

# Use Arduino and Micro:bit as teaching platform for the education programming and electronics on the STEM basis



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## Topics of my presentation

- Presentation of our textbooks
- Two parts of our textbook
- Arduino
- Micro:bit
- Structure of the textbooks
- Using of the textbooks
- Feedback
- Conclusion

## Presentation of our textbooks

- We presented it in the last Inforino firstly
- Part of the project PRIM (Podpora rozvíjení inforimatického myšlení – Support of evolution of the informatics thinking)
- Originally only the Arduino textbook
- Lately the second part Micro:bit
- It is divided into two separates parts now

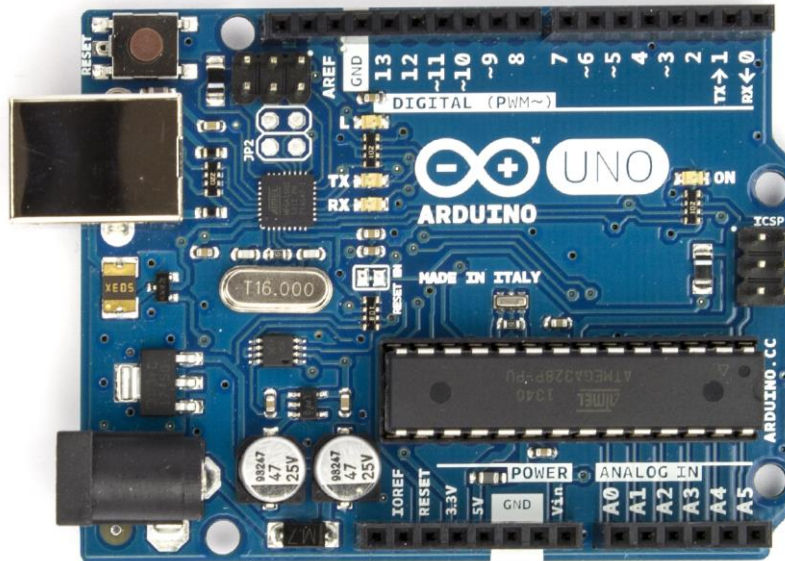
<https://github.com/Nowis75/PRIM>

<https://github.com/jipech/PRIM-microbit>

## Arduino part of the textbook

- Presented on the last Inforino
- Detected two main types of problems
- At technical school
  - No problems with circuit
  - Problems with programming
- At other grammar schools
  - No problems with programming
  - Asking for the understanding of the circuits

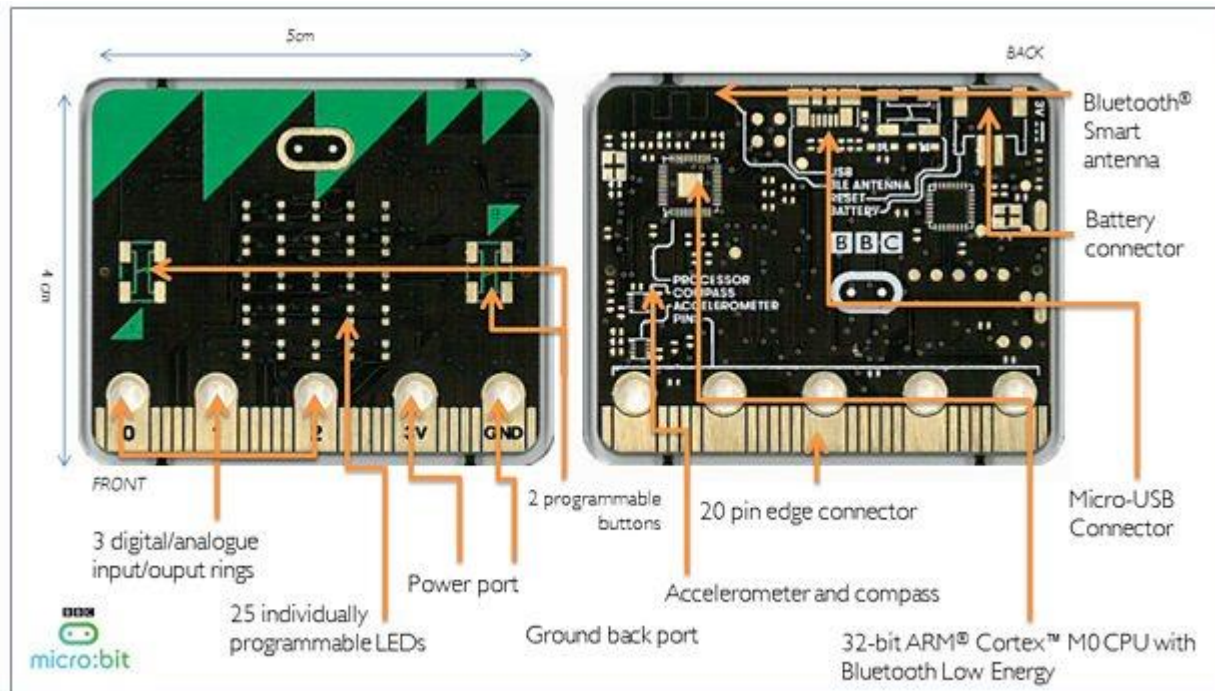
## Arduino



## Use Arduino and Micro:bit as teaching platform for the education programming and electronics on the STEM basis

- Starting discussion about solution of this problems
- We decided to use platform with Python support and simple circuits
- Two possibilities
- Esp8266 (Nodemcu)
- Micro:bit
- We choose Micro:bit – includes lot of peripheries itself

## Micro:bit

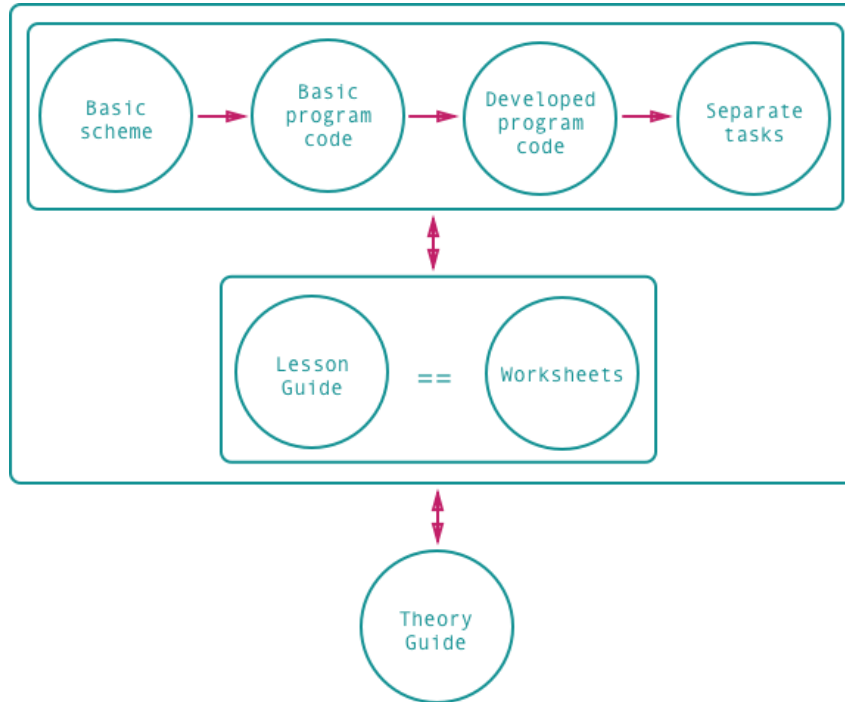


## Structure of the books

- Text is divided into 10 (Arduino) and 6 (Micro:bit) main chapters
- Every chapter has four or five parts:
  1. For teacher – guide of lesson, presentations, whole text
  2. For students – guide for the lesson
  3. Self-study – summary of the basic theory
  4. Source code of all examples
  5. Other – schemes, pictures, videos, 3d parts



## Structure of chapters



## Micro:bit book

- Initially planned same structure a Arduino Book – impossible – different hardware
- Then we planned as book without circuits – impossible – connect sound hardware
- Last we added chapter with circuits – RGB diode and thermometer

## Feedback for Micro:bit

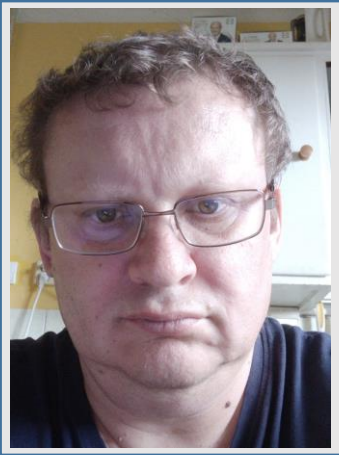
- It is not necessary to teach Python before study this book
- Suppose for the high school – 15 years old students and above
- Good overlaps with other subjects – Mathematics, Physics, English, Music, Arts and Geography
- Both textbooks is possible count as the STEM materials

## Conclusion

- Both textbooks Arduino and Micro:bit are ready to use
- It is possible to start teaching in the school year 2020-21
- The feedback is positive, but it is not sure whether books will be used widely in the curriculum of IT teaching
- It is only czech version now, but in case of need we are ready to translate it to the different language.

# Thank you for attention!

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