

Gymnázium Sv. Moniky, Prešov

Angry Birds



Technická dokumentácia

OnStage

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OBSAH

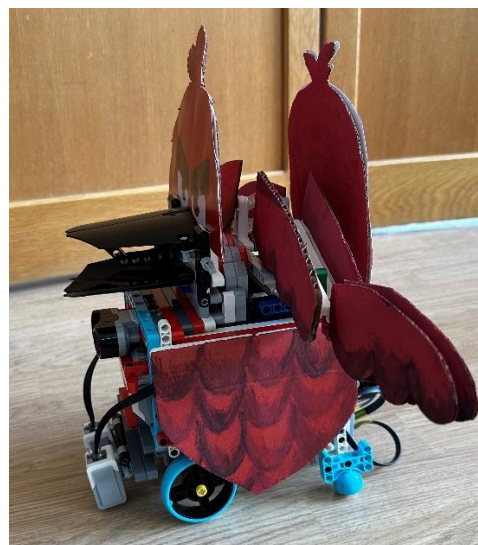
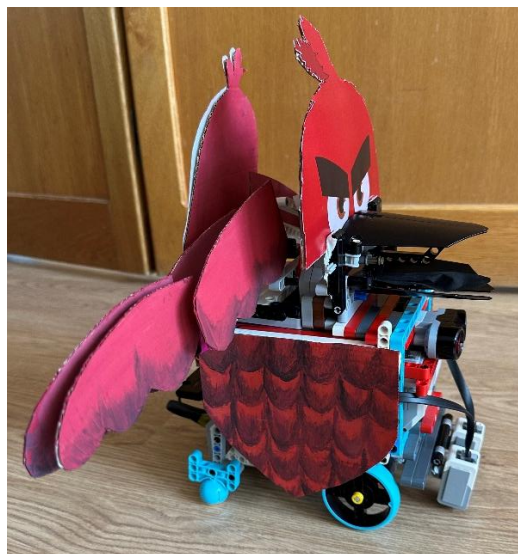
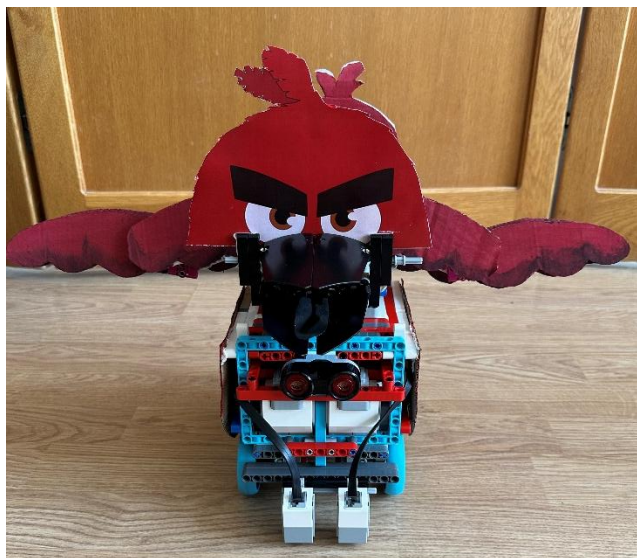
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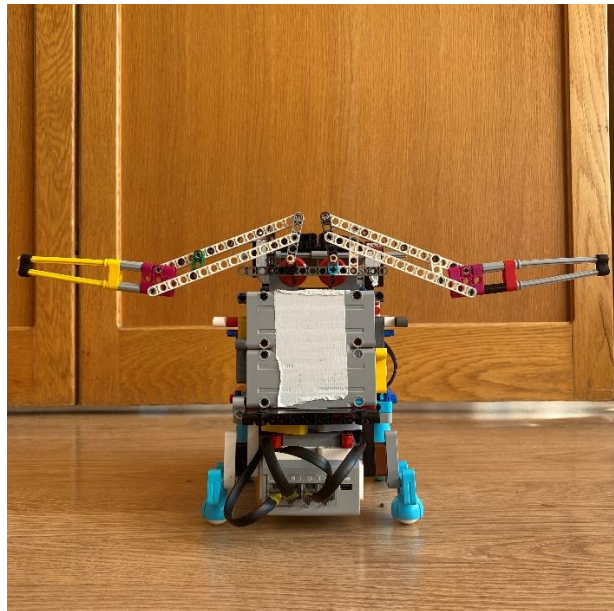
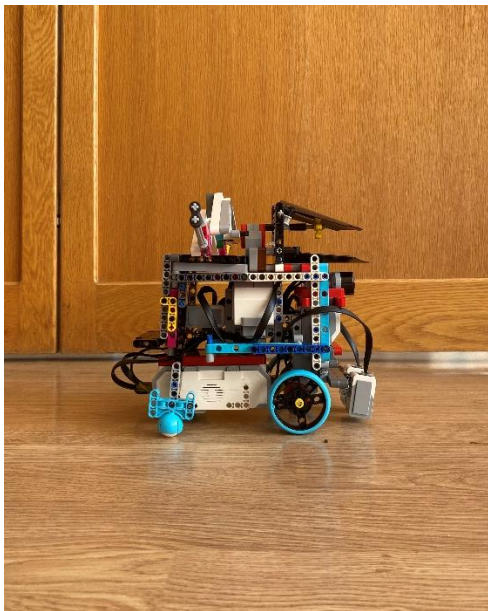
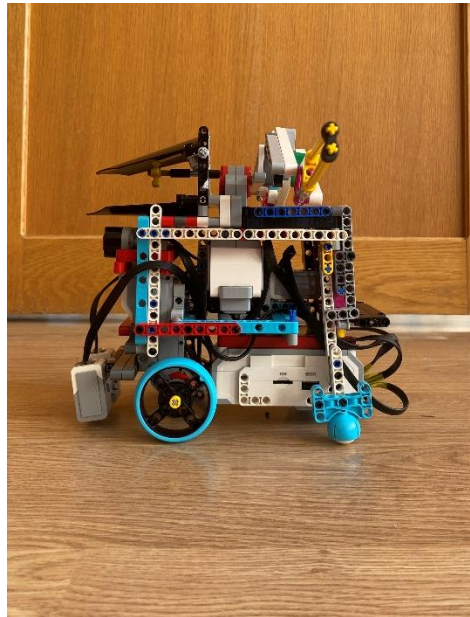
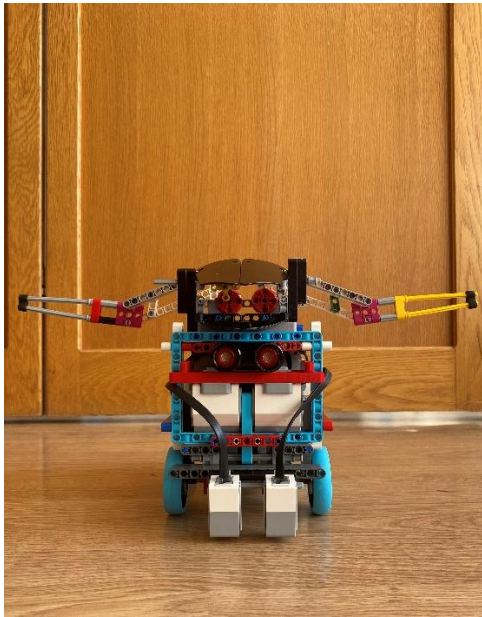
RED BIRD

Zloženie a použitie robota:

- 1 × **kontrolná jednotka LEGO® Education Mindstorms® EV3**
 - Pohyb hlavného robota
 - Programované v LEGO Mindstorms
- 2 × **LEGO® Mindstorms® EV3 Servo motor veľký**
 - Pohyb robota - kolies
- 1 × **LEGO® Mindstorms® EV3 Servo motor veľký**
 - Pohyb krídiel
- 1 × **LEGO® Mindstorms® EV3 Servo motor veľký**
 - Pohyb zobáku
- 1 × **LEGO® Mindstorms® EV3 Ultrasonic sensor**
 - Zapnutie programu
- 2 × **LEGO® Mindstorms® EV3 Color Sensor**
 - Snímanie čiary
- 1 × **LEGO® Mindstorms® EV3 Gyro sensor**
 - Meranie presnej rotácie

OBRÁZKY:





UKÁŽKA KÓDU:

```

    when distance is less than (15) cm
      D set speed to 15 %
      repeat until 1 is color green ?
        D run clockwise for 2 rotations
      D stop motor
      wait until Crazy = 1
      repeat until Crazy = 2
        D set speed to 40 %
        D run clockwise for 2 rotations

    when distance is less than (15) cm
      A set speed to 15 %
      repeat until 1 is color green ?
        A run clockwise for 2 rotations
      A stop motor
      wait until Crazy = 1
      repeat until Crazy = 2
        A set speed to 40 %
        A run clockwise for 2 rotations

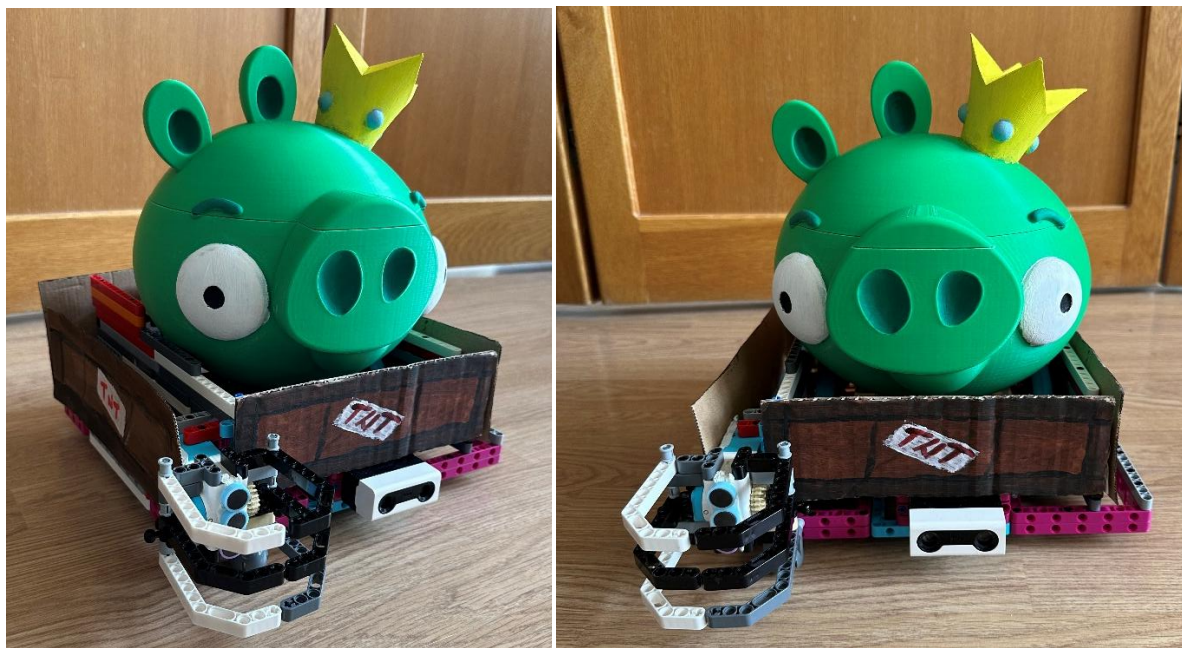
    when distance is less than (15) cm
      set Crazy to 0
      set movement motors to C and B
      set movement speed to 30 %
      repeat until 1 is color green ? or 4 is color green ?
        if 4 is color black ? then
          start moving at 15 30 % speed
        else
          if 1 is color black ? then
            start moving at 30 15 % speed
          else
            start moving at 20 20 % speed
        end if
      end repeat
      stop moving
      wait 10 seconds
      move left -90 for 1 rotations
      wait 1 seconds
      change Crazy by 1
      wait 2 seconds
      move left -30 for 1 rotations
      move straight 0 for 9 rotations
      move right 100 for 11 rotations
  
```

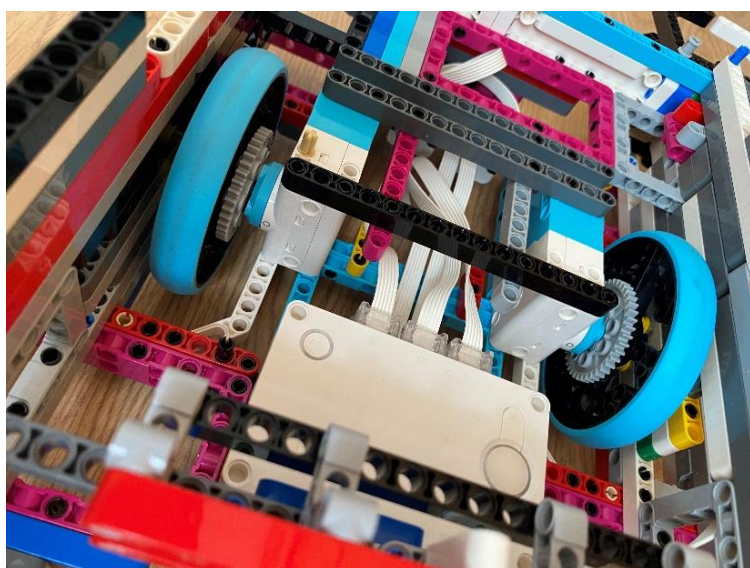
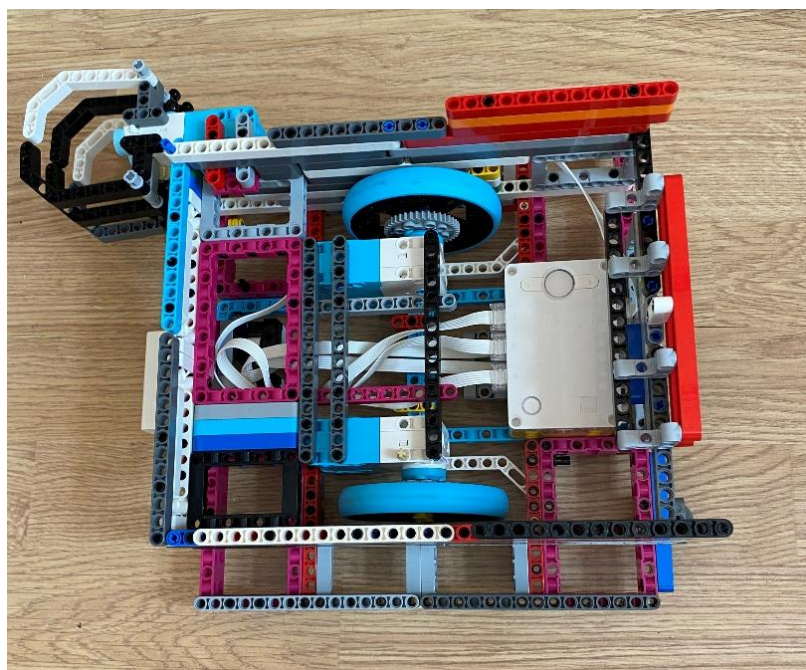
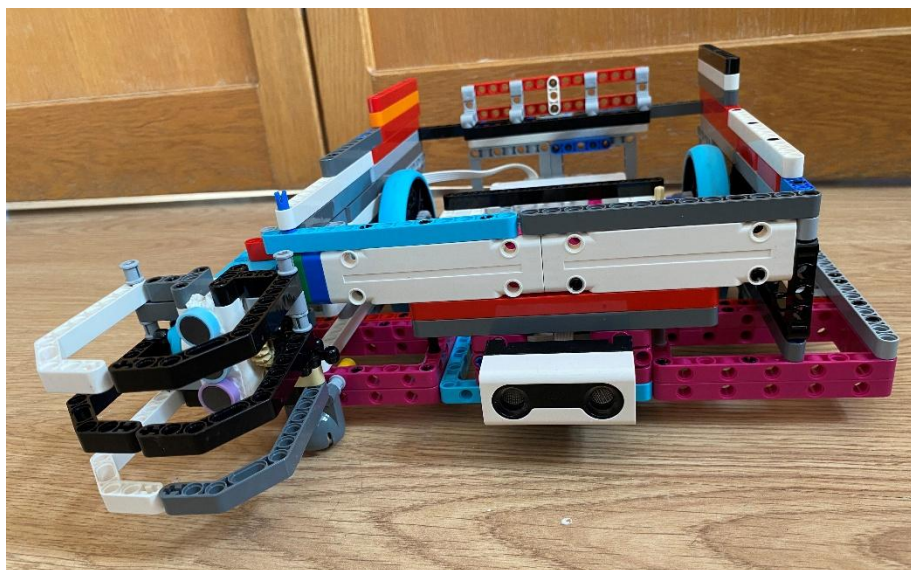
KRÁĽ PRASA

Zloženie a použitie robota:

- 1 × kontrolná jednotka SPIKE Prime LEGO Education
 - Pohyb hlavného robota
 - Programované v LEGO Education SPIKE
- 2 × LEGO® Education SPIKE Prime Veľký motor
 - Pohyb robota - kolesá
- 1 × LEGO® Education SPIKE Prime Veľký motor
 - Pohyb ruky
- 2 × LEGO® Education SPIKE Technic Color Sensor
 - Snímanie čiary
- 1 × LEGO® Education SPIKE Technic Distance Sensor
 - Snímanie okolia – vyhýbanie sa prekážkam

OBRÁZKY:





UKÁŽKA KÓDU:

```

when program starts
  set movement speed to 30 %
  set movement motors to B+D
  repeat until (A is color ? or C is color ?)
    if (C is color ?) then
      start moving left: -70 at 35 % power
    if (A is color ?) then
      start moving right: 70 at 35 % speed
    else
      start moving straight: 0 at 20 % speed
  stop moving
  set movement speed to 40 %
  E set speed to 17 %
  E run for 0.3 rotations
  move straight: 0 for 7 cm
  E set speed to 15 %
  E run for 0.3 rotations
  move for 6 cm
  start moving straight: 0
  wait until (F is closer than 24 cm ?)
  stop moving
  move for 5 cm
  move up 17 cm
  move for 12 cm
  hub transmit signal Brp with 1
  wait until (received Brp value = 2)
  repeat until (A is color ? or C is color ?)
    start moving straight: 0 at 25 % speed
  stop moving
  
```

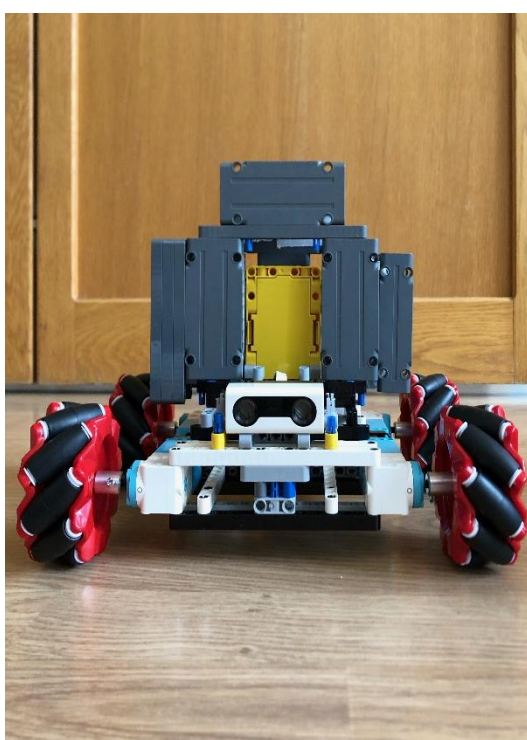
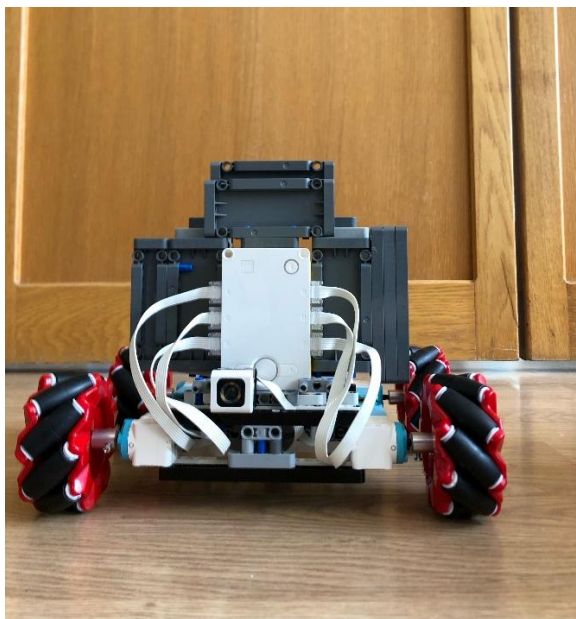
BOMB BIRD

Zloženie a použitie robota:

- 1 × **kontrolná jednotka SPIKE Prime LEGO Education**
 - Pohyb hlavného robota
 - Programované v LEGO Education SPIKE
- 4 × **LEGO® Education SPIKE Prime Stredný motor**
 - Pohyb robota - kolesá
- 1 × **LEGO® Education SPIKE Technic Color Sensor**
 - Spúšťanie streľby z katapultu
- 1 × **LEGO® Education SPIKE Technic Color Sensor**
 - Zastavenie pri pevnosti
- 4 × **Robotické Mecanum kolesa**
 - Pohyb robota do všetkých strán



OBRÁZKY:

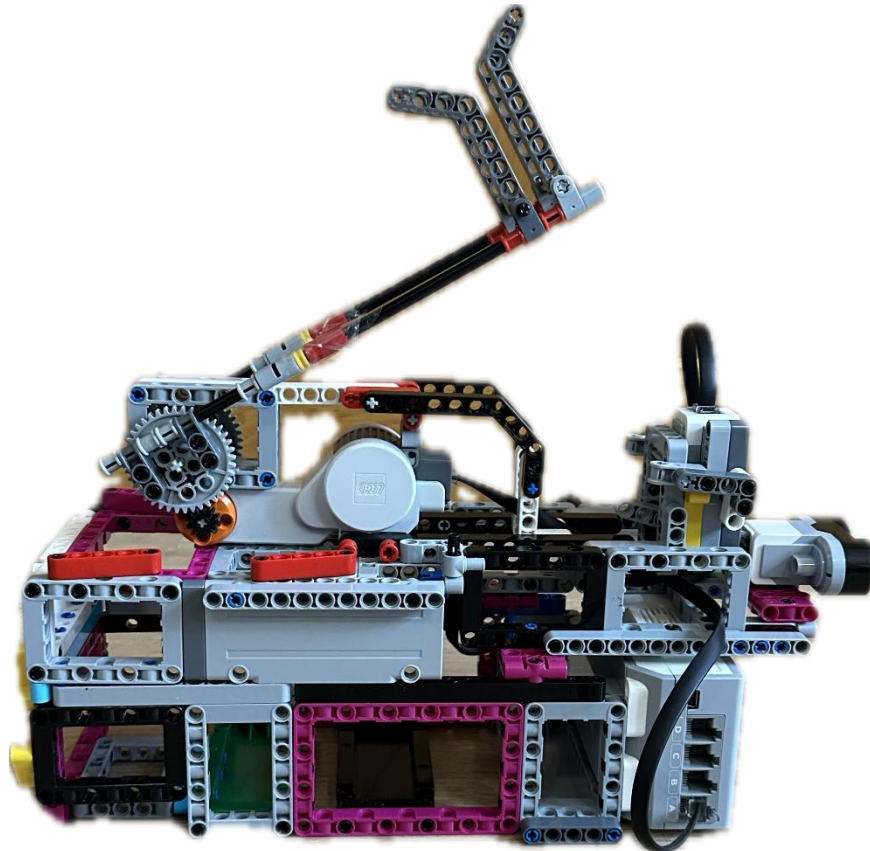


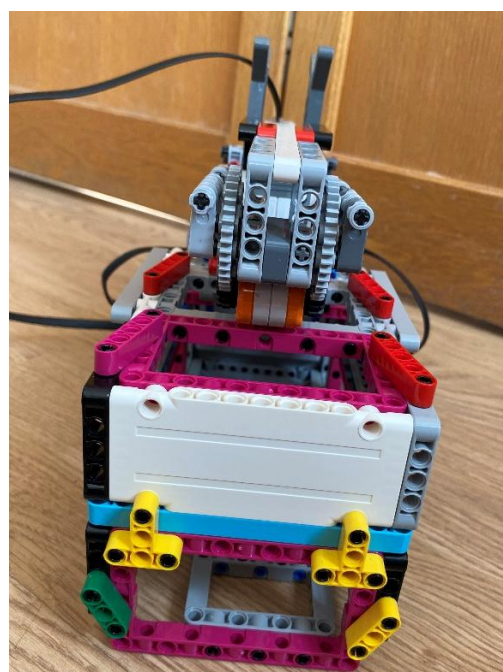
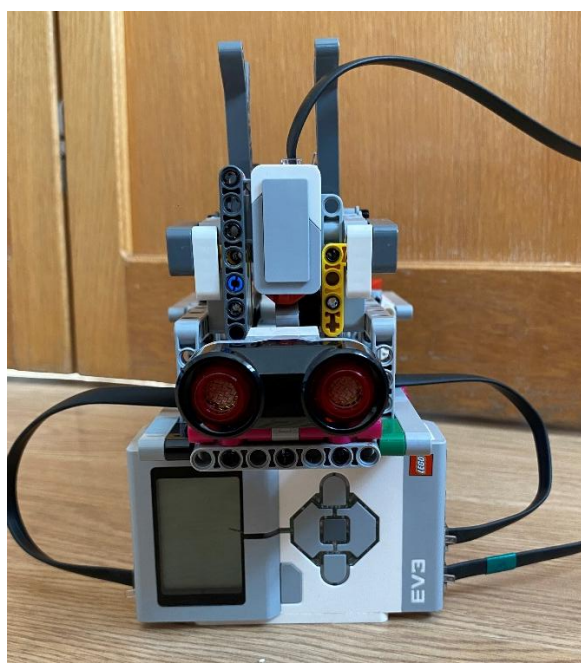
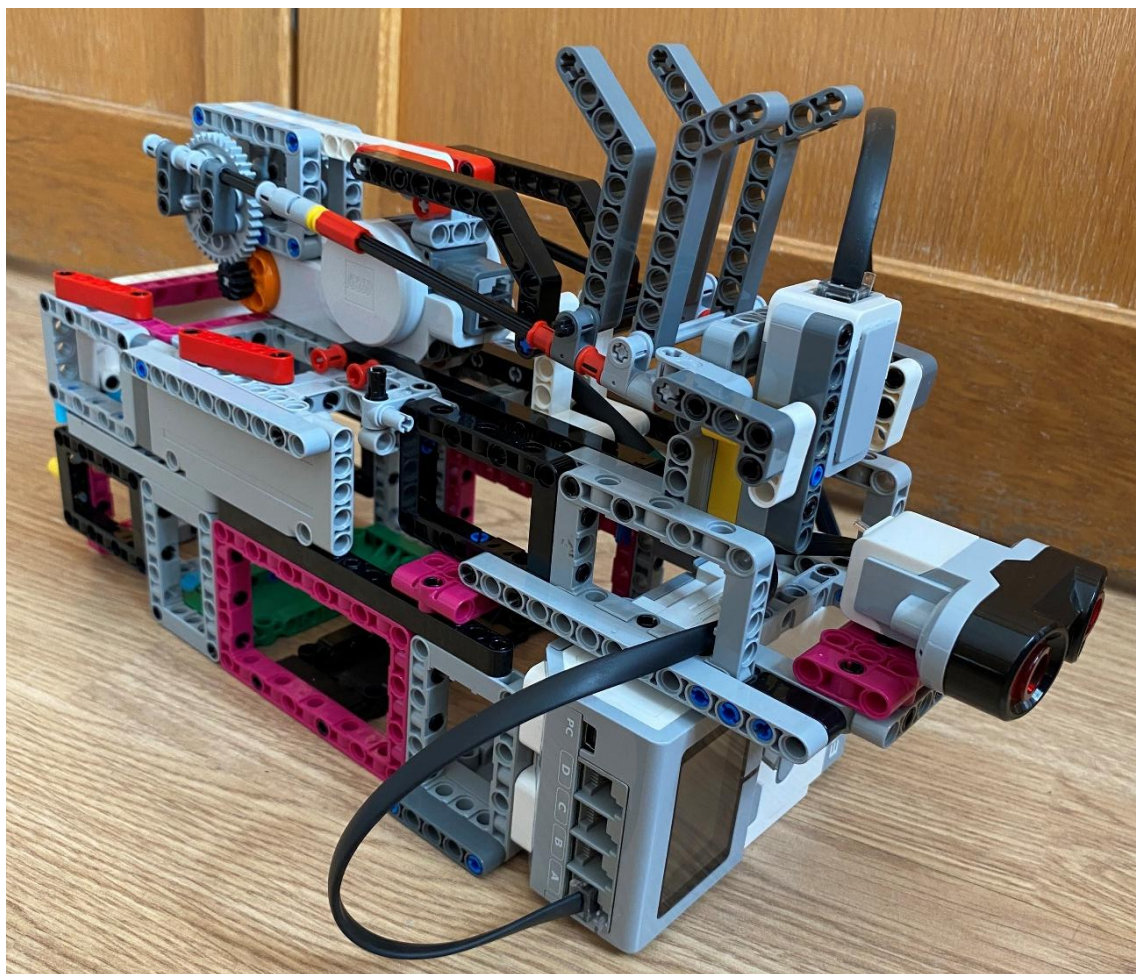
KATAPULT

Zloženie a použitie robota:

- 1 × kontrolná jednotka LEGO® Education Mindstorms® EV3
 - Pohyb hlavného robota
 - Programované v LEGO Mindstorms
- 1 × LEGO® Mindstorms® NXT Servo Veľký motor
 - Pohyb ramená – páky
- 1 × LEGO® Mindstorms® EV3 Ultrasonic sensor
 - Pomocou detekcie ruky vystrelí katapult
- 1 × LEGO® Mindstorms® EV3 Touch sensor
 - Slúži ako poistka na katapulte

OBRÁZKY:





UKÁŽKA KÓDU:

A Scratch code block starting with a 'when distance is less than (<) 15 cm' trigger. The sequence of actions is: set speed to 200 %, run counterclockwise for 1.2 rotations, set speed to 30 %, start motor clockwise, wait until button 3 is pressed, and finally stop motor.

A Scratch code block starting with 'set Str1 to 0'. It enters a 'forever' loop. Inside the loop, it waits until '2 is distance < 15 cm ?'. Then it changes 'Str1' by 1. An 'if Str1 > 1 then' block contains: set speed to 200 %, run counterclockwise for 1.2 rotations, set speed to 30 %, start motor clockwise, wait until button 3 is pressed, and stop motor. After the if block, it waits until '2 is distance > 22 cm ?' before looping back.

PRASA - CUTEBOT

Zloženie a použitie robota:

- 1 × Micro:bit inteligentné pretekárske auto V3
 - Pohyb Cutebota
 - Programované v Micro:bit Makecode
- 1 × Micro:bit Sonar senzor
 - Zastavenie pri zdetekovaní prekážky

OBRÁZKY:



UKÁŽKA KÓDU:

```

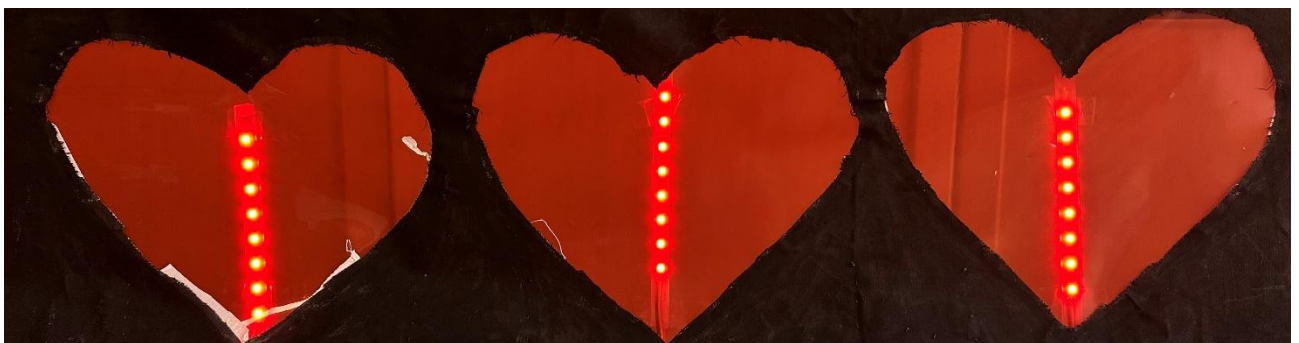
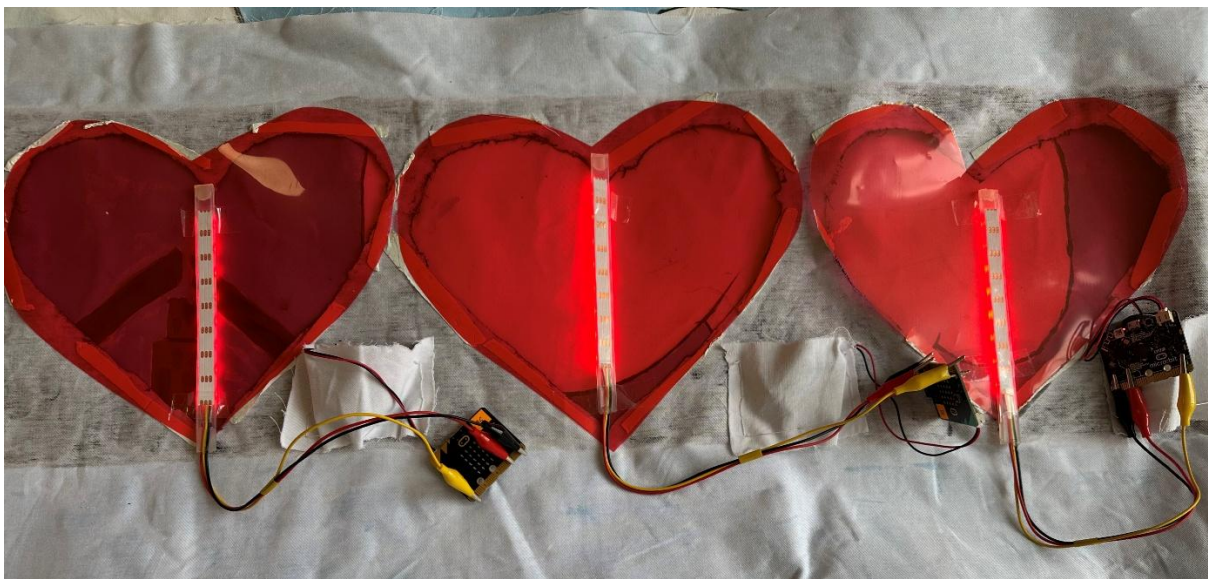
forever
  set sonar to HC-SR04 Sonar unit cm
  if sonar > 0 and sonar < 15 then
    set movement_allowed to 0
    Stop car immediately
    show icon [ ]
  if movement_allowed = 1 then
    if Tracking state is [ ] then
      Set left wheel speed 19 % right wheel speed 7 %
    if Tracking state is [ ] then
      Set left wheel speed 7 % right wheel speed 19 %
    if Tracking state is [ ] then
      Set left wheel speed 22 % right wheel speed 22 %
    if Tracking state is [ ] then
      Stop car immediately
      Go Forward at speed 10 % for 1 seconds
  on start
    radio set group 1
    set movement_allowed to 0
  on radio received receivedNumber
    if receivedNumber = 2 then
      set movement_allowed to 1
  
```

SRDCIA – ŽIVOTY

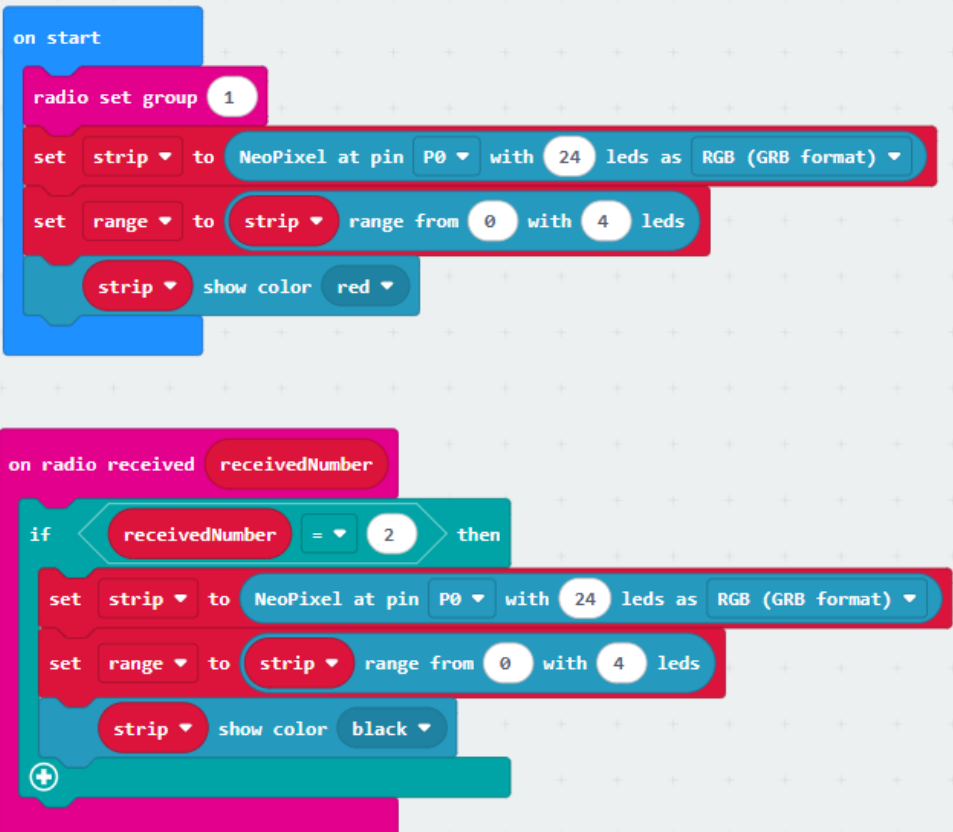
Zloženie a použitie robota:

- 3 × BBC Micro:bit
 - Programované v Micro:bit Makecod
- 3 × LED Pásik

OBRÁZKY:



UKÁŽKA KÓDU:



```
on start
  radio set group 1
  set strip to NeoPixel at pin P0 with 24 leds as RGB (GRB format)
  set range to strip range from 0 with 4 leds
  strip show color red

on radio received receivedNumber
  if receivedNumber = 2 then
    set strip to NeoPixel at pin P0 with 24 leds as RGB (GRB format)
    set range to strip range from 0 with 4 leds
    strip show color black
```

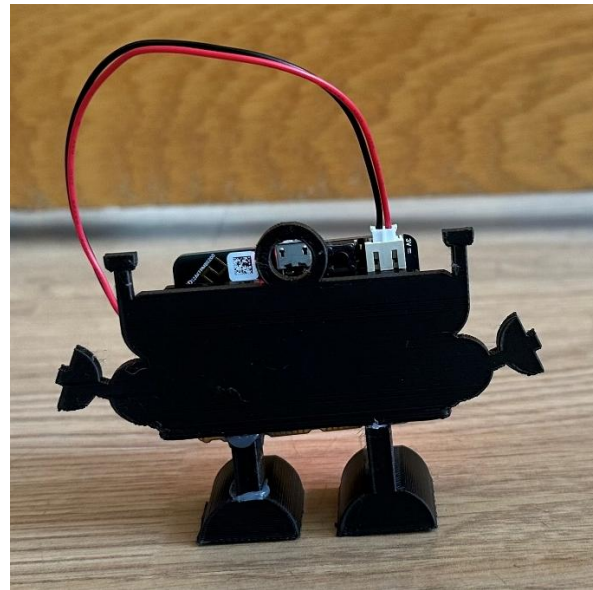
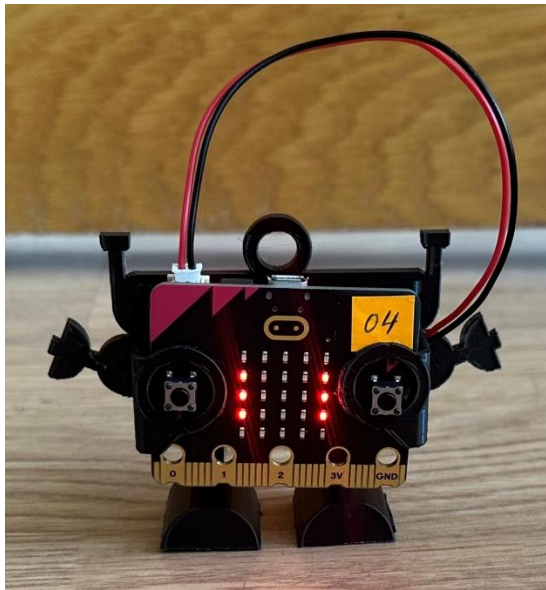
The image shows two Scratch code blocks. The first block, 'on start', initializes a radio group to 1, sets a NeoPixel strip to 24 LEDs at pin P0 in RGB (GRB format), sets a range from 0 to 4 LEDs, and shows the color red. The second block, 'on radio received', checks if the received number is 2. If true, it resets the strip to 24 LEDs at pin P0 in RGB (GRB format), sets the range from 0 to 4 LEDs, and shows the color black.

MICRO:BIT

Zloženie a použitie robota:

- 1 × BBC Micro:bit
 - Programované v Micro:bit Makecod

OBRÁZKY:



3D PRVKY

OBRÁZKY:

