| SCENARIO | | |
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| **Title** | **Improving math skills in Scratch** | |
| **Summery** | Students will build an algorithm that is a calculator | |
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| Didactic objectives |
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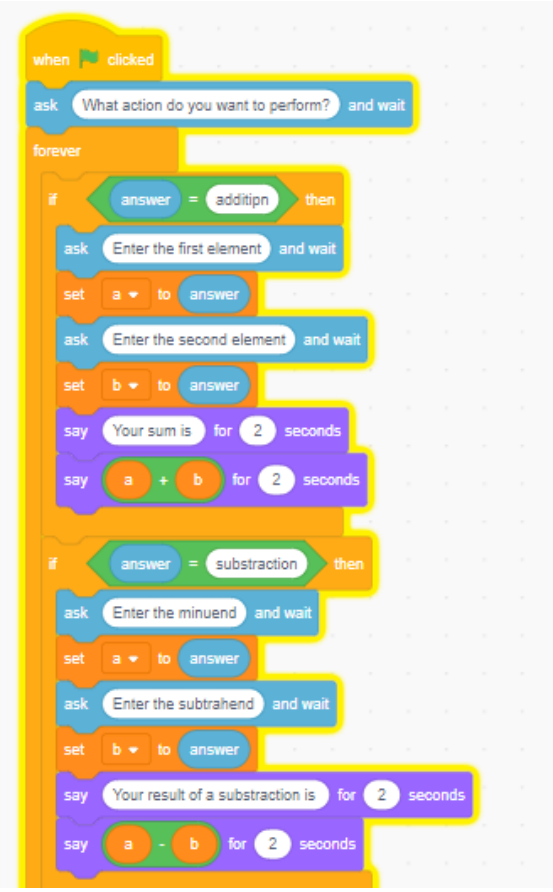
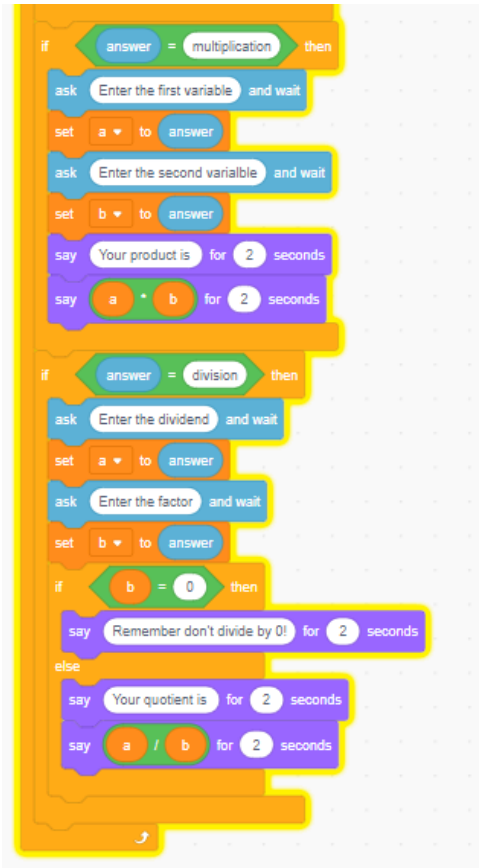
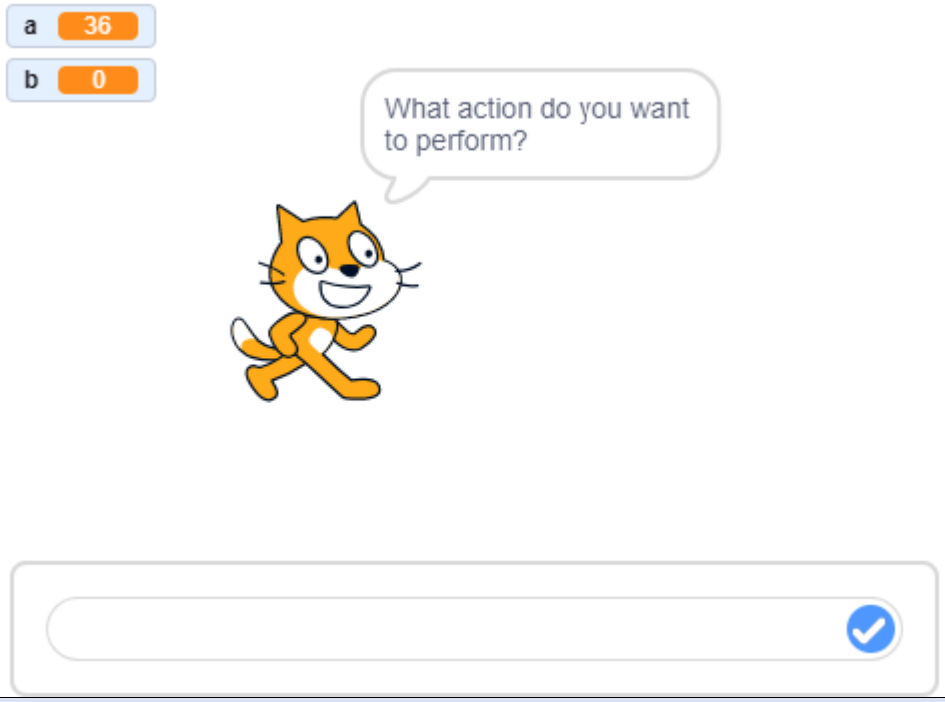
| **General objectives:**<br>- reminder of the types of math operations<br>- create of a program which is a simple calculator in the Scratch environment<br>**Detailed objectives:**<br>- knows the various types of activities<br>- can create an algorithm for various types of mathematical operations<br>- developing creative thinking<br>- group cooperation<br>- troubleshooting |
| Physics☐ Mathematics☒ Information Technology☐ Robotics☐ Programming☒ |
| Education Level: 10-12 years☒ 12-14 years☐ |
| **Problem Statement** |
| What types of math do you know?<br>What is the order of the math operations?<br>What are the different parts of the activities called? |
| **BOM (Bill Of Materials needed)** |
| - computer for each student<br>- Scratch environment installed<br>- multimedia board with a projector for presentation<br>- Internet access<br>- calculator |
| **Activity description** |
| The scenario is planned for 3 lessons.<br>**Course of classes:**<br>1. Organization in the classroom, assigning computer workstations to students, creating a folder on the computer disk for saving projects named student's name_class, for example Adam_IIA.<br>2. Discussion on the mathematical operations known to students - addition, subtraction, division, multiplication. Overview of components of activities. |

3. Performing actions on the calculator.
4. Exercise 1. Calculator
    a. choice sprite,
    b. choice background,
    c. the students' task is to create an algorithm that will:
        i. asked about the type of activity performed,
        ii. selects the appropriate function for the answer obtained,
        iii. calculated the result of an action,
        iv. displayed the result of the operation,
        v. display a message if the divisor is 0.
    d. questions of a sprite about numbers should contain the names of the component parts of actions (element, sum, minuend, subtrathend, result, variable, product, dividend, factor, quotient).
    e. remember that the program should check if the divisor is not 0.
    f. project should be saved as project1
5. Summary of the classes. Self-evaluation of students.

## Resources






## Students' Evaluation

**Evaluation tools:**

- observation of students' work and their activities,
- students' self-assessment - what I have learned, what I can, what I would like to know, what algorithm I can create,
- program feasibility.

## Bibliography

https://scratch.mit.edu/

R. Kulesza, S. Langa, D. Leśniakiewicz, P. Pełka „Młodzi giganci programowania. Scratch" wyd. Helion

## Scalability

An extension of the exercise for older students is the proposal to create a calculator with the actions of exponentiation and square root.

## More information

Scenario was created as part of the project "InnoExperiment - Innovative Approach to Teaching through Experiment" carried out under Key Action 2. Erasmus +. The scenario will be made available on the project platform.