



PA181

Term Project

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About

- term project
- team project
- cloud native
- something useful



Idea

- system for user self-testing
- users are able to test themselves
- users can add new tests
- multilingual
- good for exams preparation



Work Division

■ Jan Ondruch

- specifications
- design
- testing

■ Jiří Čechák

- design
- frontend
- testing
- bug fixing

■ Tadeáš Pavlík

- analysis
- design
- testing

Work Division

- Adrián Tóth
 - configuration
 - architecture
 - deployment
 - documentation
 - presentation
- Václav Stehlík
 - backend
 - interconnection of backend & frontend
 - troubleshooting
 - bug fixing



Used Tools & Technologies

Technologies:

- IBM Cloud
- GitHub
- Travis CI

Tools:

- IBM Cloud DevOps Toolchain
- ASP.NET
- React
- Material-UI

Application Initialization

- created one private repository
 - hosted on GitHub
- inspired by IBM ASP.NET *'HelloWorld'*¹
- created project skeleton
 - ASP.NET Core Web API (*webapi*) - the main structure
 - Class library (*classlib*) - several support projects
- configured deployment
 - before the development itself
 - on a clean *'HelloWorld'* application
- configured automation pipeline
 - IBM Cloud DevOps Toolchain

¹github.com/IBM-Cloud/aspnet-core-helloworld

Application Implementation

Frontend:

- Material UI components
- connected to the API
- supporting any mode
 - phone
 - tablet
 - desktop

Backend:

- Model–View–Controller
- multitier architecture
 - API
 - entities
 - repositories
 - services

Application Deployment

Our work looked like this:

■ Manual

- 1 Change code in a local repository
- 2 Commit changes in the local repository
- 3 Update of the remote repository

■ Automated

- 4 Test the application
- 5 Build the application from source
- 6 Deploy the built application
- 7 Create a release

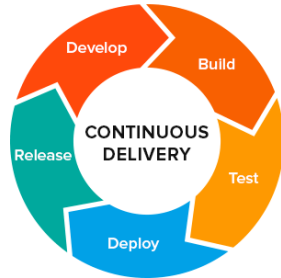


Figure: Continuous Delivery



Toolchain

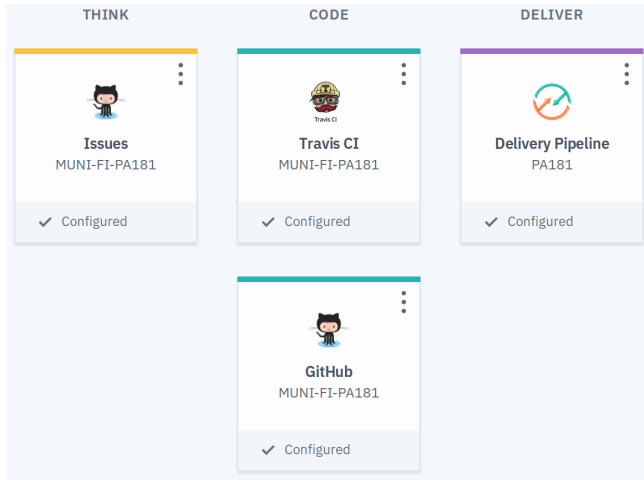


Figure: IBM Cloud DevOps Toolchain



Examples

The following screenshots illustrate our application.

Example 1

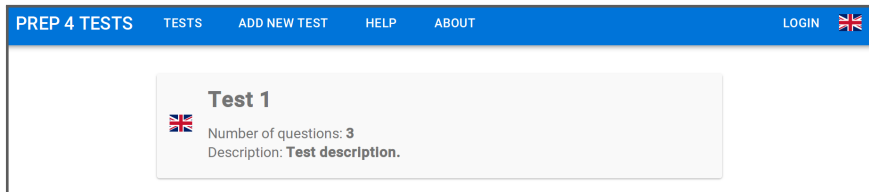



Figure: list of available tests

Example 2

PREP 4 TESTS **TESTS** **ADD NEW TEST** **HELP** **ABOUT** **LOGIN** 

2 - 2 = ?

Question **1** / 3 **MENU**

4

2

0

PREV

NEXT

Wrongly answered questions:

1

00:00:09


Correct: 0 / 3 (0%)

Description:
Mathematics - Arithmetic (subtraction)

Additional information:
Zobrazí se po vyhodnocení.

Figure: incorrect answer

Example 3

PREP 4 TESTS TESTS ADD NEW TEST HELP ABOUT LOGIN 

$2 + 2 = ?$

Question 2 / 3

MENU

2

1

3

4

PREV

NEXT

00:00:12

Correct: 1 / 3 (33.3%)


Description:
Mathematics - Arithmetic (addition)

Additional information:
Feedback Text

Figure: correct answer



Example 4

PREP 4 TESTS TESTS ADD NEW TEST HELP ABOUT LOGIN 


Username

Password

LOGIN

Figure: login

Example 5

[PREP 4 TESTS](#) [TESTS](#) [ADD NEW TEST](#) [HELP](#) [ABOUT](#) [LOGIN](#) 

New test

Name *

Language *

Test as JSON file *

UPLOAD FILE

Description

* Required

CANCEL

SUBMIT

Figure: add a new test

Example 6

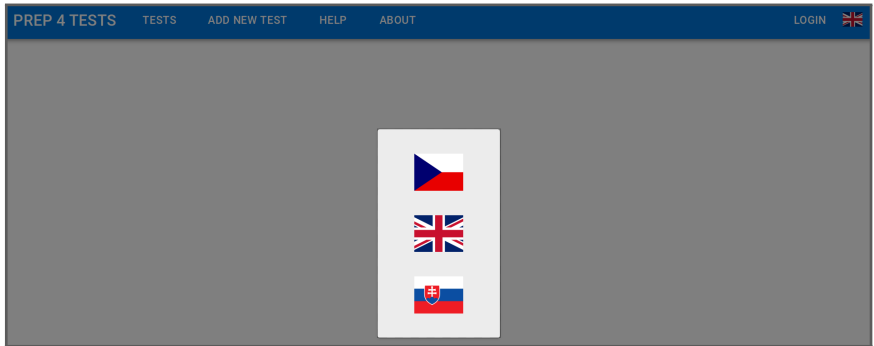



Figure: language selection

Example 7

[PREP 4 TESTS](#)
[TESTS](#)
[ADD NEW TEST](#)
[HELP](#)
[ABOUT](#)

[LOGIN](#)


Help

Test as JSON file

```


{
  {
    "text": "string",
    "description": "string",
    "afterSubmitFeedback": "string",
    "answers": [
      {
        "text": "string",
        "isCorrect": true
      }
    ]
  }
}

```

- **text** - Question
- **description** - Description
- **afterSubmitFeedback** - Additional information to be displayed after the answers have been evaluated.
- **answers** - Answers
 - **text** - Answer
 - **isCorrect** - true (Correct) / false (Incorrect)

Figure: help

Example 8

PREP 4 TESTSTESTSADD NEW TESTHELPABOUTLOGIN

About

Title:

Semestrální projekt pro předmět PA181 (2019)

Authors:

Adrián Tóth, Tadeáš Pavlík, Jiří Čechák, Václav Stehlík, Jan Ondruch

Description:

Application for user self-testing.

Source:

<https://github.com/europ/MUNI-FI-PA181>

License:

<https://github.com/europ/MUNI-FI-PA181/blob/master/LICENSE>

Figure: about



Thank you for your attention!