

Testing

6.1. Testing techniques

This project employs five levels of testing: unit testing, integration testing, system testing, usability testing and security testing. Unit and integration testing are automated. Unit tests are additionally integrated with CI/CD tool. The rest of testing is manual.

6.2. Testing tools

Security tests	Pentest, Astra, SonarLint
Usability tests	Manual
System tests	Manual
Integration tests	Playwright
Unit tests	Supertest, Mocha, React testing library

Testing levels and tools

Backend unit tests are automated using Supertest and Mocha. Integration with CI/CD pipeline (Jenkins) is done with jenkins-mocha package and xUnit plugin for Jenkins.

Front-end unit tests are automated with React testing library and have native integration with CI/CD pipeline.

Integration tests are implemented with Playwright, but not integrated with Jenkins.

System testing is performed manually, according to the template, provided in Appendix 1.

Usability tests are, obviously, conducted manually. By the time of writing this document, test was conducted on 2 participants. In future, tests need to be conducted on 3-7 participants.

Security tests employ two levels of security checks – static code analysis with SonarLint and using web scanning tools, like Pentest and Astra which run on deployed version of the application (<https://icf-app.onrender.com/>)

Appendices

Appendix 1

Use cases table for system tests

Execution date:

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. using "test")	redirected to /courses		
	Press "go to course" on any card	redirected to /sessions/id		
	Expand session	session expanded, all data is visible		
	Click on edit button	modal pops up		
	Click on generate QR button	QR code is opened in new tab		

Post-condition QR code is generated with session's id encoded
QR code is opened in new tab

Name	12. Teacher should be able to see feedbacks' statistic for session
Design Date	13/04/2014
Preconditions	Teacher has account
	Teacher has at least one course
	Course has at least one session
	Session has at least one feedback
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. using "test")	redirected to /courses		
	Press "go to course" on any card	redirected to /sessions/id		
	Expand session	session expanded, all data is visible		
	Click on edit button	modal pops up		
	Click on "show statistics"	The session has not received any feedback. Or statistics		

Execution date:

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test"	redirected to /courses; courses list is shown		

Post-condition See list of all teacher's courses

Name	5. Teacher should be able to update course
Design Date	13/04/2014
Preconditions	Teacher has account.
	Teacher has some courses created.
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test"	redirected to /courses		
	Click on edit button in any course	course modal pops out		
	Update fields with valid information and press submit	course is updated		

Post-condition Course is updated
Changes are immediately reflected

Post-condition Session is updated
Changes are immediately reflected

Name	10. Teacher should be able to delete session
Design Date	13/04/2014
Preconditions	Teacher has account
	Teacher has at least one course
	Course has at least one session
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test")	redirected to /courses		
	Press "go to course" on any card	redirected to /sessions/id		
	Expand session	session expanded, all data is visible		
	Click on edit button	modal pops up		
	Click on delete button	the session is deleted immediately		

Post-condition Session is deleted
Changes are immediately reflected

Name	11. Teacher should be able to create QR code for session and share it
Design Date	13/04/2014
Preconditions	Teacher has account
	Teacher has at least one course
	Course has at least one session
Executed by:	

	Press "login" button	redirection to /courses as a signed user		

Post-condition Teacher is signed in
Teacher is redirected to /Courses

Name	3. Teacher should be able to create new course
Design Date	13/04/2014
Preconditions	Teacher has account
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test")	redirected to /courses		
	Click on create course button	Create new course modal pops up		
	Fill in one field and press submit button	"Please fill out this field"		
	Fill all fields with correct information and press submit	redirected to /courses, new course created		

Post-condition New course is created
New course is immidiately added to courses list

Name	4. Teacher should be able to see list of his courses
Design Date	13/04/2014
Preconditions	Teacher has account.
	Teacher has some courses created.
Executed by:	

	Fill all fields with correct information and press submit	new session is added and can be seen		

Post-condition New session is created
New session is immidiately added to sessions list

Name	7. Teacher should be able to create new session
Design Date	13/04/2014
Preconditions	Teacher has account
	Teacher has at least one course
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test")	redirected to /courses		
	Press "go to course" on any card	redirected to /sessions/:id		
	Click on create session button	create new session modal pops up		
	Fill in one field and press submit button	"Please fill out this field"		
	Fill all fields with correct information and press submit	new session is added and can be seen		

Post-condition New session is created
New session is immidiately added to sessions list

Name	8. Teacher should be able to see list of sessions for particular course
Design Date	13/04/2014
Preconditions	Teacher has account

Name	6. Teacher should be able to delete course
Design Date	13/04/2014
Preconditions	Teacher has account.
	Teacher has some courses created.
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test")	redirected to /courses		
	Press on delete button	course is deleted		

Post-condition Course is deleted
Course is immidiately deleted from courses list

Name	7. Teacher should be able to create new session
Design Date	13/04/2014
Preconditions	Teacher has account
	Teacher has at least one course
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Sign in (e.g. usitg "test")	redirected to /courses		
	Press "go to course" on any card	redirected to /sessions/:id		
	Click on create session button	create new session modal pops up		
	Fill in one field and press submit button	"Please fill out this field"		

Test cases for teacher

Name	1. Teacher should be able to sign up
Design Date	13/04/2014
Preconditions	No
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Click on sign up button	Redirection to /signup		
	Fill in not all fields	"All fields are required" message		
	Insert "test" word to all fields	"User already exists" message		
	Fill all fields			
	Submit form	redirection to /courses as a signed user		

Post-condition Teacher account is created
? Teacher is automatically signed in
? Teacher is redirected to /Courses

Name	2. Teacher should be able to sign in
Design Date	13/04/2014
Preconditions	Teacher has account
Executed by:	
Execution date:	

Step	Action	Expected System Resoponse	Pass / Fail	Comment
	Click on sign in/login button	redirection to /login		
	Fill in just one field with the word "test"	"Email and password are required."		
	Fill all fields with correct information, e.g. "test"			