The use of LaTeX to build the educational platform ForMath

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little digression

People still need a nice typography

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Look at the page:
`http://diveintohtml5.info/`

What is 4math?

- The component of Mathematics — interactive study of the future

Projekt współfinansowany ze środków Unii Europejskiej w ramach Europejskiego Funduszu Społecznego

- For math. students, to help with learning of solving exercises
- A student can solve the exercise himself and just check the correctness
- A student can ask for assistance, he/she step by step solve subproblems input intermediate results and if there is a (common) mistake – he/she gets a feedback information
- There s a module for blind people
- Let us take a quick look at the platform.

Some requirements

- Authors know LATEX but do not know methods of programming
- Authors want full control over the view of each screen
- There must work a screen reader for blind and visually impaired
- The input should be in the point of a formula where the result must be

$$\int \cos^6 x \, dx = \text{-?-} \sin x \cos^5 x \text{-?-} \cos^5 x +$$

$$\int \cos^6 x \, dx = \frac{1}{3} \sin x \cos^5 x + \frac{5}{} \sin x$$
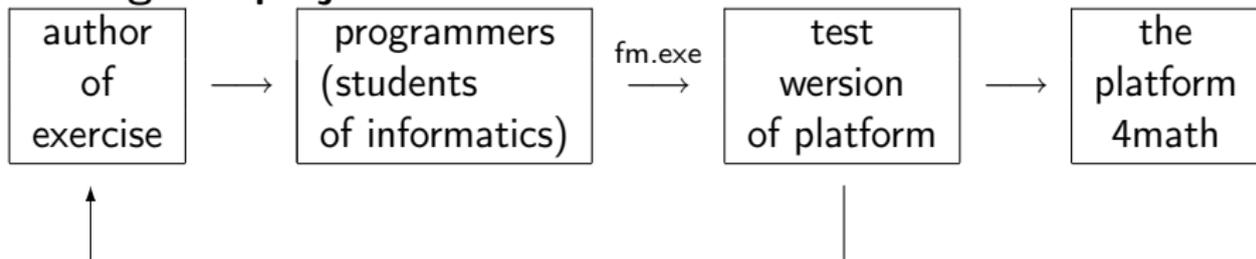
Some problems with MathJax

- Nobody knows how to read the TEX matematical formulas automaticly
- Blind students can have an assistent, he must see the same screen that the screen reader
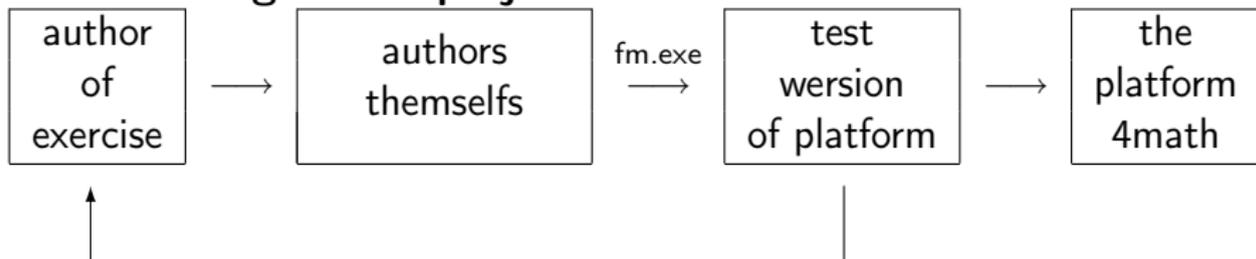- I could not find the way of mix formula and inputs.

Some decisions

- Each screen devided into tiles (kafelka) is an series of graphics and buttons.
- On the front of graphics there is a layer with buttons, inputs and active regions.
- for disabled, there is another layer behaind with descriptions

The way that en exercise goes to the platform

During the project

| author of exercise | $\longrightarrow$ | programmers (students of informatics) | $\overset{\text{fm.exe}}{\longrightarrow}$ | test wersion of platform | $\longrightarrow$ | the platform 4math |

After closing of the project

| author of exercise | $\longrightarrow$ | authors themselfs | $\overset{\text{fm.exe}}{\longrightarrow}$ | test wersion of platform | $\longrightarrow$ | the platform 4math |

TEX is used in two different ways in this project

1. For contents of screens
2. As a pattern of programm language

```
\fmEkran{E5e}

We can substitute \(t=\cos x^2\).
First, we have to rewrite the integrand:

\[\int x \,{\rm tan\,}x^2\,dx=
\int x\,\frac{\sin x^2}{\cos x^2}\,
dx={\scriptsize \left|\begin{array}{l}t= \cos x^2\\
dt=(-\sin x^2)\cdot 2x\,dx\\-\frac{1}{2}dt=x\sin x^2\,
dx \end{array}\!\right|}=-\frac{1}{2}
\int \frac{dt}{\fmNapis{A}[1X]}\]

Type the appropriate function.

\fmPrzycisk(Next)
\fmGoTo{E6b}[A='t']{kaf=0}
\fmGoTo{E5e}(BCP)[A!='t' and (Ecurr>1)]{kaf=2, A='t'}
\fmGoTo{E5e}(BCP)[A!='t']{kaf=1}
```

Some information on language

- parenthesis: (*expression*)
- + - * / %
- absolut value: |*expression*|
- it is possible to omit * afer numbers:
  2A   means 2*A
- numbers or strings can be compare: <   >   <= >= =   !=
- boolean values are different from numbers
- boolean operators: and, or, not
- 2<A<3 means: 2<A and A<3 as mathematician think
- if it must be boolean value: A=2 means comparison, but in other
  places if fe.exe expect assigments it means an assigment