MBOT has read.

The variable “answer” will serve to know if the MBOT has answered.

And the variable “distance” will serve to know to the distance that we pass the hand by the ultrasonic sensor.

2. Save the answer:

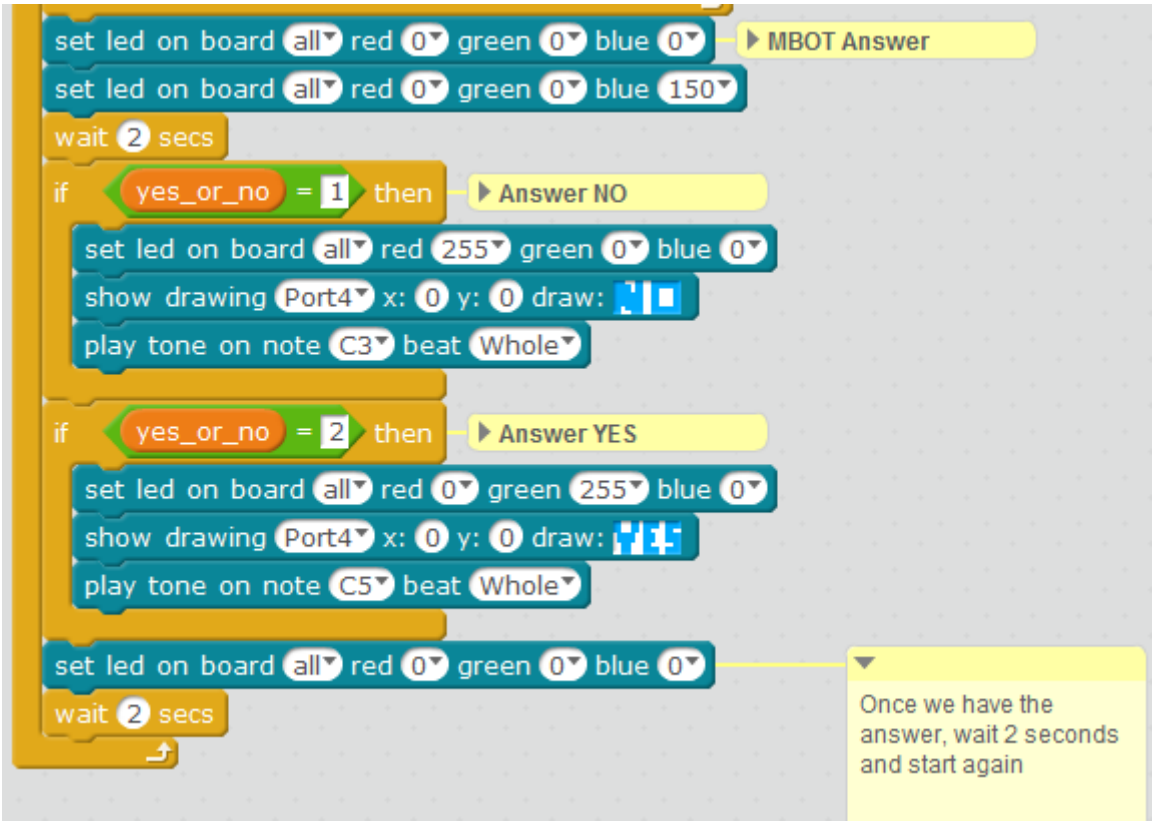


This block consists of saving the answer we tell the MBOT, so the loop will exit when the MBOT has received a response.

With the LED matrix we draw an interrogation to make the activity more graphical.

Every 2 seconds the colours will be exchanged, and the moment we pass the hand to a distance of less than 7cm in one of the two colours, the MBOT will record the answer.

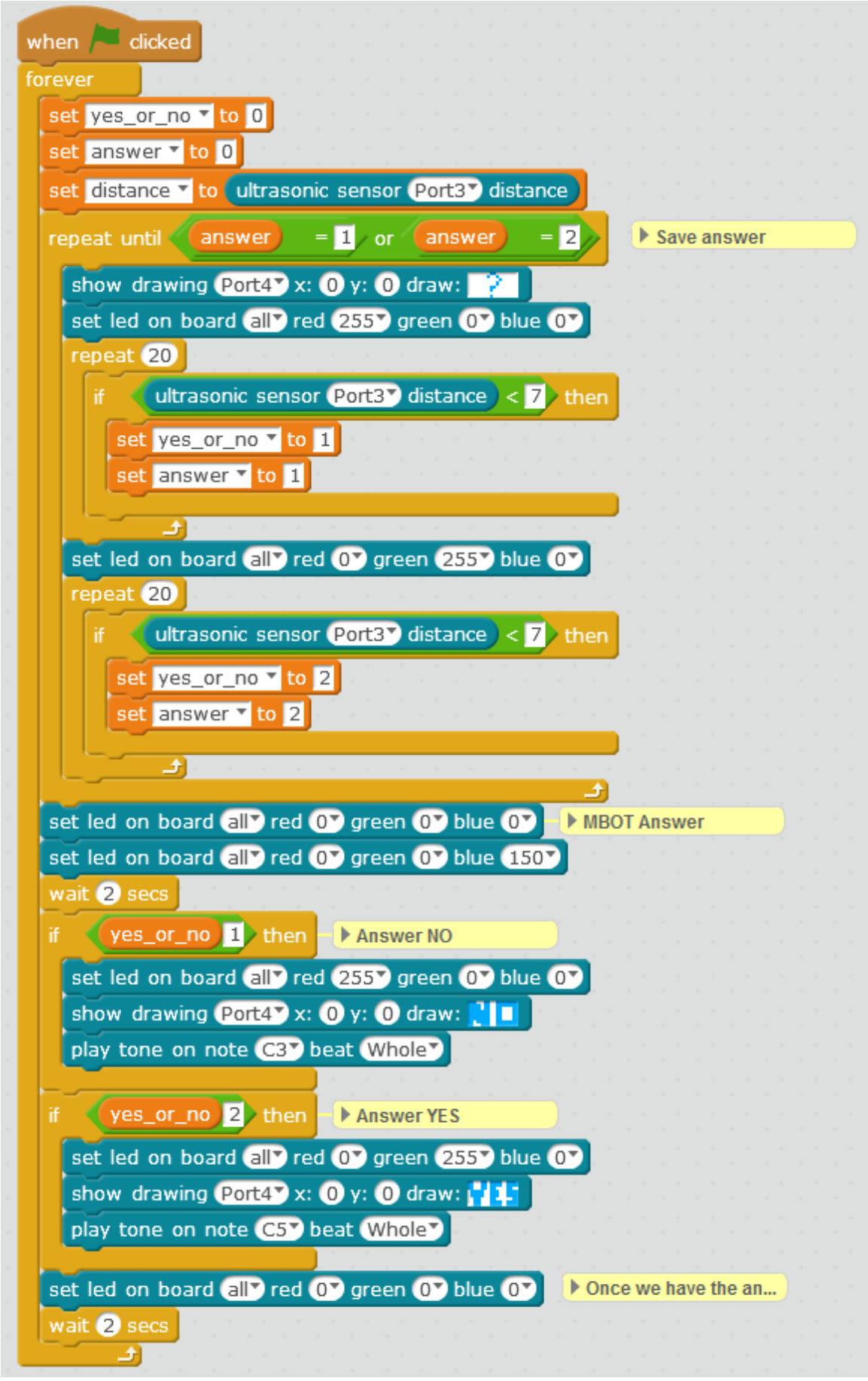
3. MBOT reproduce the answer:



Finally, we will put the LEDs in blue to indicate that the MBOT is going to make the answer, and depending on the answer that it has registered, MBOT emit a sound, a colour and the LED matrix will draw “yes” or “no”.

Once the response is issued, the same process will be repeated after 2 seconds.

4. That would be our final code:



We left some example images: