Za početak:

- Razmisli o poenti svake teme i primerima tema u kontekstu:
  - Karijere inženjera softvera
  - Studiranja
  - Građanskog života
- Prodiskutuj početna zapažanja sa kolegama oko sebe

Čas kreće sa opštom diskusijom o temama u bilo kom redosledu.

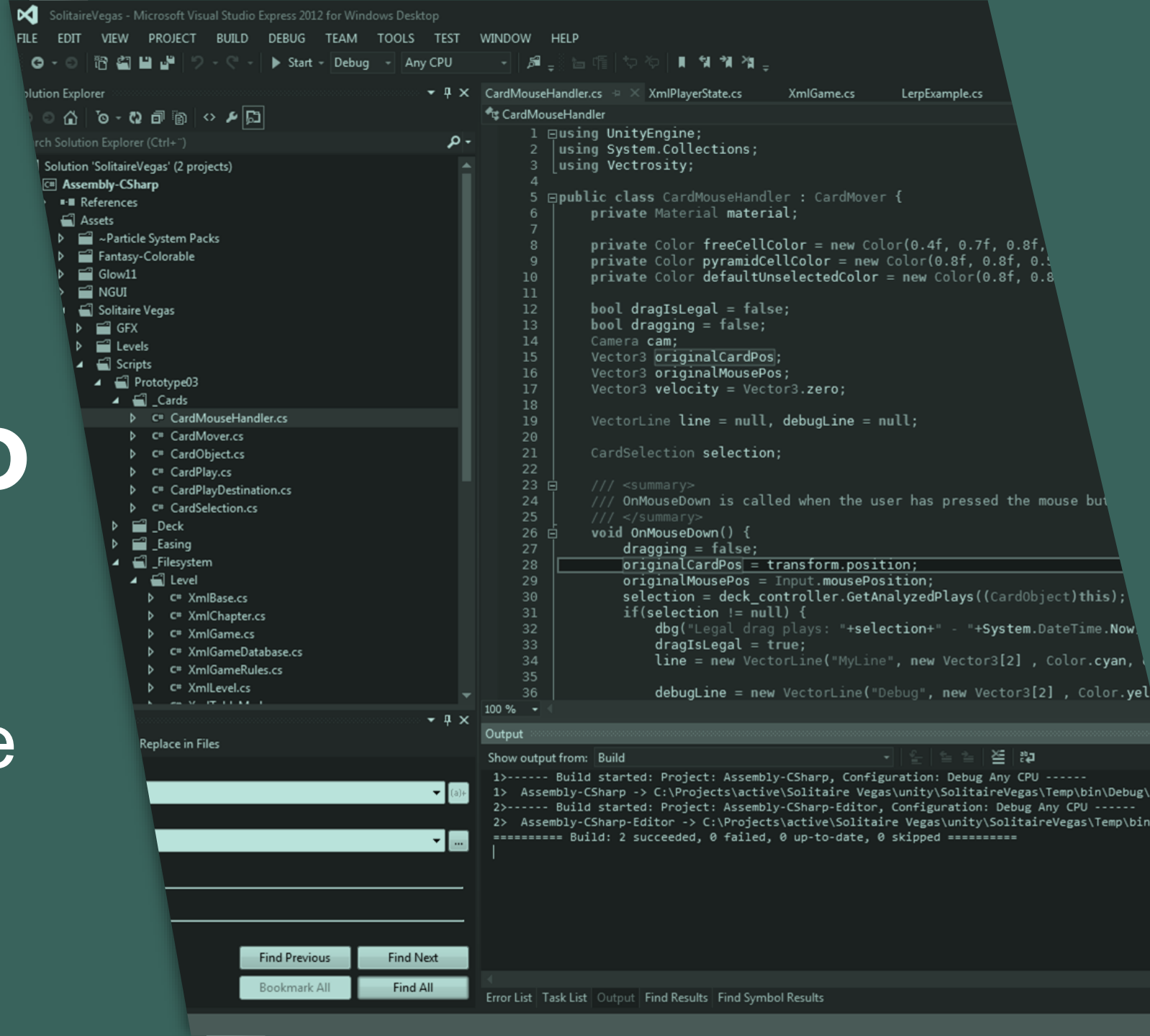
A Pragmatic Philosophy

1. It's Your Life
2. The Cat Ate My Source Code
3. Software Entropy
4. Stone Soup and Boiled Frogs
5. Good-Enough Software
6. Your Knowledge Portfolio
7. Communicate!

Uvod u softversko inženjerstvo

Integrisano razvojno okruženje

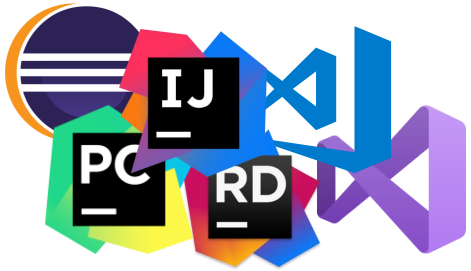
Nikola Luburić
nikola.luburic@uns.ac.rs



Integrisano razvojno okruženje

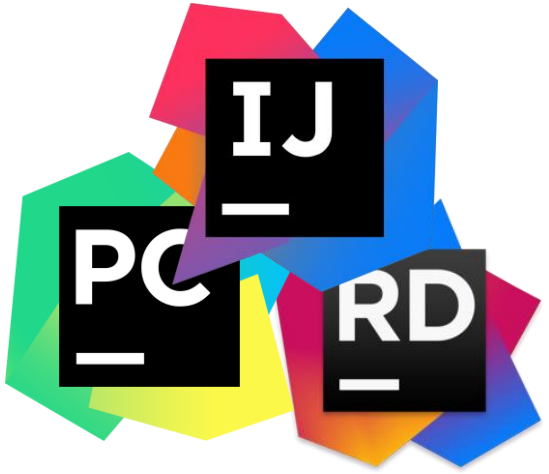
- Editor koda
- Dibager
- *Case Study*: Visual Studio
- *Debugging* tehnike

Alati amplifikuju tvoju veštinu



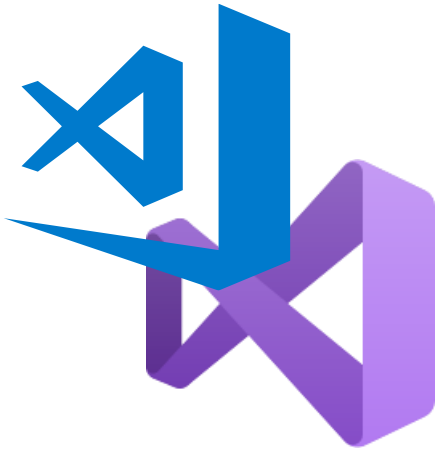
Integrated Development Environment

Aplikacija koja nudi zajednički interfejs raznim alatima za razvoj softvera



Cilj – Povećati produktivnost razvoja

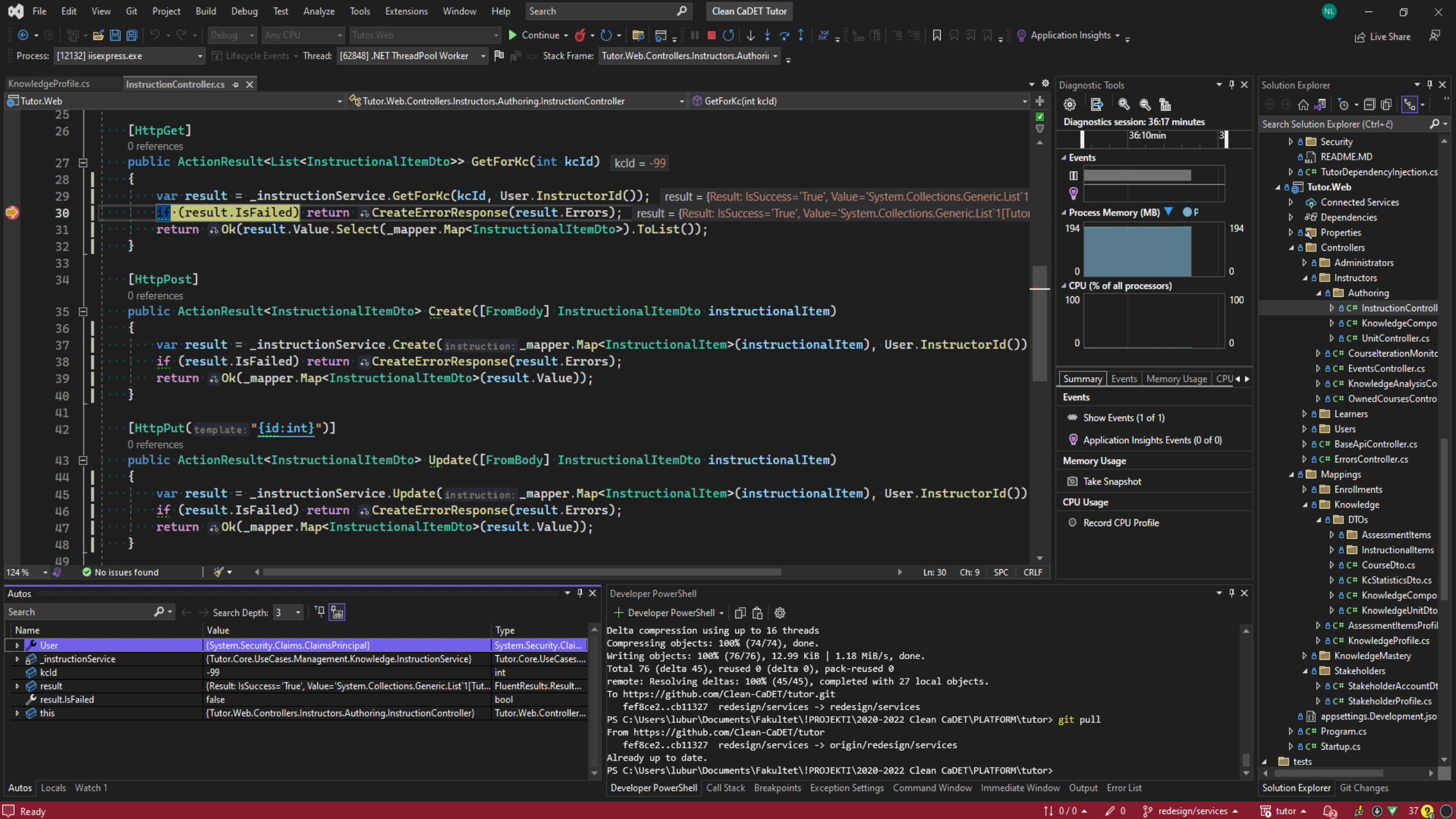
- Skup iskonfigurisanih alata
- Skup integrisanih alata
- Podrška za proširivanje skupa alata



Editor koda

Debugger

Vankoderske aktivnosti


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search
Clean CaDET Tutor
Debug
Any CPU
Tutor.Web
Continue
Application Insights
Live Share
Process: [12132] iisexpress.exe
Lifecycle Events
Thread: [62848] .NET ThreadPool Worker
Stack Frame: Tutor.Web.Controllers.Instructors.Authori
KnowledgeProfile.cs
InstructionController.cs
Tutor.Web
Tutor.Web.Controllers.Instructors.Authoring.InstructionController
GetForKc(int kcId)
[HttpGet]
0 references
public ActionResult<List<InstructionalItemDto>> GetForKc(int kcId) kcId = -99
{
var result = _instructionService.GetForKc(kcId, User.InstructorId()); result = {Result: IsSuccess='True', Value='System.Collections.Generic.List`1
if (result.IsFailed) return CreateErrorResponse(result.Errors); result = {Result: IsSuccess='True', Value='System.Collections.Generic.List`1[Tutor
return Ok(result.Value.Select(_mapper.Map<InstructionalItemDto>).ToList());
}
[HttpPost]
0 references
public ActionResult<InstructionalItemDto> Create([FromBody] InstructionalItemDto instructionalItem)
{
var result = _instructionService.Create(instruction: _mapper.Map<InstructionalItem>(instructionalItem), User.InstructorId());
if (result.IsFailed) return CreateErrorResponse(result.Errors);
return Ok(_mapper.Map<InstructionalItemDto>(result.Value));
}
[HttpPut(template: "{id:int}")]
0 references
public ActionResult<InstructionalItemDto> Update([FromBody] InstructionalItemDto instructionalItem)
{
var result = _instructionService.Update(instruction: _mapper.Map<InstructionalItem>(instructionalItem), User.InstructorId());
if (result.IsFailed) return CreateErrorResponse(result.Errors);
return Ok(_mapper.Map<InstructionalItemDto>(result.Value));
}
124 %
No issues found
Ln: 30
Ch: 9
SPC
CRLF
Diagnostic Tools
Diagnostics session: 36:17 minutes
36:10min
Events
Process Memory (MB)
194
0
CPU (% of all processors)
100
0
Summary
Events
Memory Usage
CPU
Events
Show Events (1 of 1)
Application Insights Events (0 of 0)
Memory Usage
Take Snapshot
CPU Usage
Record CPU Profile
Solution Explorer
Search Solution Explorer (Ctrl+ž)
Security
README.MD
TutorDependencyInjection.cs
Tutor.Web
Connected Services
Dependencies
Properties
Controllers
Administrators
Instructors
Authoring
InstructionControll
KnowledgeCompo
UnitController.cs
CourseIterationMonitc
EventsController.cs
KnowledgeAnalysisCo
OwnedCoursesContro
Learners
Users
BaseApiController.cs
ErrorsController.cs
Mappings
Enrollments
Knowledge
DTOs
AssessmentItems
InstructionalItems
CourseDto.cs
KcStatisticsDto.cs
KnowledgeCompo
KnowledgeUnitDto
AssessmentItemsProfil
KnowledgeProfile.cs
KnowledgeMastery
Stakeholders
StakeholderAccountDt
StakeholderProfile.cs
appsettings.Development.jso
Program.cs
Startup.cs
tests
Solution Explorer
Git Changes
Autos
Search
Search Depth: 3
Name
Value
Type
User
{System.Security.Claims.ClaimsPrincipal}
System.Security.Clai...
_instructionService
{Tutor.Core.UseCases.Management.Knowledge.InstructionService}
Tutor.Core.UseCases....
kcId
-99
int
result
{Result: IsSuccess='True', Value='System.Collections.Generic.List`1[Tut...
FluentResults.Result...
result.IsFailed
false
bool
this
{Tutor.Web.Controllers.Instructors.Authoring.InstructionController}
Tutor.Web.Controller...
Autos
Locals
Watch 1
Developer PowerShell
Developer PowerShell
Delta compression using up to 16 threads
Compressing objects: 100% (74/74), done.
Writing objects: 100% (76/76), 12.99 KiB | 1.18 MiB/s, done.
Total 76 (delta 45), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (45/45), completed with 27 local objects.
To https://github.com/Clean-CaDET/tutor.git
fef8ce2..cb11327 redesign/services -> redesign/services
PS C:\Users\lubur\Documents\Fakultet\!PROJEKTI\2020-2022 Clean CaDET\PLATFORM\tutor> git pull
From https://github.com/Clean-CaDET/tutor
fef8ce2..cb11327 redesign/services -> origin/redesign/services
Already up to date.
PS C:\Users\lubur\Documents\Fakultet\!PROJEKTI\2020-2022 Clean CaDET\PLATFORM\tutor>
Developer PowerShell
Call Stack
Breakpoints
Exception Settings
Command Window
Immediate Window
Output
Error List
Ready
redesign/services
tutor

Editor koda

šta se vidi u odnosu na notepad?

syntax highlighting

warning: not read

warning: not needed

```
private static List<OrderItem> createOrders() {
  List<OrderItem> retVal = new ArrayList<OrderItem>();
  retVal.add(new OrderItem( name: "appel",  quantityType: "kg",  quantityAmount: 2.0));
  retVal.add(new OrderItem( name: "orange",  quantityType: "kg",  quantityAmount: 1.0));
  return retval;
}
```

error: not defined

warning: misspelling

parameter name hints

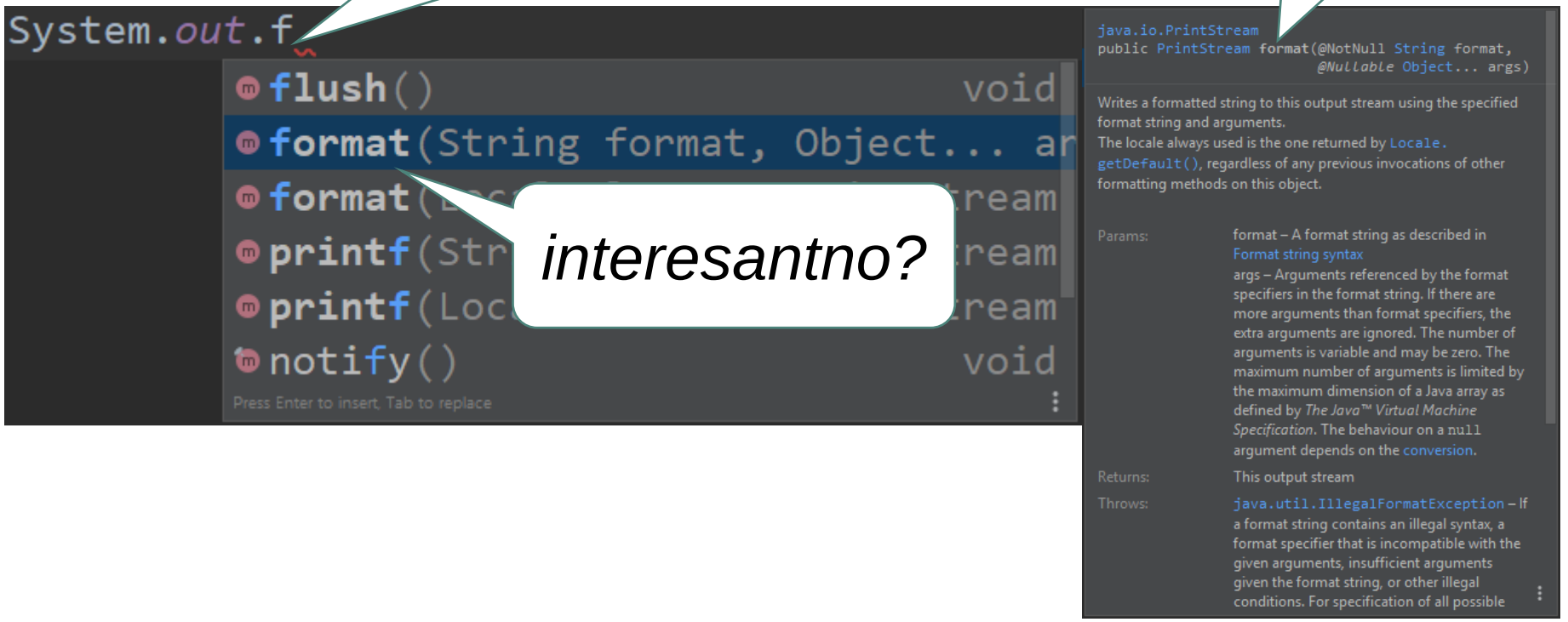
***Alt+Enter** kod problema*

Editor koda

radi i na selektovan element u kodu

Ctrl+Space
code completion

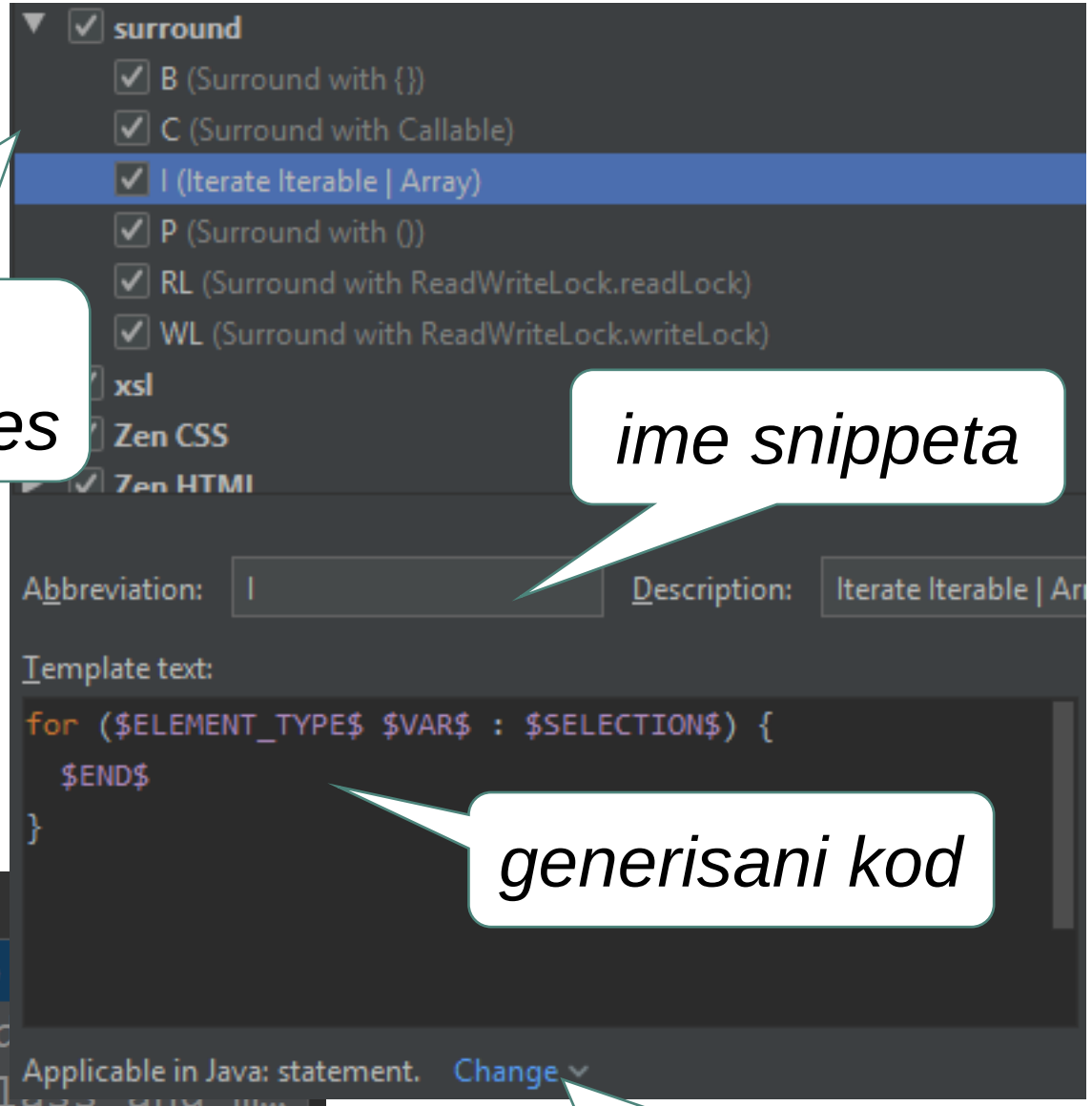
Ctrl+Q



Editor koda

File -> Settings -> Editor/Live Templates

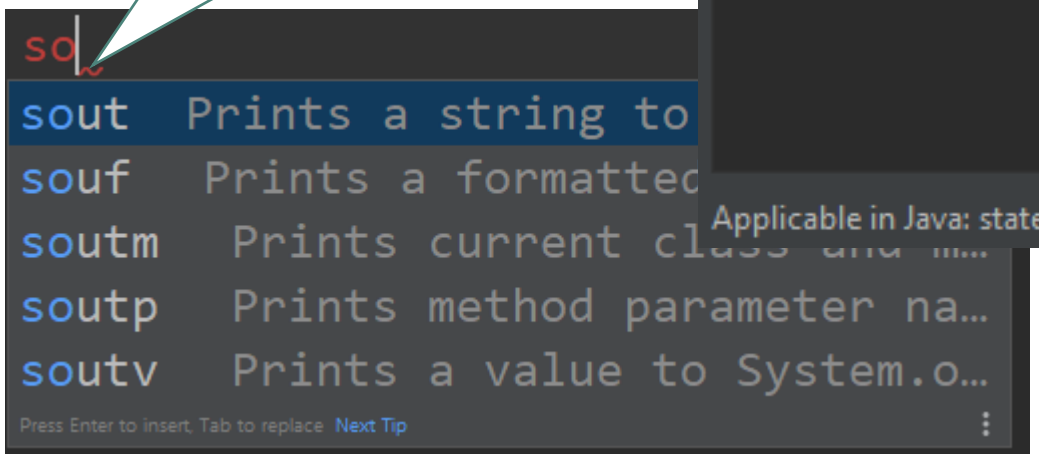
Ctrl+J/Space *code snippets (live templates)*



ime snippeta

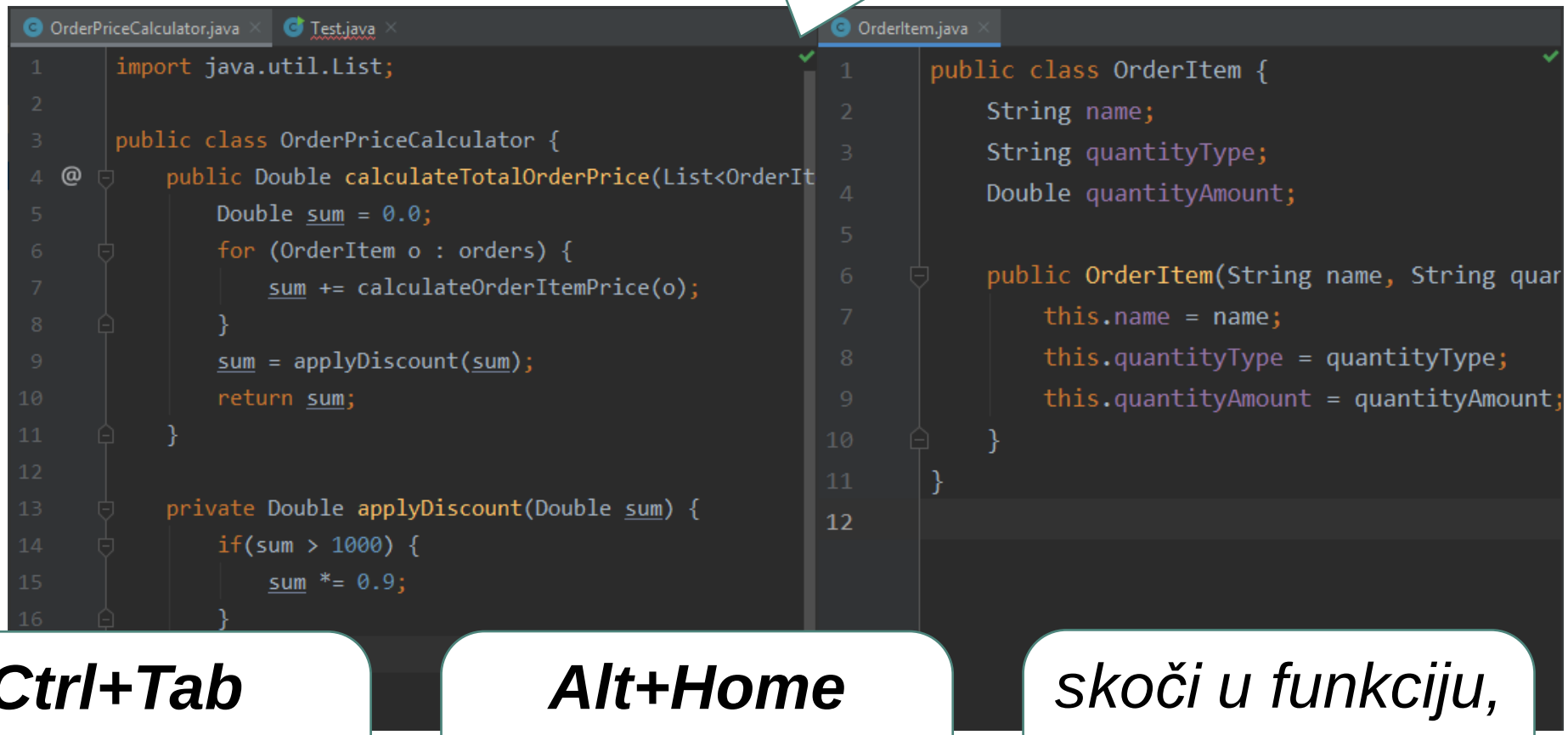
generisani kod

gde da se pojavi skraćenica



Editor koda

Window -> Editor Tabs -> Split Vertically/Horizontally



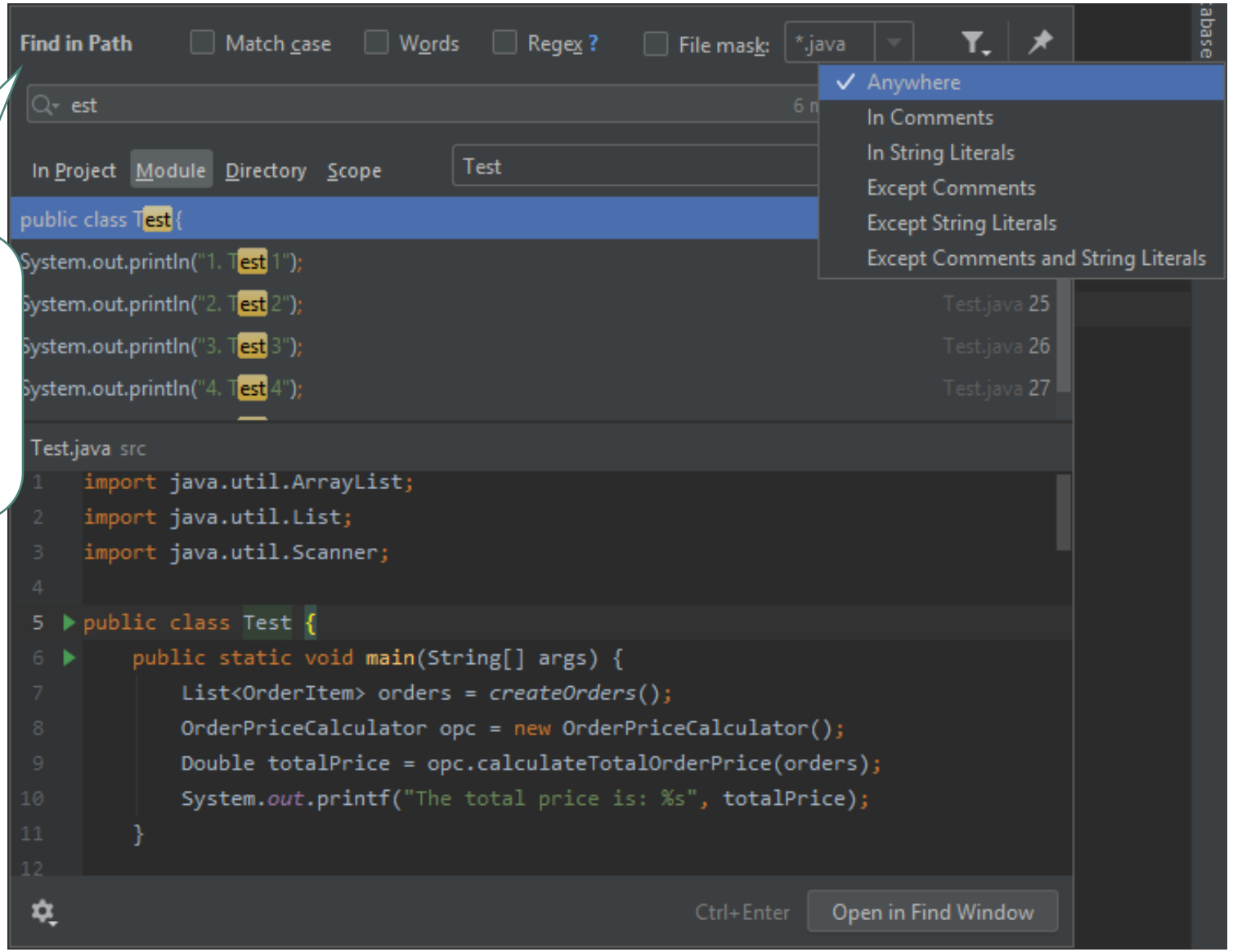
Ctrl+Tab
kretanje kroz otvorene fajlove

Alt+Home
kretanje kroz projekat

skoči u funkciju, pronađi gde se koristi funkcija...

Editor koda

Ctrl+Shift+F *koje su sve opcije?*



Smanjenje grešaka
Ubrzano pisanje koda
Isticanje konstrukcija koda
Generisanje koda
Editor koda
Kretanje po kodu
Održavanje čistoće koda
Ubrzano čitanje koda
Povećan kvalitet koda

Postani vešt sa svojim IDE-om

programiraj 7 dana bez miša

zar ne dolazi vremenom?

Domaći: Nauči da vršiš sledeće akcije bez miša:

Move and make selections by word, line, paragraph

Move by various syntactic units (matching delimiters, functions, modules…)

Reindent code following changes; Undo and redo changes

Comment and uncomment blocks of code with a single command

Split the editor window into multiple panels, and navigate between them

Navigate to a particular line number; Sort selected lines

Search for both strings and regular expressions, and repeat previous searches

Create multiple cursors based on a selection or on a pattern match, and edit the text at each in parallel

Display compilation errors in the current project; Run the current project’s tests

9/9

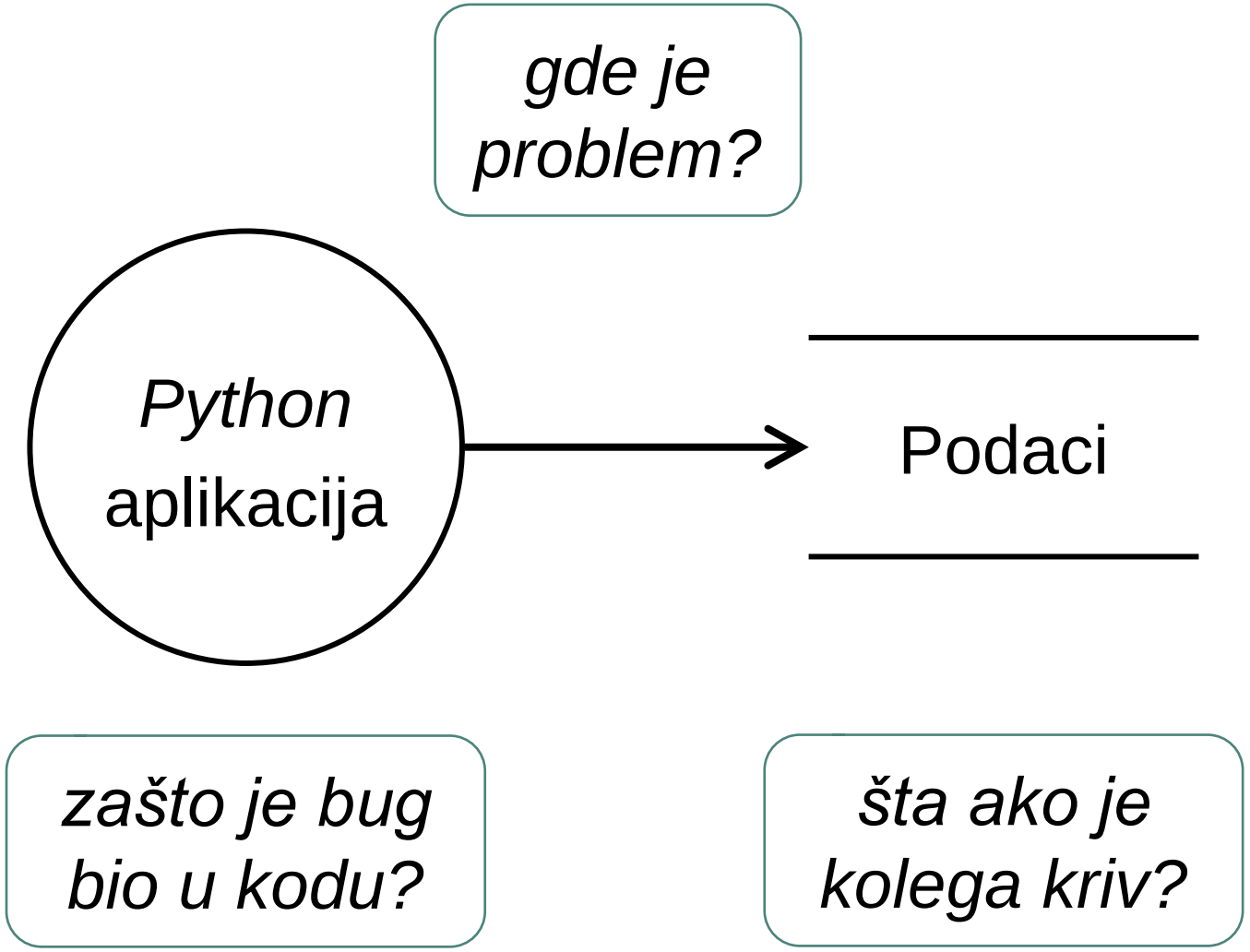
0800 Arctan started { 1.2700 9.037 847 025
1000 stopped - arctan ✓ 9.037 846 995 correct
13" WC (033) MP - MC ~~2.130476415~~ 4.615925059(-2)
033 PRO 2 2.130476415
correct 2.130676415
Relays 6-2 in 033 failed special speed test
In Relay 10,000 test.
Relays changed
1100 Started Cosine Tape (Sine check)
1525 Started Multi Adder Test.

1545 Relay #70 Panel F
(moth) in relay.

First actual case of bug being found.
~~1630~~ 1630 Arctangent started.
1700 closed down.

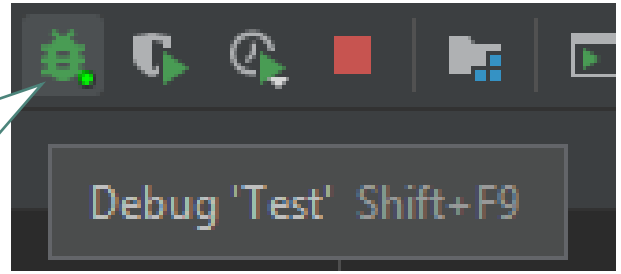
0830 Started mac
Registration
11.15 Started Mu
1245 Started 6
1300 Stopped o
secon
Adder troubl
(coincidental?) o
in column
failed occas
allow trouble
Con't d head
14.35 Stopped on
Sum d
2 instead o
adder from t
Con't o.k.
1630 Trouble a
5-8. Relay
shim. Repl

Rešavanje *bug*-a je puzla



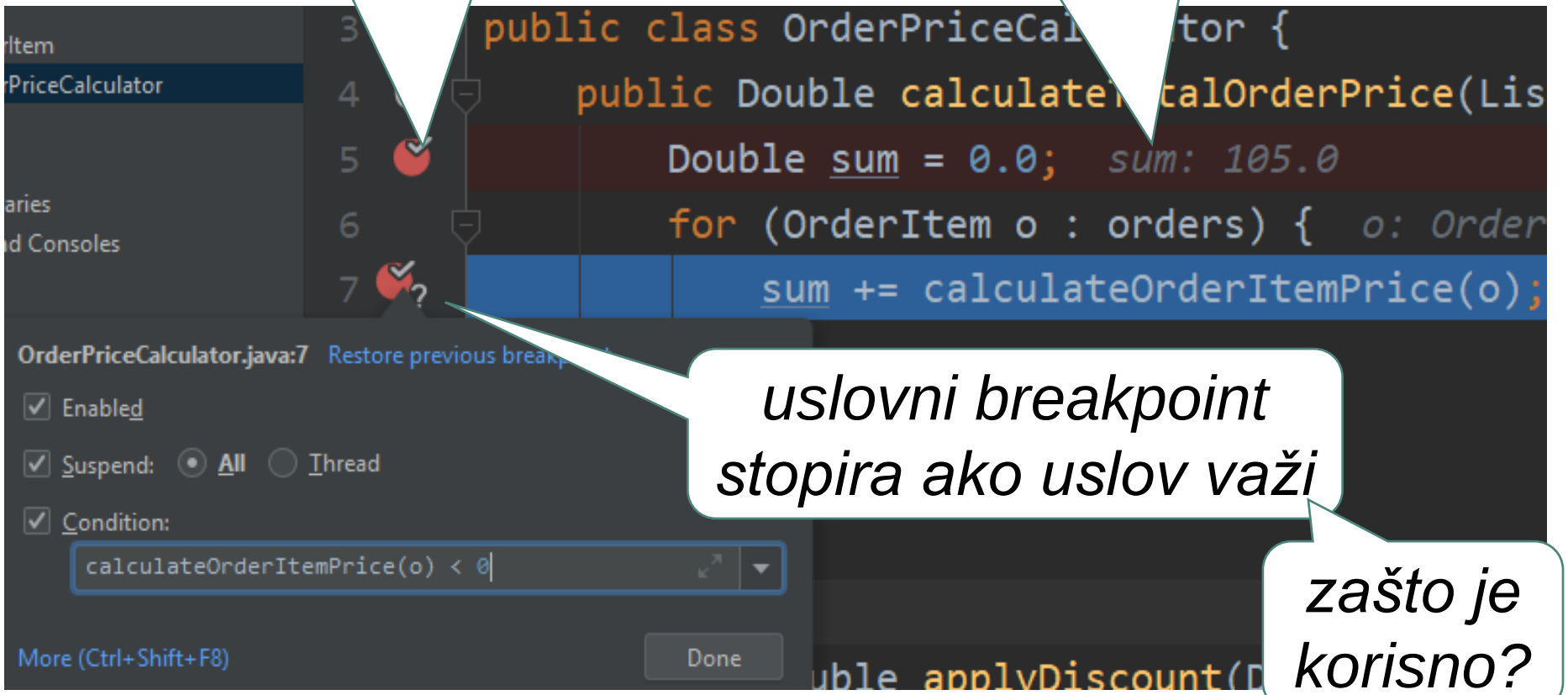
Debugger

vrši program u debag režimu



debag zastaje na breakpoint-ima

debag prikazuje aktivne vrednosti



uslovni breakpoint stopira ako uslov važi

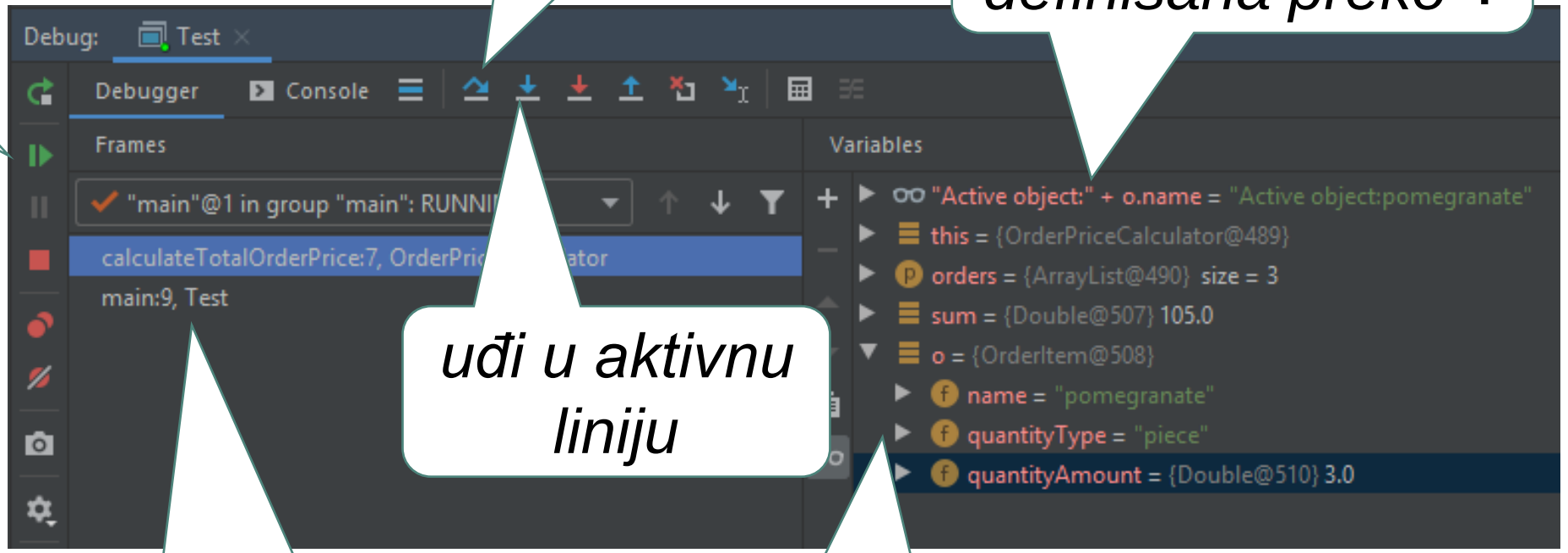
zašto je korisno?

Debugger

naredni breakpoint

skoči na narednu liniju

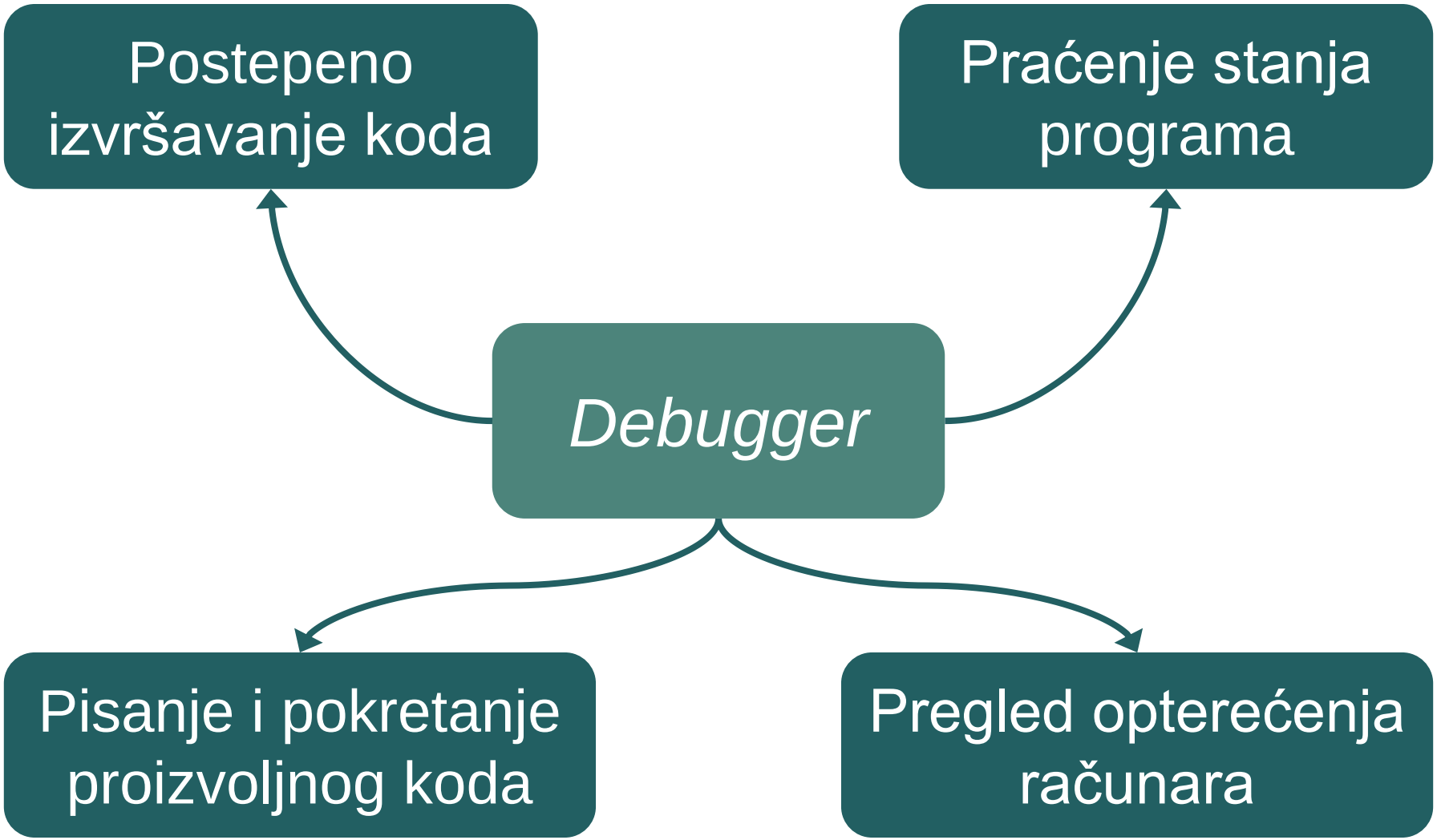
promenljiva definisana preko +



uđi u aktivnu liniju

stanje funkcija koje su pozvale aktuelnu

aktivne vrednosti u promenljivama

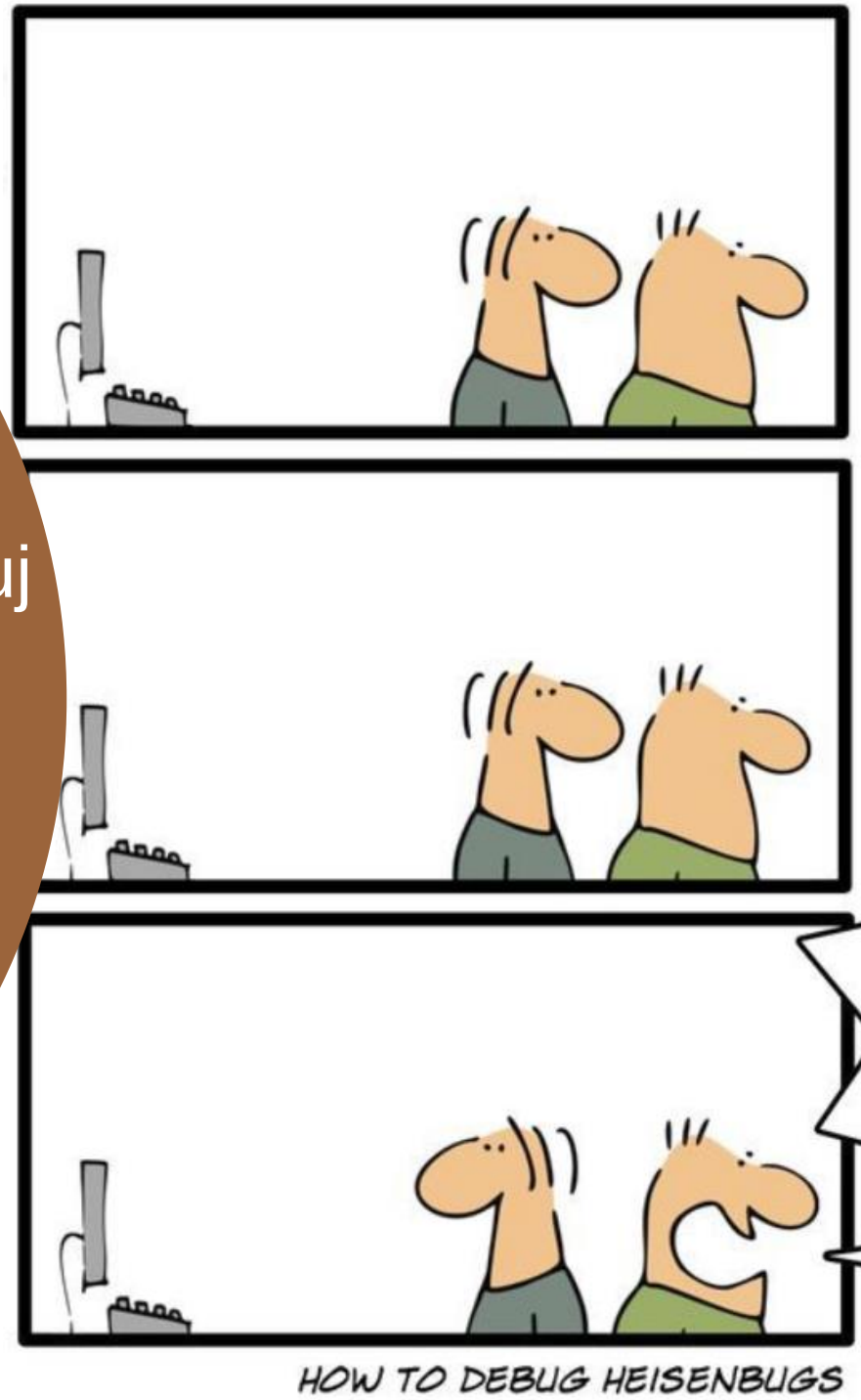

Postepeno izvršavanje koda
Praćenje stanja programa
Debugger
Pisanje i pokretanje proizvoljnog koda
Pregled opterećenja računara

Debugging tehnike

Reprodukuj *bug*

Čitaj poruku greške

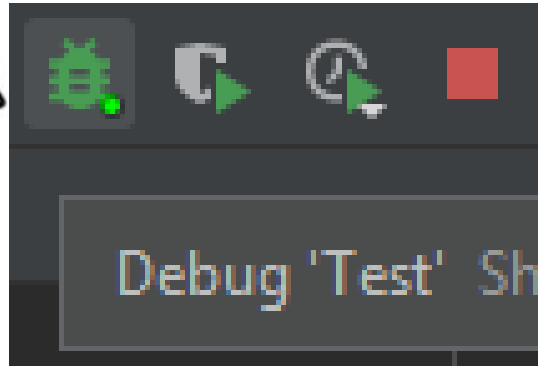
Upotrebi *debugger*



Stack Trace Explorer

Stack Trace × Stack Trace ×

```
at Microsoft.CodeAnalysis.CSharp.CSharpCompilation.GetSemanticModel(SyntaxTree syntaxTree, Boolean ignoreAccessibility)
at Microsoft.CodeAnalysis.CSharp.CSharpCompilation.CommonGetSemanticModel(SyntaxTree syntaxTree, Boolean ignoreAccessibility)
at CodeNav.Mappers.SyntaxMapper.MapDocument(Document document) in C:\projects\codenav\CodeNav\Mappers\SyntaxMapper.cs:line 142
at CodeNav.Mappers.SyntaxMapper.MapDocument(Document activeDocument, CodeViewUserControl control, VisualStudioWorkspace workspace) in C:\projects\codenav\CodeNav\Mappers\SyntaxMapper.cs:line 78
```

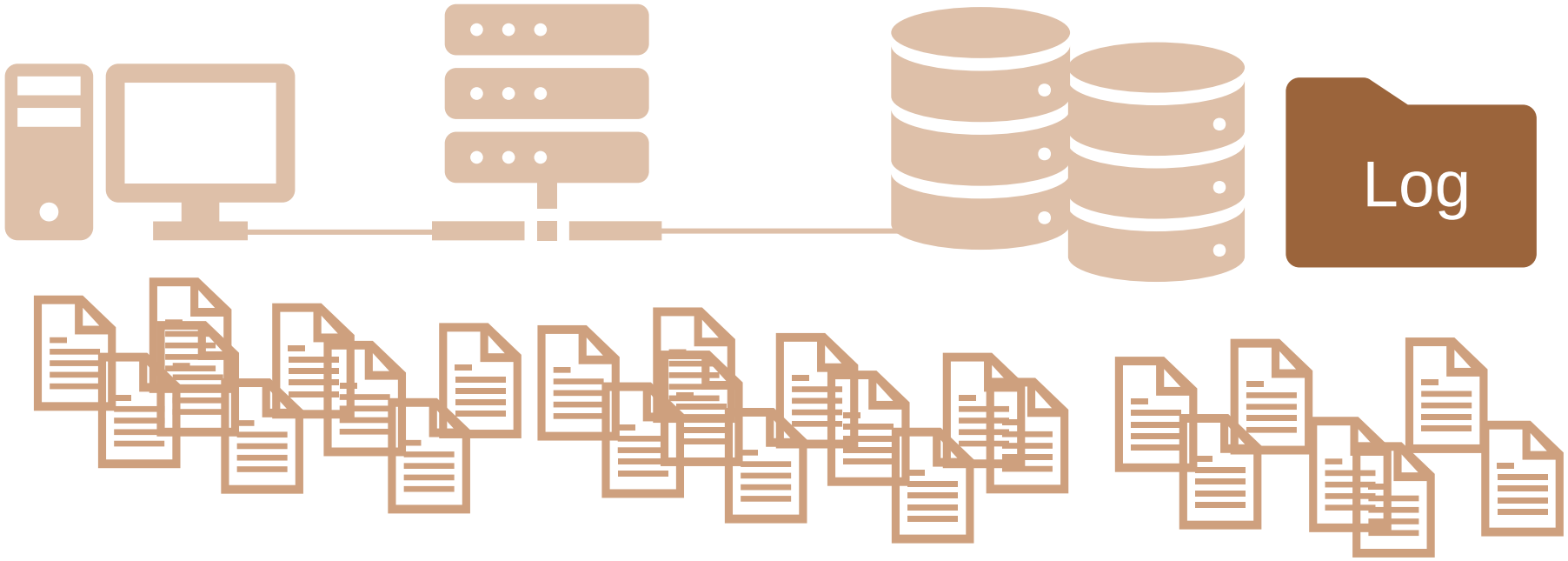


Debugging tehnike

Loguj stanje

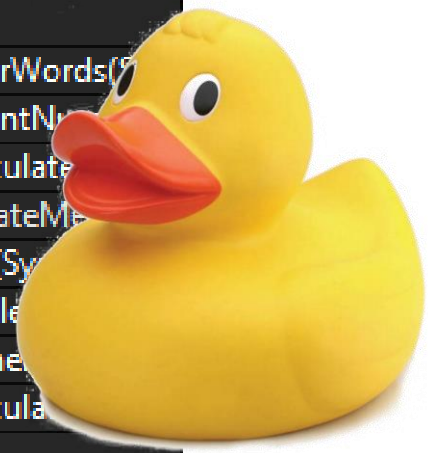
Binary chop

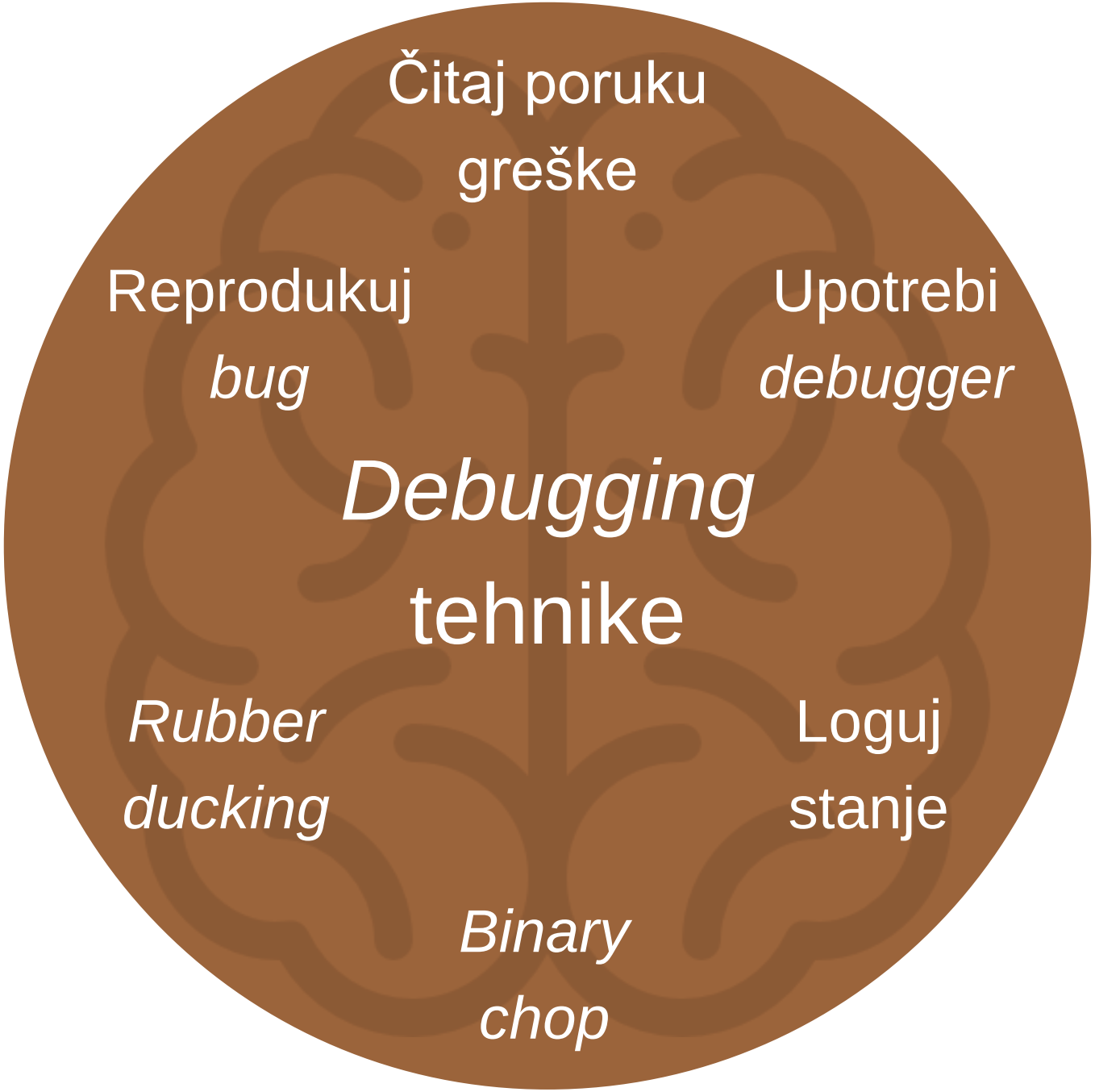
Rubber ducking



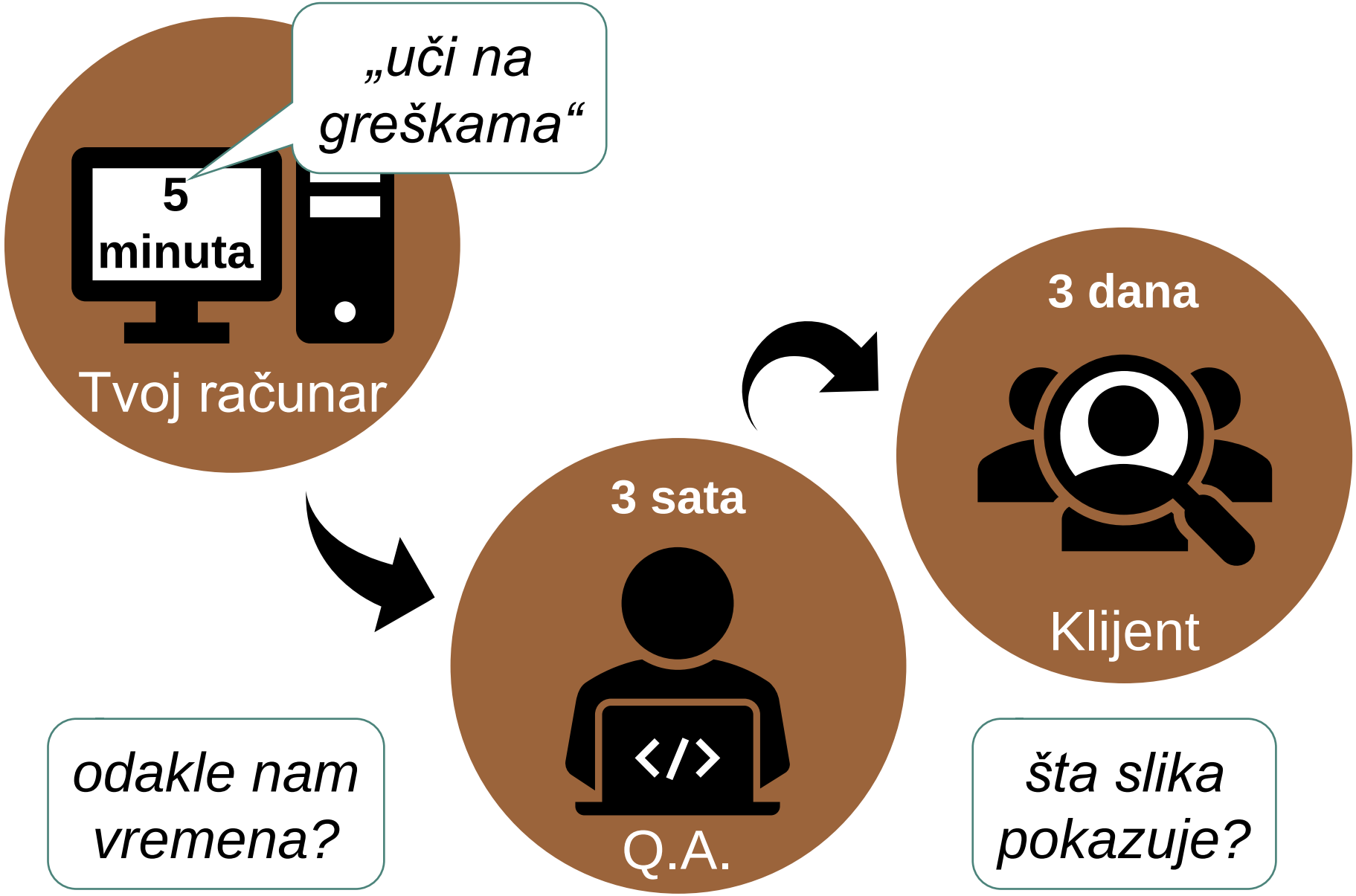
Call Stack

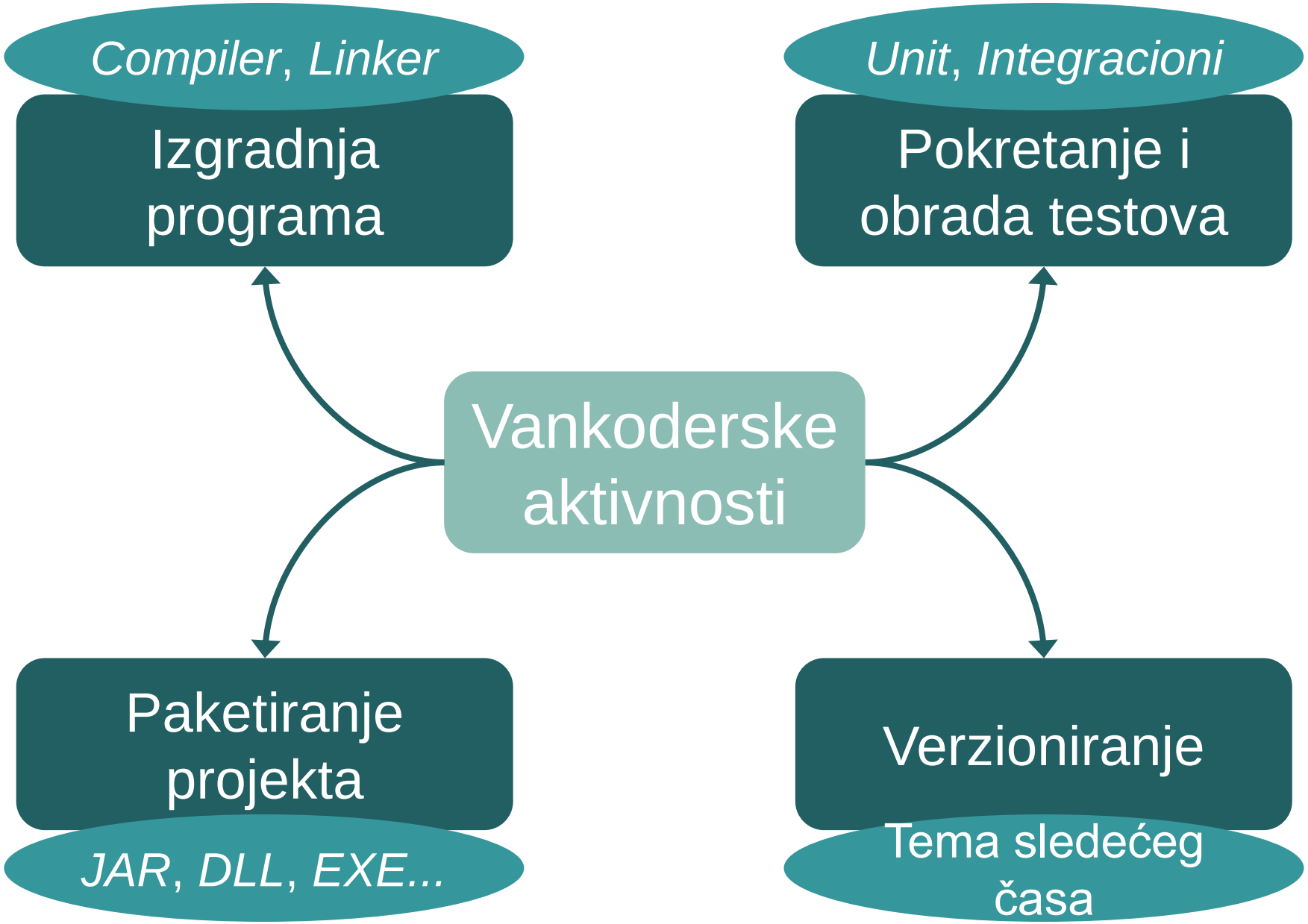
	Name
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CaDETMemberMetricCalculator.GetKeywords()...
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CaDETMemberMetricCalculator.FilterWords.A...
	[External Code]
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CaDETMemberMetricCalculator.FilterWords(?
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CaDETMemberMetricCalculator.CountN
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CaDETMemberMetricCalculator.Calculat
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CSharpCaDETMemberBuilder.CalculateM
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CSharpCodeParser.CalculateMetrics(Sy
	CodeModel.dll!CodeModel.CodeParsers.CSharp.CSharpCodeParser.Parse(System.Colle
	CodeModel.dll!CodeModel.CodeModelFactory.CreateProject(System.Collections.Gene
	CodeModel.Tests.dll!CodeModel.Tests.Unit.CaDETMetrics.MetricCalculationTests.Calcula
	[External Code]

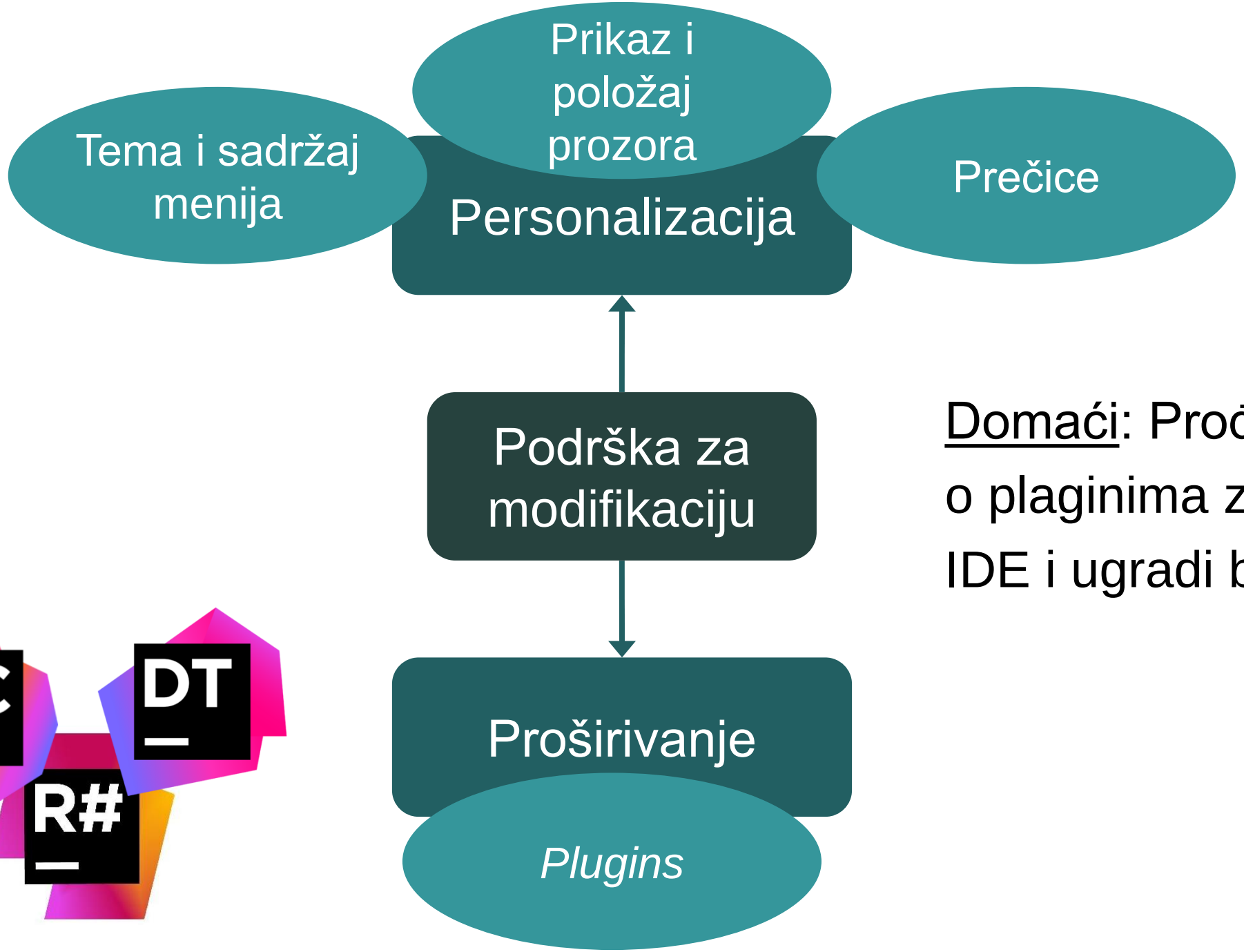



Čitaj poruku greške
Reprodukuj *bug*
Upotrebi *debugger*
Debugging tehnike
Rubber ducking
Loguj stanje
Binary chop

Vreme rešavanja *bug*-a spram mesta pronalaska

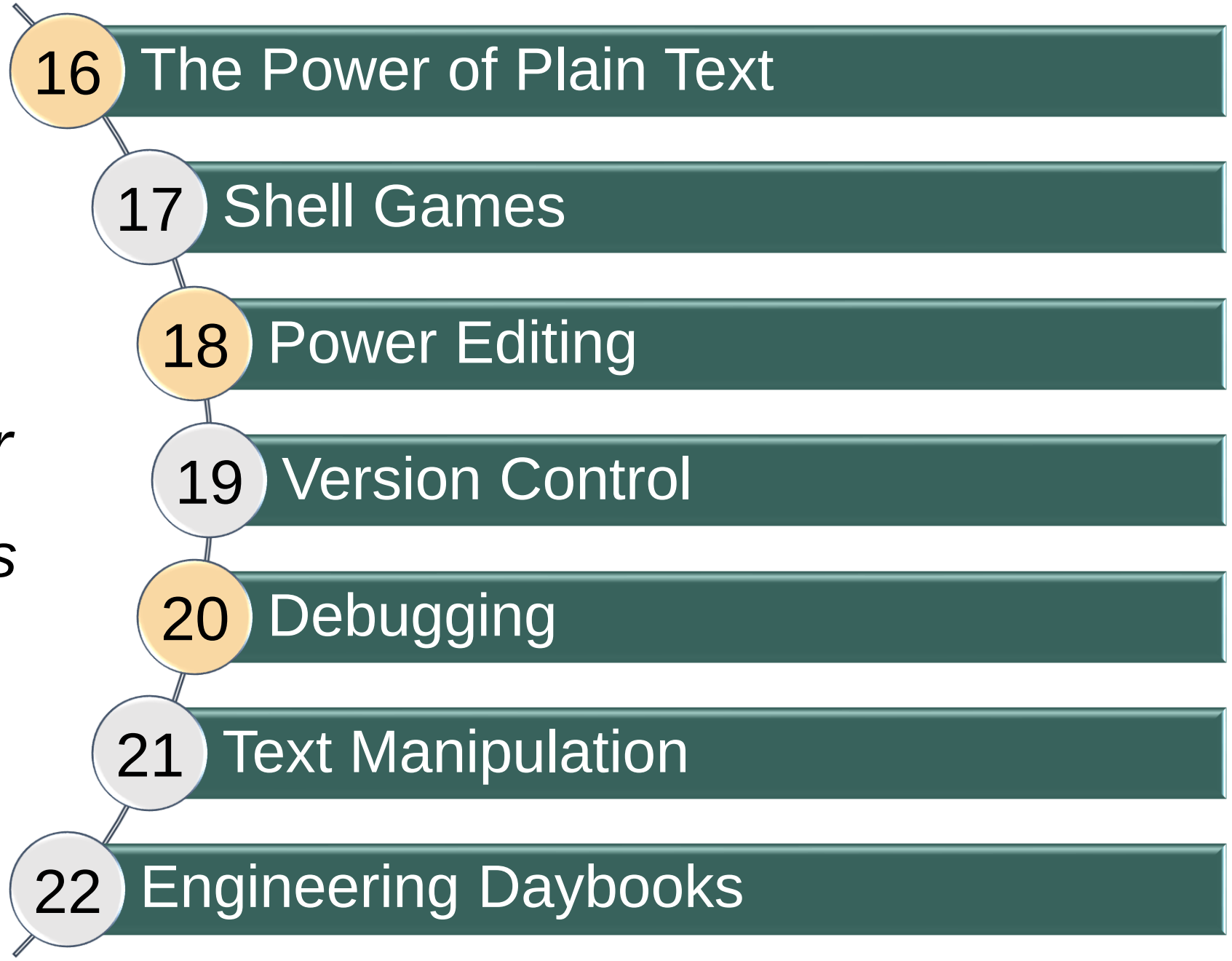



Compiler, Linker
Izgradnja programa
Unit, Integracioni
Pokretanje i obrada testova
Vankoderske aktivnosti
Paketiranje projekta
JAR, DLL, EXE...
Verzioniranje
Tema sledećeg časa



Domaći: Prođi članke o plaginima za tvoj IDE i ugradi bar jedan

Alati amplifikuju tvoju veštinu

Pragmatic Programmer

The Basic Tools