

UNIVERSITATEA DIN BUCUREȘTI
FACULTATEA DE MATEMATICĂ ȘI INFORMATICĂ



EXPRESS CONSULT

*PLATFORMĂ DE MANAGEMENT
A PROGRAMĂRIILOR MEDICALE*



TOPICI SPECIALE ÎN BDTS

Aprilie 2023

CUPRINS

- **Metodologia SCRUM**
- **Interfața aplicației**
- **Cerințele aplicației**
- **Definirea user story-urilor**
- **Estimarea user story-urilor**
- **Jira**
- **Sprint Backlog**
- **Implementarea user story-urilor**
- **Sistem de control al versiunilor**
- **Sprint Daily Standup Meetings**
- **Review & Retrospective Meetings**



METODOLOGIA

SCRUM





AVANTAJE	DEZAVANTAJE
adaptabilitate și flexibilitate	dependență de echipe cu oameni experimentați
accelerarea procesului de dezvoltare	perioadă de training costisitoare ca timp și resurse
transparență internă	nepotrivită pentru echipele mari
costuri reduse	
feedback continuu de la client	



INTERFAȚA APLICAȚIEI EXPRESS CONSULT



HOME PAGE

Medical Appointments

[Home](#) [Departments](#) [Doctors](#) [Login](#) [Register](#)

Express Consult

With our Online Management Platform for Medical Appointments, you can create an account, find a doctor, schedule an appointment and see your medical history.

[Learn More](#)



HOME PAGE

Medical Appointments

[Home](#) [Departments](#) [Doctors](#) [Login](#) [Register](#)

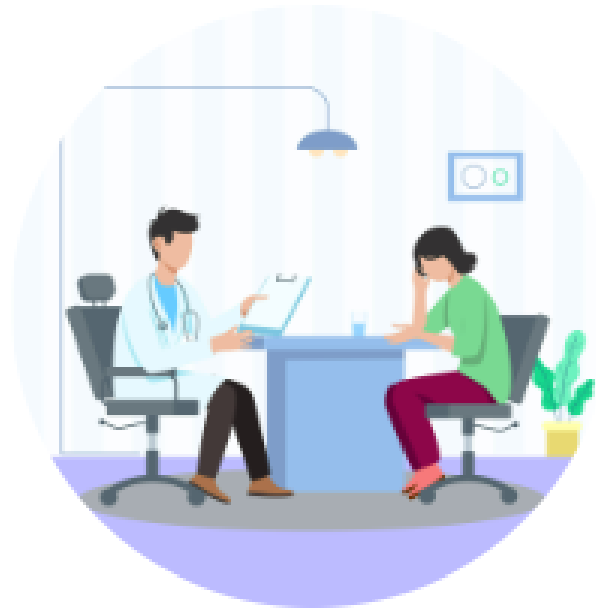
Scheduling a medical appointment has never been easier.

Clean interface, intuitive user experience



Schedule an appointment

Schedule an appointment to one of our doctors. Your past and future appointments will show up in My Consults page.



Get a consultation from our doctors

Show up on the day of your appointment. You will get a consultation from our doctors, which will prescribe medications based on your diagnosis.



Find your results and medical history

You can revisit your results and medical history any time, in My Consults page. You can also see our departments and doctors.

MY CONSULTS PAGE

Add consult

Future consults

ID	Patient	Doctor	Date	Diagnose	Details	Edit	Delete
3	Stefanescu Cristina	Sava Alin	26-04-2023 09:48		<div>Details</div>	<div>Edit</div>	<div>Delete</div>
10	Iordache Marius	Sava Alin	28-04-2023 12:00		<div>Details</div>	<div>Edit</div>	<div>Delete</div>

Past consults

ID	Patient	Doctor	Date	Diagnose	Details	Edit
1	Iordache Marius	Sava Alin	16-04-2023 11:47	Streptococ agravat	<div>Details</div>	<div>Edit</div>
4	Iordache Marius	Sava Alin	25-04-2023 09:59	Hemoragie interna	<div>Details</div>	<div>Edit</div>

CERINȚELE APLICAȚIEI



CERINȚELE FUNCȚIONALE



Crearea unei
programări medicale



Vizualizarea istoricului
medical

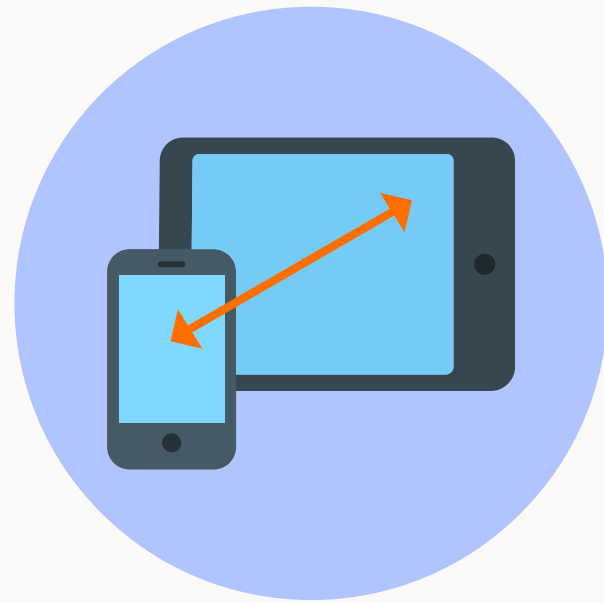


Notificarea prin email
la adăugarea unei noi
programări



Vizualizarea
departamentelor și a
procedurilor medicale

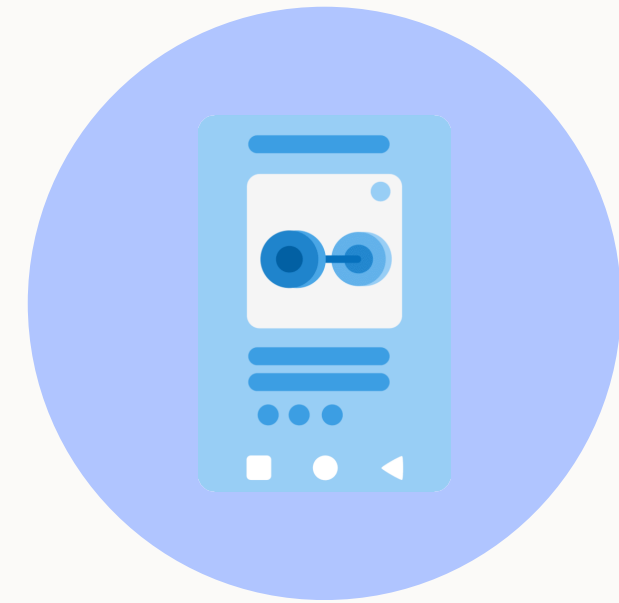
CERINȚELE NON-FUNCȚIONALE



Compatibilitatea și
portabilitatea



Securitatea
aplicației



Interfața intuitivă și
utilizarea eficientă

DEFINIREA USER STORY-URILOR



RAFINAREA USER STORY-URILOR

INVEST

INDEPENDENT

AS A <PERSONA>, I WANT TO <GOAL>, SO THAT <VALUE>.

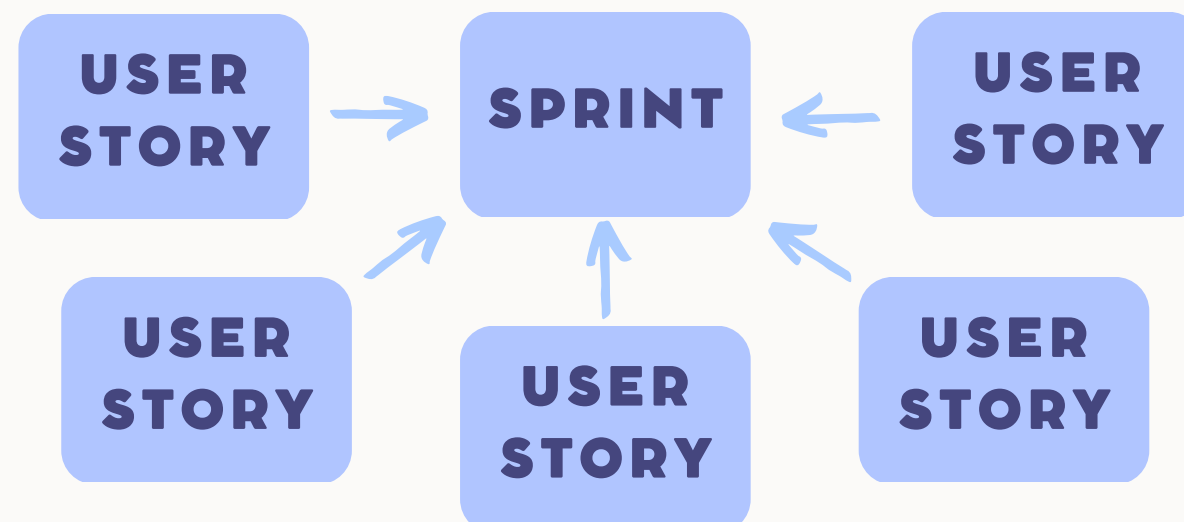
VALUABLE

As a patient, I want to create a medical appointment.



As a patient, I want to create a medical appointment, so that I don't have to call the clinic to make an appointment.

SMALL



INVEST

NEGOTIABLE

TESTABLE

ESTIMABLE

GIVEN SOME CONTEXT

**WHEN SOME ACTION IS
CARRIED OUT**

**THEN A PARTICULAR
SET OF OBSERVABLE
CONSEQUENCES
SHOULD OBTAIN**



USER STORY-URI

AUTHENTICATION

As an unauthenticated user, I want to register into the app as a patient, so that I can create a medical appointment.

APPOINTMENT MANAGEMENT

As a patient, I want the doctor to be notified by email when I add a new appointment, so that he can be aware of his new schedule.

PATIENT MANAGEMENT

As a doctor, I want to see the list of patients together with the details for each of them, so that I can access the consult history of each patient.

DOCTOR MANAGEMENT

As an admin, I want to edit the details of a doctor, so that I can make sure the information is up to date.



USER STORY-URI



DEPARTMENT MANAGEMENT

As a patient, I want to see the list of medical departments, so that I can check in which department I can make an appointment.

MEDICATION MANAGEMENT

As an admin, I want to add a new medication, so that it can reflect the new changes on the market.

PROFILE MANAGEMENT

As an admin, I want to create a doctor account, so that only authorized individuals can add doctors in hospital system.

PROJECT SETUP

As an authenticated or unauthenticated user, I want to see a home page of the app, so that I can learn more about the benefits of the app.

ESTIMAREA USER STORY-URILOR



PLANNING POKER

User story	Ana	Andrei	Flavius	Oana	Vlad	Estimare finală	Justificare
As an unauthenticated user, I want to register into the app as a patient, so that I can create a medical appointment.	3	2	3	2	3	3	Deși setup-ul autentificării este creat separat, trebuie creat controller, service, view și adaugate validări pe formular.
As a patient, I want to create a medical appointment, so that I don't have to call the clinic to make an appointment.	8	8	8	8	8	8	Flow-ul principal al aplicației, implică comunicarea cu alte repository-uri și necesită un număr mai mare de validări.
As an admin, I want to view the list of consults together with the details for each of them, so that I can verify that the displayed information is correct.	5	5	5	3	5	5	Implică atât vizualizarea întregii liste a consultațiilor, cât și a detaliilor pentru o consultație particulară, astfel trebuie create 2 view-uri.

AGILE PROJECT MANAGEMENT TOOL



JIRA

- administrarea issue-urilor (Epic, User Story, Task sau Bug)
- crearea board-urilor specializate
- definirea unui flux de lucru

The screenshot displays a Jira issue page for a user story. The breadcrumb trail at the top reads: Projects / Management platform ... / MA-54 / MA-15. The issue title is "As a patient, I want to create a medical appointment, so that I don't have to call the clinic to make an appointment." Below the title are buttons for "Attach", "Add a child issue", "Link issue", and a menu icon. The issue's priority is set to "Highest" and its impact is "None". The description section contains "Acceptance criteria:" followed by two sets of criteria. The first set includes: "GIVEN that the user is logged in as a patient", "AND he is on the my appointments page", "WHEN he clicks on the create appointment button", and "THEN the user is redirected on add appointment page". The second set includes: "GIVEN that the user is logged in as a patient", "AND he is on the doctors page", "WHEN he clicks on the create appointment button", and "THEN the user is redirected on the add appointment page and the field for the doctor is already completed with the name of the doctor selected earlier". On the right sidebar, the issue status is "CLOSED" with a "Done" checkmark. Below this are sections for "Details", "Assignee", "Labels", "Story point estimate", "Sprint", and "Reporter". At the bottom of the sidebar, it shows the issue was "Created March 11, 2023 at 3:30", "Updated 2 days ago", and "Resolved 5 days ago".

Projects / Management platform ... / MA-54 / MA-15

As a patient, I want to create a medical appointment, so that I don't have to call the clinic to make an appointment.

Attach Add a child issue Link issue

Priority Highest

Impact None

Description

Acceptance criteria:

GIVEN that the user is logged in as a patient

AND he is on the my appointments page

WHEN he clicks on the create appointment button

THEN the user is redirected on add appointment page

GIVEN that the user is logged in as a patient

AND he is on the doctors page

WHEN he clicks on the create appointment button

THEN the user is redirected on the add appointment page and the field for the doctor is already completed with the name of the doctor selected earlier

CLOSED Done

Details

Assignee

Labels

Story point estimate

Sprint

Reporter

Created March 11, 2023 at 3:30

Updated 2 days ago

Resolved 5 days ago

SPRINT BACKLOG



MEDICAL SPRINT 1

27 MARTIE



25 APRILIE

Backlog



Epic ▾

Type ▾

Insights

Medical Sprint 1 27 Mar – 25 Apr (43 issues)

0 8 127




Complete sprint




MA-41	As an admin, I want to delete a consult, so that I can delete non-updated informatio...	APPOINTMENT MANAGEMENT	3	^	CLOSED ▾	AI
MA-26	As a doctor, I want to update one of my consults, so that the information is up to date.	APPOINTMENT MANAGEMENT	3	^	CLOSED ▾	AI
MA-25	As a doctor, I want to add the details of a consult for a completed appointment, so t...	APPOINTMENT MANAGEMENT	3	^	CLOSED ▾	OT
MA-16	As a patient, I want to edit my appointment, so that I can change the date and the p...	APPOINTMENT MANAGEMENT	8	^	CLOSED ▾	OT
MA-27	As a doctor, I want to delete one of my consults, so that it can disappear from the sy...	APPOINTMENT MANAGEMENT	2	^	CLOSED ▾	AI
MA-23	As a doctor, I want to access my consults together with the details for each of them, ...	APPOINTMENT MANAGEMENT	5	^	CLOSED ▾	OT
MA-19	As a patient, I want the doctor to be notified by email when I add a new appointmen...	APPOINTMENT MANAGEMENT	3	=	CLOSED ▾	DV
MA-24	As a doctor, I want to add an appointment for a patient, so that I can schedule his n...	APPOINTMENT MANAGEMENT	2	^	CLOSED ▾	OT

SCRUM BOARD

Medical Sprint 1

 1 day remaining




LC

DV

FS

AM

+2



Epic ▾

Type ▾

GROUP BY No

TO DO

IN PROGRESS 1 ISSUE


IN REVIEW 1 ISSUE


BLOCKED

CLOSED 41 ISSUES ✓

As an authenticated or unauthenticated user, I want to see a home page of the app, so that I can learn more about the benefits of the app.


PROJECT SETUP


 MA-50

3  AI

As a doctor, I want to see the list of patients together with the details for each of them, so that I can access the consult history of each patient.


PATIENT MANAGEMENT


 MA-22

5  AI

As a doctor, I want to add the details of a consult for a completed appointment, so that I can save the results related to diagnosis and medication, in order to be visible later for me and my patient.


APPOINTMENT MANAGEMENT


 MA-25

✓ 3  OT

As an admin, I want to view the list of patients together with the details for each of them, so that I can verify that the displayed information is correct.


PATIENT MANAGEMENT


 MA-37

✓ 3  FS

As an admin, I want to delete a consult, so that I can delete non-updated information from the system if it is requested.

APPOINTMENT MANAGEMENT

 MA-41

✓ 3  AI



Roadmap



 Give feedback Share Export ...

 View settings

The screenshot shows a Jira board for 'Medical Sprint 1'. The board is organized into four columns: 'To Do', 'In Progress', 'Done', and 'Closed'. The 'To Do' column has four items, 'MA-53 Authentication' and 'MA-54 Appointment management' are highlighted with green bars. The 'In Progress' column has three items. The 'Done' column has two items. The 'Closed' column has one item. The board is titled 'Medical Sprint 1'.

Item ID	Description	Status	Assignee
MA-53	Authentication	In Progress	OV
MA-54	Appointment management	In Progress	AI
MA-41	As an admin, I want to delete a consult,...	Closed	AI
MA-26	As a doctor, I want to update one of m...	Closed	AI
MA-3	As an unauthenticated user, I want to lo...	Closed	OV
MA-2	As an unauthenticated user, I want to re...	Closed	OV
MA-5	As an unauthenticated user, I want to be able ...	To Do	
MA-6	As an unauthenticated user, I want to be able ...	To Do	
MA-25	As a doctor, I want to add the details o...	Closed	OT
MA-16	As a patient, I want to edit my appoint...	Closed	OT

IMPLEMENTAREA USER STORY-URILOR



TEST-DRIVEN DEVELOPMENT

TEHNOLOGII

Implementare -> Java + Spring Boot

Testare automată -> JUnit + Mockito

ABORDARE

Cazurile de testare sunt generate înainte de a face
implementarea propriu-zisă

SCOP

Sporirea productivității programatorului, menținerea
stabilității codului și reducerea timpului de debugging

TEST COVERAGE

93%

Acoperire pe clase

85%

Acoperirea pe metode

82%

Acoperirea pe linii

AVANTAJE	DEZAVANTAJE
Este scris doar codul care este necesar	Testele scrise greșit pot rezulta în cod scris greșit
Design modular	Poate încetini procesul de dezvoltare
Codul este ușor de menținut	Toți membrii echipei sunt afectați
Ușor de refactorizat	Scriere de teste pentru cod trivial
Acoperire mare a testelor	
Ajută la diminuarea efortului necesar debugging-ului	



PAIR PROGRAMMING



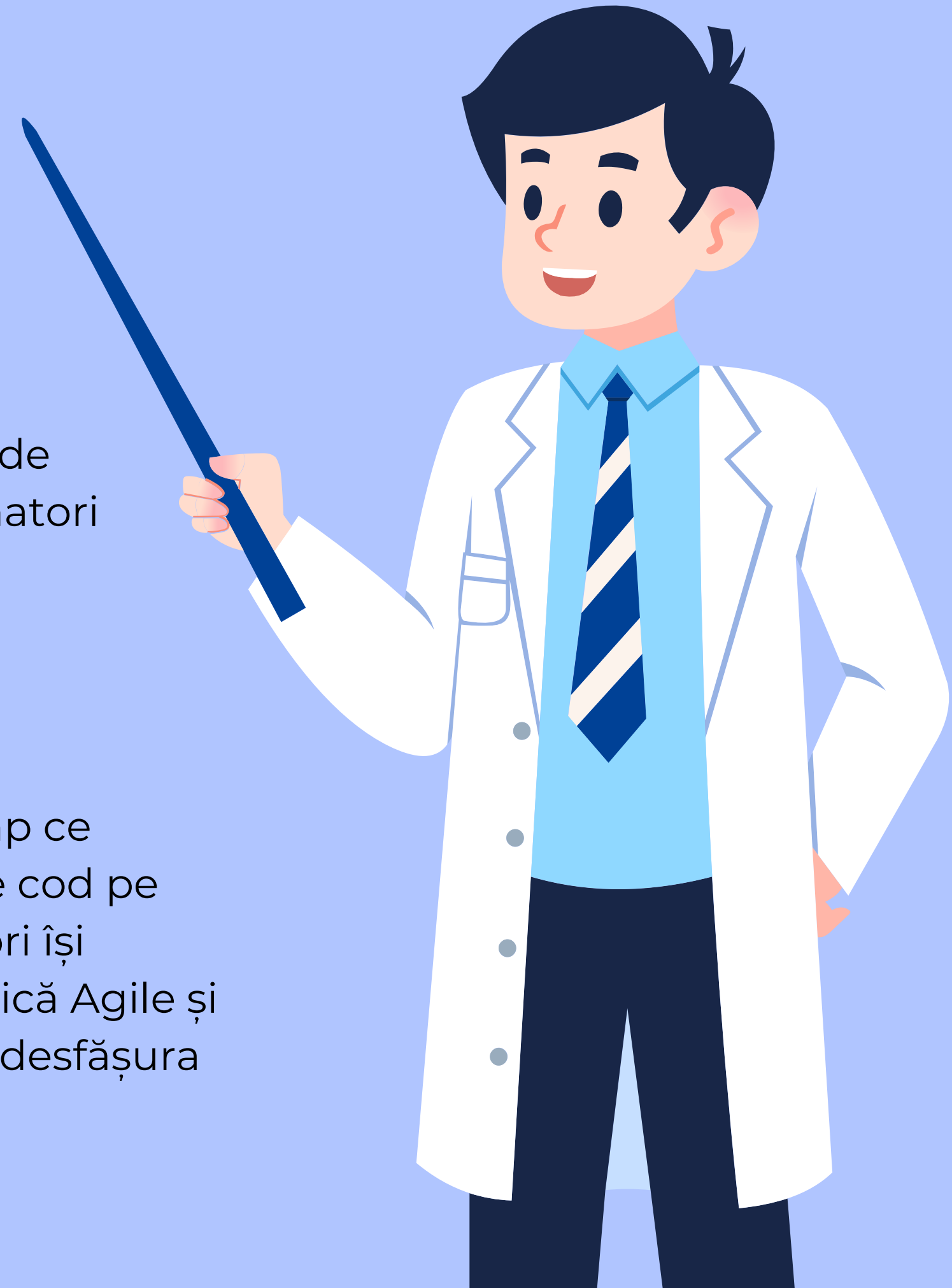
PAIR PROGRAMMING

01

Programarea în pereche este o tehnică de dezvoltare software în care doi programatori lucrează împreună la un computer.

02

Unul dintre aceștia, „driver”, scrie codul, în timp ce celălalt, „navigator”, revizuieste fiecare linie de cod pe măsură ce este introdusă. Cei doi programatori își schimbă rolurile frecvent. Aceasta este o tehnică Agile și provine din Extreme Programming. Se poate desfășura în persoană sau la distanță (remote).



AVANTAJE	DEZAVANTAJE
Mai puține greșeli și bug-uri	Costuri mai mari de dezvoltare
Rezistență mai mare	Sustenabilitate
Calitatea mai bună a codului	
Împărtășirea de cunoștințe	
Moral mai bun al echipei	



SISTEMUL DE CONTROL AL VERSIUNILOR



INTEGRAREA CODULUI

În cadrul proiectului, am folosit **Github** ca sistem de control al versiunilor. Pentru a păstra consistența, au fost făcute următoarele convenții:

1

Fiecare task este creat pe un branch separat având drept nume **numărul task-ului**

2

Fiecare commit va avea în titlu numărul task-ului din care face parte, respectiv numele din ticket-ul de Jira

3

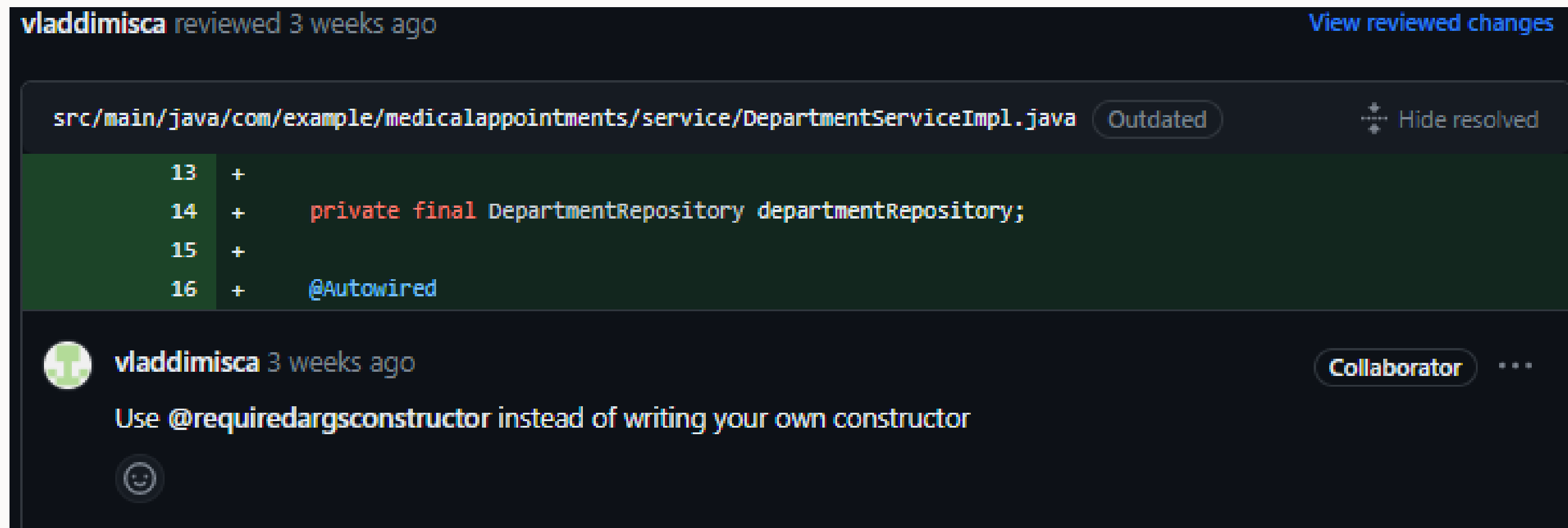
Fiecare funcționalitate este testată manual de către dezvoltator, respectiv prin **teste automate**.



INTEGRAREA CODULUI

4

Se va deschide un nou **pull request** pentru care este necesar cel puțin un approval. Cel care face code review este responsabil de realizarea **testelor de acceptență**



The screenshot shows a GitHub pull request review interface. At the top, it says 'vladdimisca reviewed 3 weeks ago' with a link to 'View reviewed changes'. Below this, the file path 'src/main/java/com/example/medicalappointments/service/DepartmentServiceImpl.java' is shown, along with an 'Outdated' label and a 'Hide resolved' button. The code diff shows four lines of additions: line 13 with a '+' sign, line 14 with '+ private final DepartmentRepository departmentRepository;', line 15 with a '+' sign, and line 16 with '+ @Autowired'. Below the code, there is a review comment from 'vladdimisca' 3 weeks ago, with the text 'Use @requiredArgsConstructor instead of writing your own constructor'. The reviewer is identified as a 'Collaborator' with a three-dot menu icon. A smiley face emoji is visible at the bottom left of the comment area.

```
src/main/java/com/example/medicalappointments/service/DepartmentServiceImpl.java Outdated Hide resolved
```

```
13 +  
14 + private final DepartmentRepository departmentRepository;  
15 +  
16 + @Autowired
```

vladdimisca 3 weeks ago Collaborator ...

Use @requiredArgsConstructor instead of writing your own constructor




INTEGRAREA CODULUI


5


Pentru asigurarea stabilității codului, a fost creat un **pipeline** folosind **Github actions**. Acesta realizează un nou build al aplicației și rulează testele automate pentru fiecare modificare din pull request



 **MA-66: As a doctor, I cannot select the medical procedure when tryin...** MA-66 20 hours ago ...


Java CI with Maven #27: Pull request #46 opened by andreim9816 53s



 **Review required**
At least 1 approving review is required by reviewers with write access. [Learn more.](#)

 **All checks have passed**
1 successful check [Hide all checks](#)

  **Java CI with Maven / build (pull_request)** Successful in 58s [Details](#)

 **Merging is blocked**
Merging can be performed automatically with 1 approving review.

Merge pull request

You can also open this in [GitHub Desktop](#) or [view command line instructions.](#)



SPRINT DAILY

STANDUP MEETINGS



SPRINT DAILY STANDUP MEETINGS



SUBIECTE ABORDATE

În cadrul Daily Standup Meeting, se discuta despre:

1

Actualizările cu privire la issue-urile în curs de desfășurare de la ultimul meeting.

2

Posibilele impedimente apărute.

3

Issue-ul la care se va lucra în continuare, până la următorul daily.

AVANTAJELE DAILY-ULUI



Creșterea eficienței prin
urmărirea progresului



Îmbunătățirea
comunicării



Construirea unei
viziuni comune

DAILY STATUS

VLAD

OANA

Am lucrat la task-ul de creare și editare a departamentelor ca utilizator cu rol de administrator folosind TDD, a fost în review și acum este în done

Am continuat să lucrez la crearea de programări și am întâmpinat niște probleme la afișarea dropdown-ului cu doctori pe baza departamentului ales, pe care voi încerca să le rezolv astăzi.

ANA

Am început să lucrez la task-ul de ștergere a unei consultații, ca medic, folosind TDD. Am cerut un review și l-am finalizat.

ANDREI

Am făcut pair-programming pe task-ul de editare a doctorului. Am întâmpinat probleme legate de validarea datelor, dar le-am rezolvat în final.

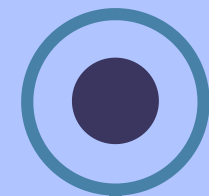
FLAVIUS

Am făcut pair-programming cu Andrei pe task-ul de editare a detaliilor unui doctor, din rolul de administrator.

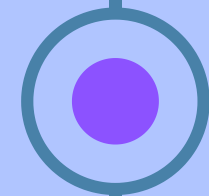
REVIEW & RETROSPECTIVE **MEETINGS**



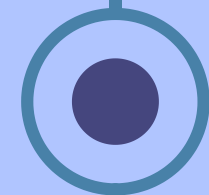
REVIEW MEETING



A avut loc în ultima zi a sprint-ului



Dezvoltatorii au prezentat implementarea tuturor user story-urilor



Product Owner-ul a validat toate funcționalitățile



CE A MERS BINE?

- listă de user story-uri bine alcătuită
- alcătuirea unei liste realiste de task-uri
- daily-uri bine organizate
- utilizarea metodei TDD
- lucru în echipă eficient prin intermediul Pair - Programming
- livrarea la timp a unei aplicații care îndeplinește cerințele primite

CE NU A MERS BINE?

- distribuirea necorespunzătoare a task-urilor
- adaptarea greoaie la metoda de testare Test Driven Development
- împărțirea necorespunzătoare a daily-urilor în sprint

CE DORIM SĂ ÎMBUNĂTĂȚIM?

- alocarea mai potrivită a task-urilor
- utilizarea unui tool de generare a testelor automate

RETROSPECTIVE MEETING



ECHIPA



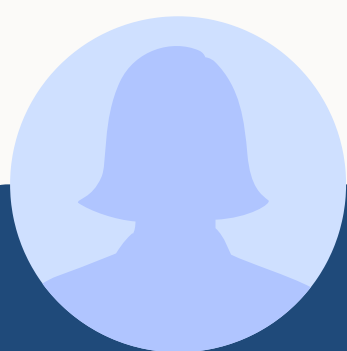
Cozma
Laura-Elena

PRODUCT OWNER



Dimișcă
Vlad
Mihăiță

DEZVOLTATOR



Iamandii
Ana-Maria

DEZVOLTATOR



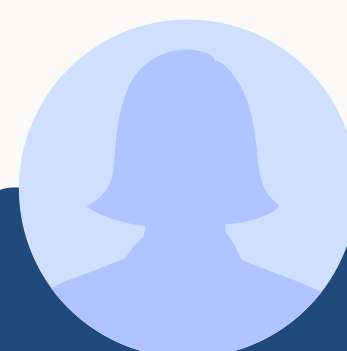
Manolache
Andrei

DEZVOLTATOR



Stan
Flavius
Ștefan

DEZVOLTATOR &
SCRUM MASTER



Todirică
Oana
Andreea

DEZVOLTATOR



MULTUMIM!