SWOP Iteration 1 Group 03

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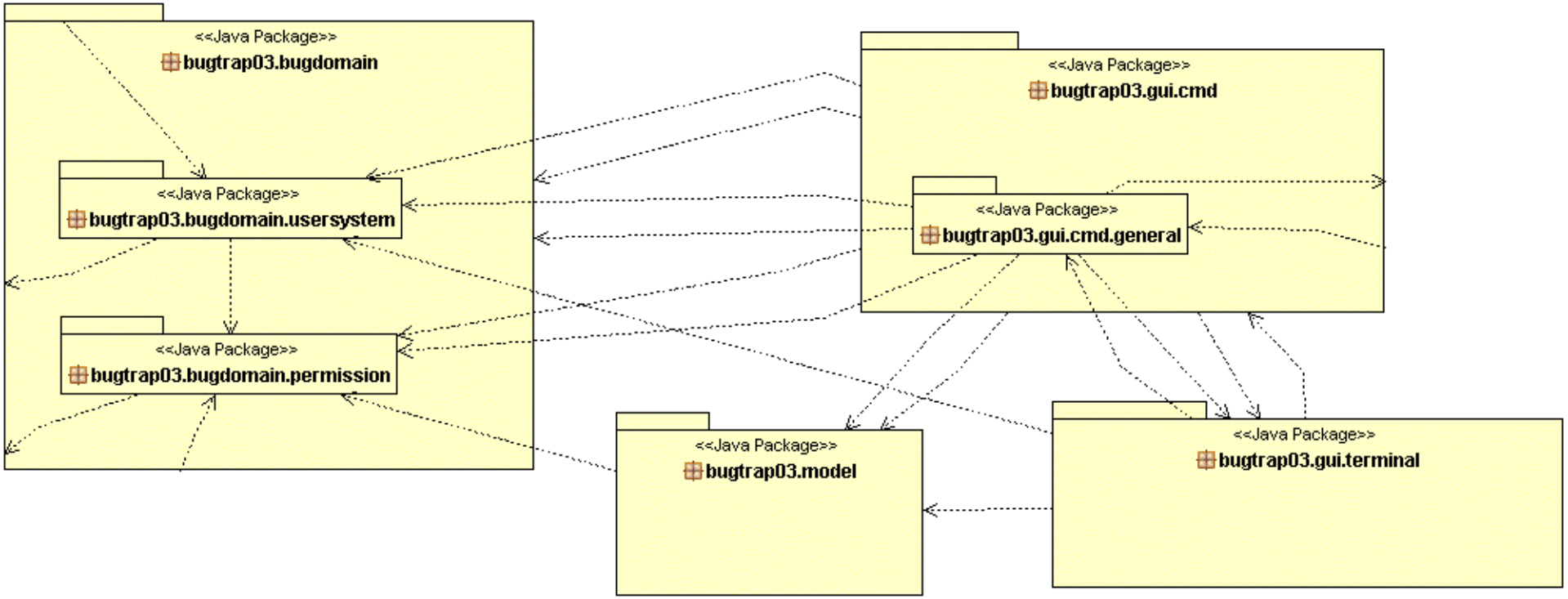
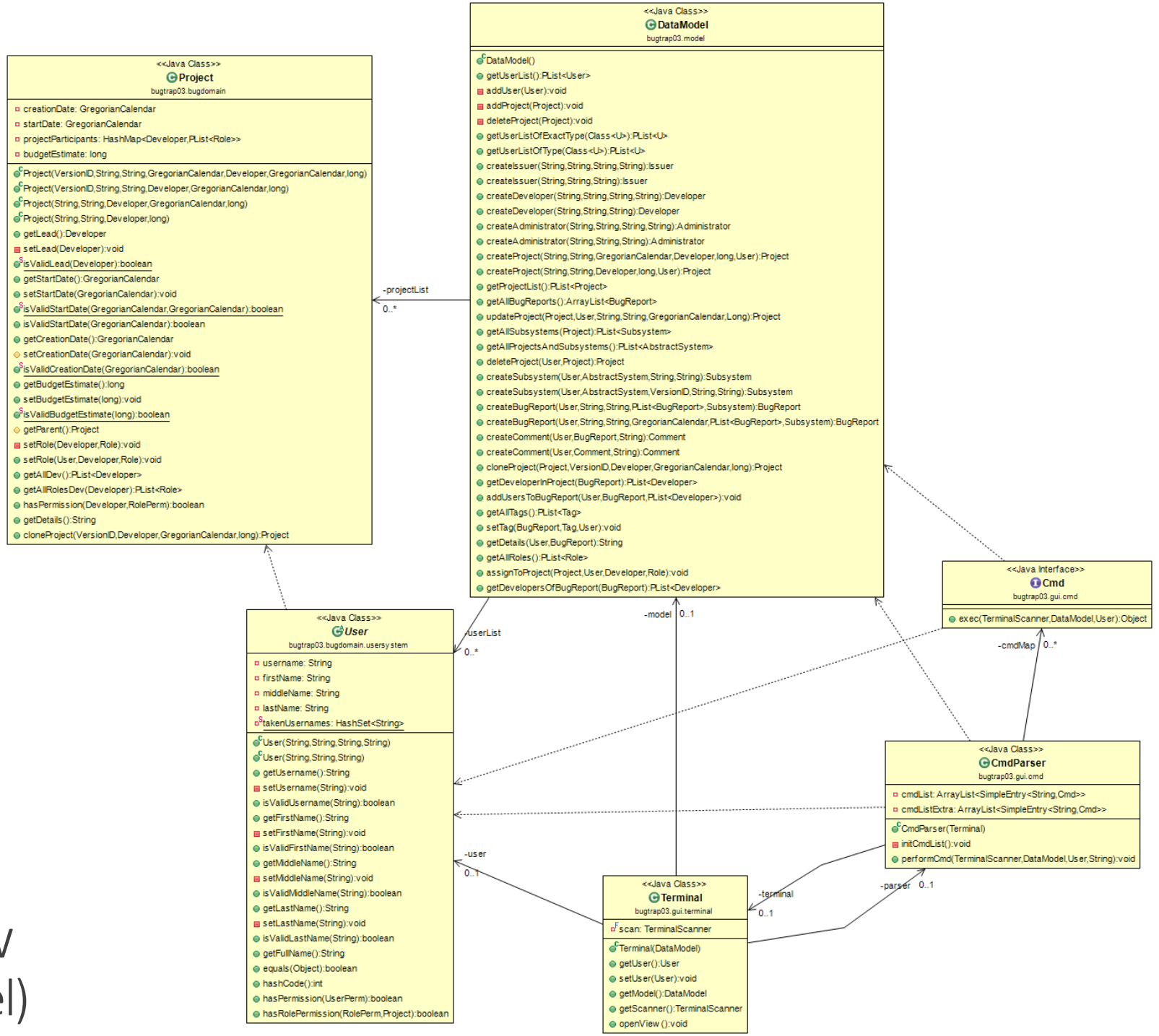
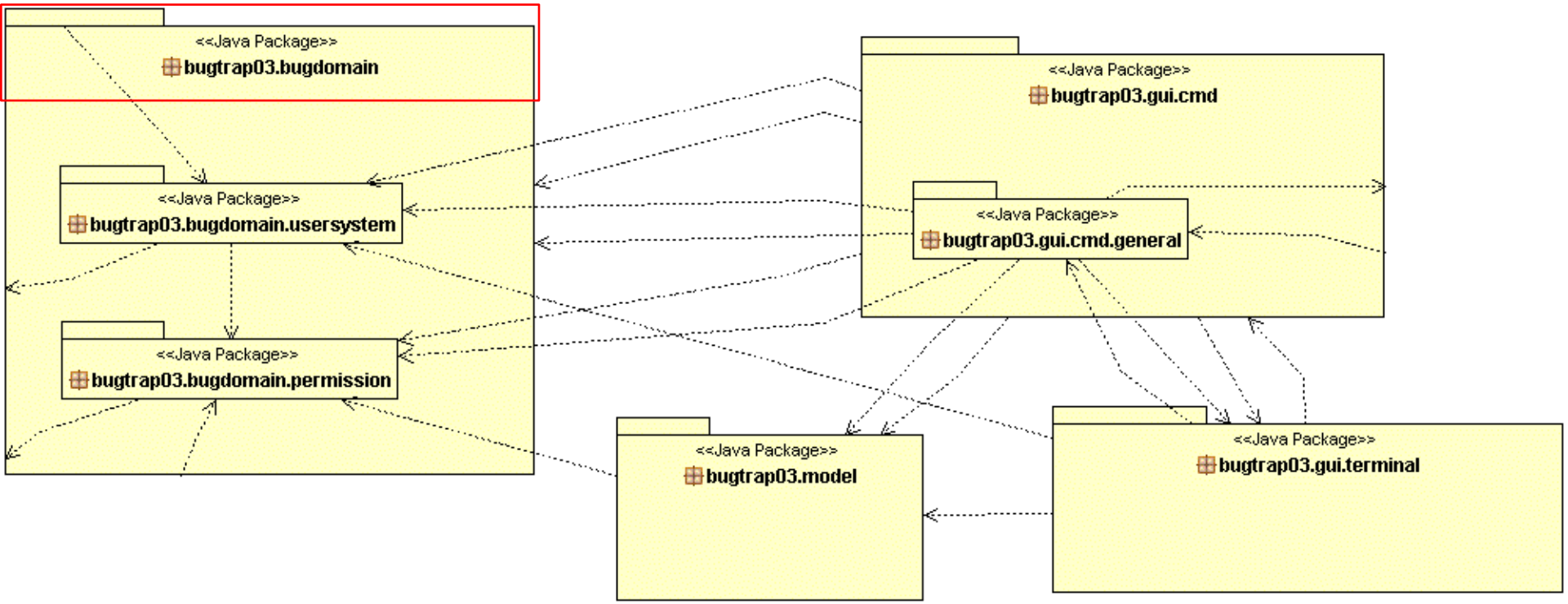
Overview
Package level



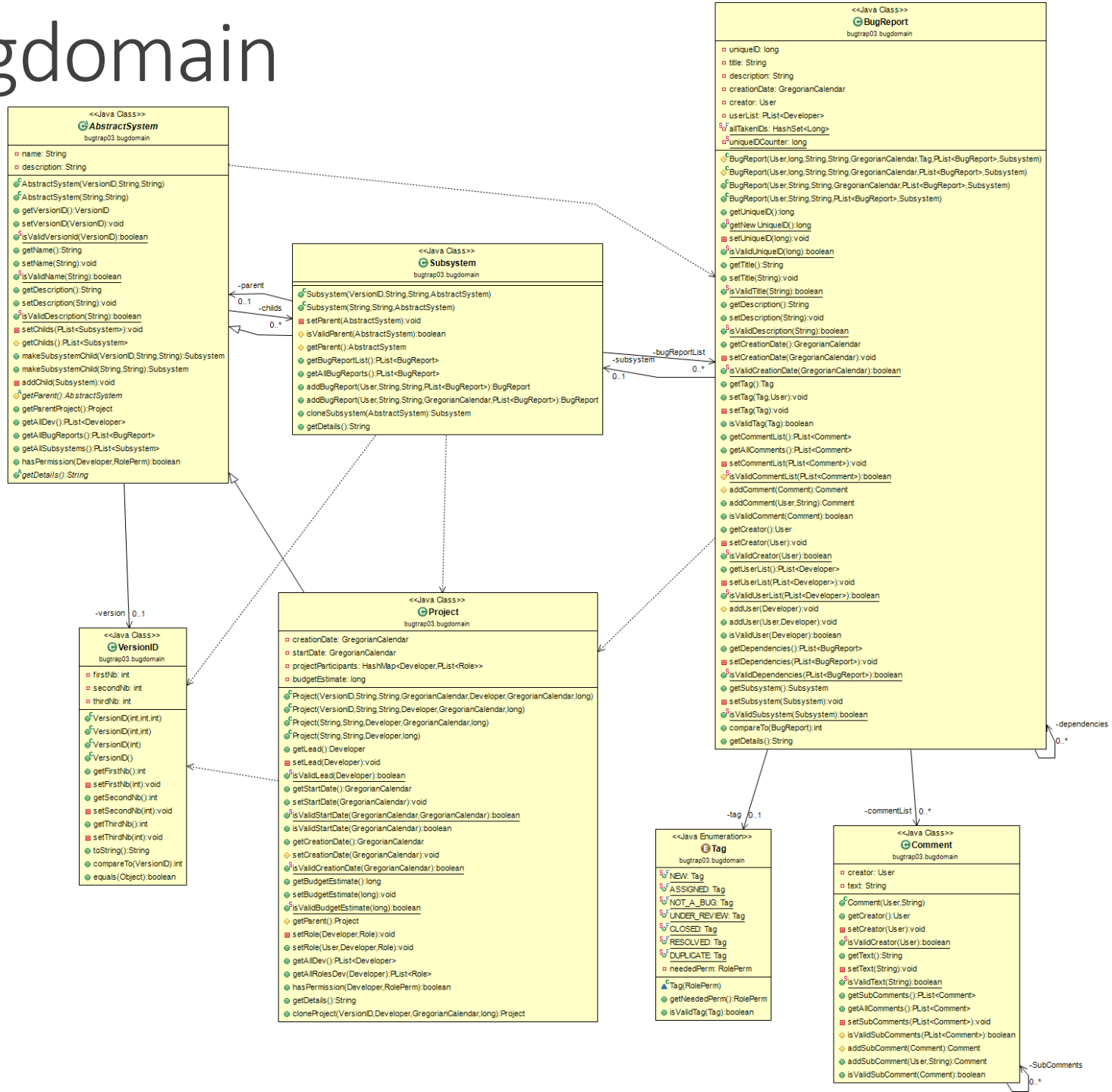


Overview (Class level)

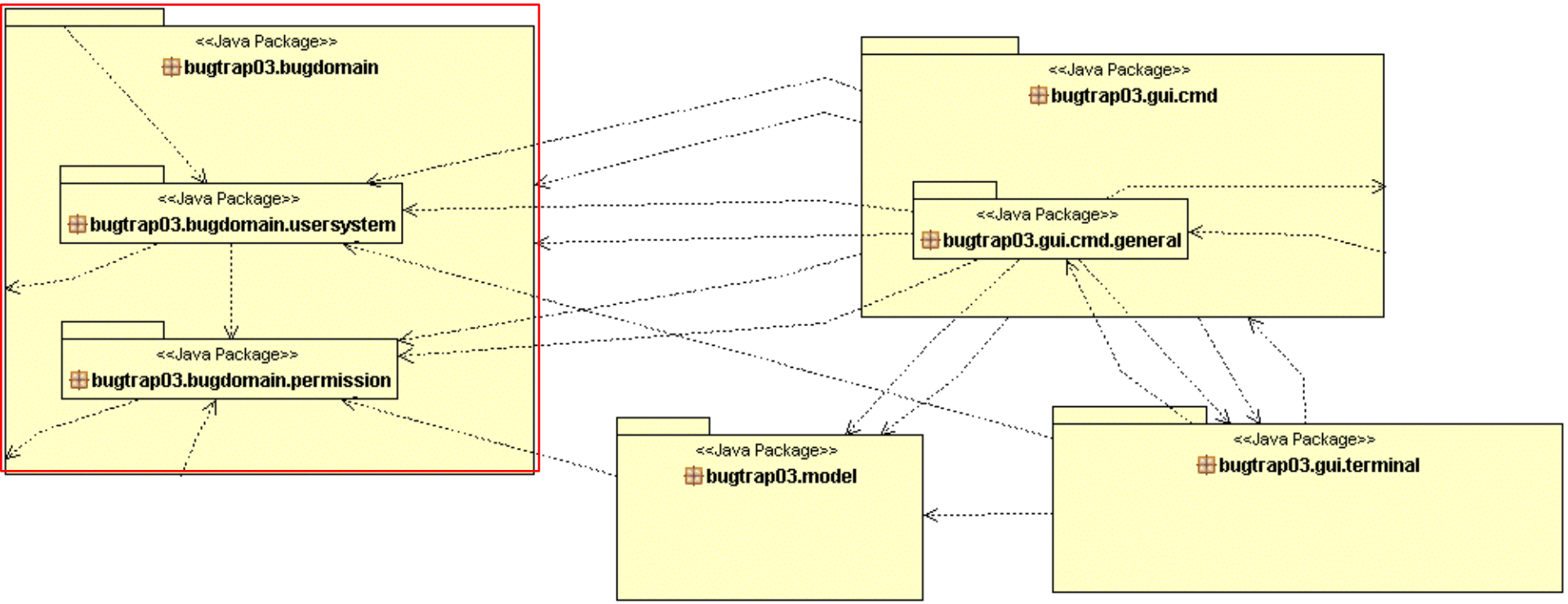
Bug domain


<<Java Package>>
bugtrap03.bugdomain
<<Java Package>>
bugtrap03.bugdomain.usersystem
<<Java Package>>
bugtrap03.bugdomain.permission
<<Java Package>>
bugtrap03.gui.cmd
<<Java Package>>
bugtrap03.gui.cmd.general
<<Java Package>>
bugtrap03.model
<<Java Package>>
bugtrap03.gui.terminal

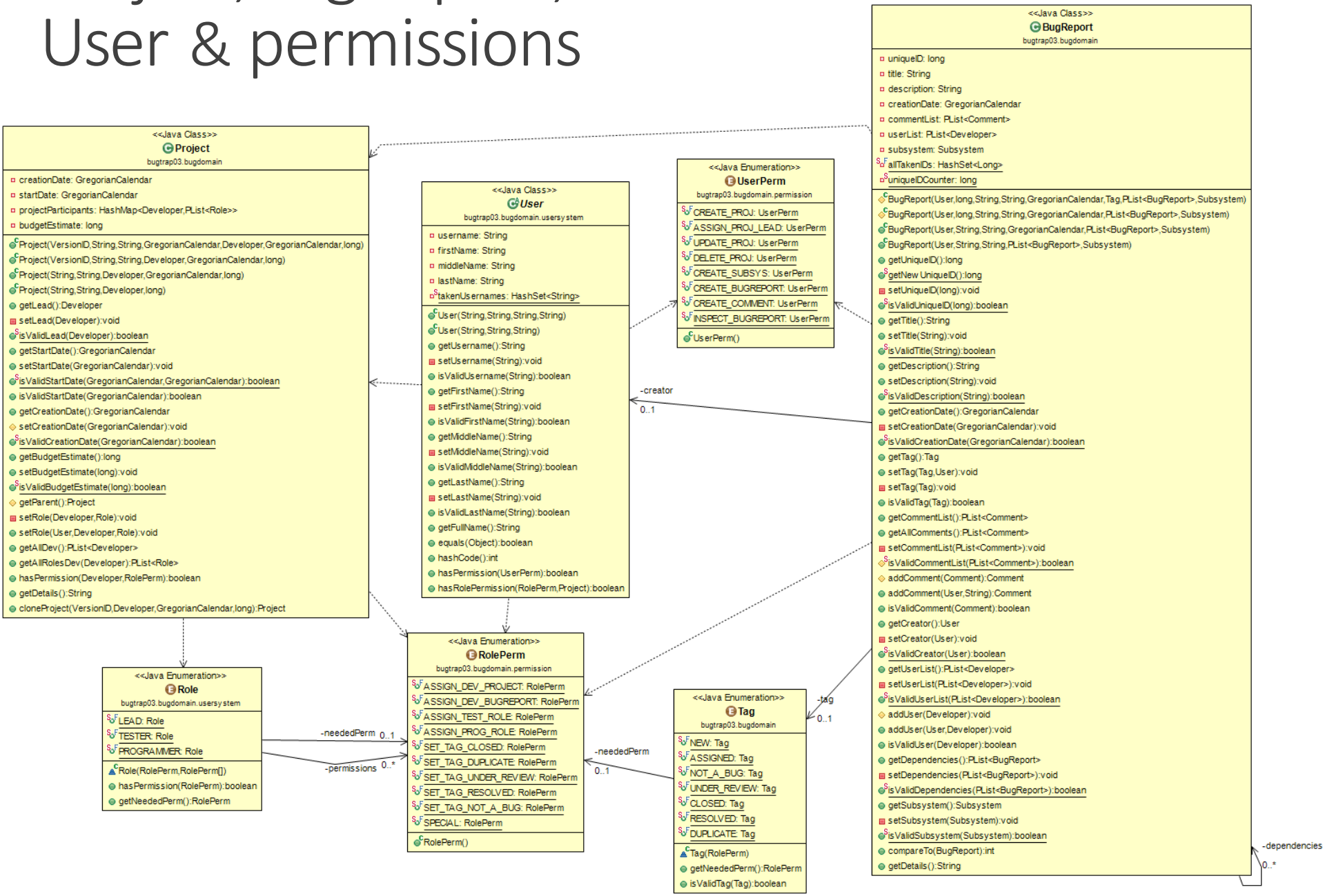
bugdomain


<<Java Class>>
AbstractSystem
bugtrap03.bugdomain
name: String
description: String
AbstractSystem(VersionID,String,String)
AbstractSystem(String,String)
getVersionID():VersionID
setVersionID(VersionID):void
isValidVersionId(VersionID):boolean
getName():String
setName(String):void
isValidName(String):boolean
getDescription():String
setDescription(String):void
isValidDescription(String):boolean
setChilds(PList<Subsystem>):void
getChilds():PList<Subsystem>
makeSubsystemChild(VersionID,String,String):Subsystem
makeSubsystemChild(String,String):Subsystem
addChild(Subsystem):void
getParent():AbstractSystem
getParentProject():Project
getAllDev():PList<Developer>
getAllBugReports():PList<BugReport>
getAllSubsystems():PList<Subsystem>
hasPermission(Developer,RolePerm):boolean
getDetails():String
-parent
0..1
-childs
0..*
<<Java Class>>
Subsystem
bugtrap03.bugdomain
Subsystem(VersionID,String,String,AbstractSystem)
Subsystem(String,String,AbstractSystem)
setParent(AbstractSystem):void
isValidParent(AbstractSystem):boolean
getParent():AbstractSystem
getBugReportList():PList<BugReport>
getAllBugReports():PList<BugReport>
addBugReport(User,String,String,PList<BugReport>):BugReport
addBugReport(User,String,String,GregorianCalendar,PList<BugReport>):BugReport
cloneSubsystem(AbstractSystem):Subsystem
getDetails():String
-bugReportList
0..*
-subsystem
0..1
<<Java Class>>
BugReport
bugtrap03.bugdomain
uniqueID: long
title: String
description: String
creationDate: GregorianCalendar
creator: User
userList: PList<Developer>
allTakenIDs: HashSet<Long>
uniqueIDCounter: long
BugReport(User,long,String,String,GregorianCalendar,Tag,PList<BugReport>,Subsystem)
BugReport(User,long,String,String,GregorianCalendar,PList<BugReport>,Subsystem)
BugReport(User,String,String,GregorianCalendar,PList<BugReport>,Subsystem)
BugReport(User,String,String,PList<BugReport>,Subsystem)
getUniqueID():long
getNew UniqueID():long
setUniqueID(long):void
isValidUniqueID(long):boolean
getTitle():String
setTitle(String):void
isValidTitle(String):boolean
getDescription():String
setDescription(String):void
isValidDescription(String):boolean
getCreationDate():GregorianCalendar
setCreationDate(GregorianCalendar):void
isValidCreationDate(GregorianCalendar):boolean
getTag():Tag
setTag(Tag,User):void
setTag(Tag):void
isValidTag(Tag):boolean
getCommentList():PList<Comment>
getAllComments():PList<Comment>
setCommentList(PList<Comment>):void
isValidCommentList(PList<Comment>):boolean
addComment(Comment):Comment
addComment(User,String):Comment
isValidComment(Comment):boolean
getCreator():User
setCreator(User):void
isValidCreator(User):boolean
getUserList():PList<Developer>
setUserList(PList<Developer>):void
isValidUserList(PList<Developer>):boolean
addUser(Developer):void
addUser(User,Developer):void
isValidUser(Developer):boolean
getDependencies():PList<BugReport>
setDependencies(PList<BugReport>):void
isValidDependencies(PList<BugReport>):boolean
getSubsystem():Subsystem
setSubsystem(Subsystem):void
isValidSubsystem(Subsystem):boolean
compareTo(BugReport):int
getDetails():String
-dependencies
0..*
-version
0..1
<<Java Class>>
VersionID
bugtrap03.bugdomain
firstNb: int
secondNb: int
thirdNb: int
VersionID(int,int,int)
VersionID(int,int)
VersionID(int)
VersionID()
getFirstNb():int
setFirstNb(int):void
getSecondNb():int
setSecondNb(int):void
getThirdNb():int
setThirdNb(int):void
toString():String
compareTo(VersionID):int
equals(Object):boolean
<<Java Class>>
Project
bugtrap03.bugdomain
creationDate: GregorianCalendar
startDate: GregorianCalendar
projectParticipants: HashMap<Developer,PList<Role>>
budgetEstimate: long
Project(VersionID,String,String,GregorianCalendar,Developer,GregorianCalendar,long)
Project(VersionID,String,String,Developer,GregorianCalendar,long)
Project(String,String,Developer,GregorianCalendar,long)
Project(String,String,Developer,long)
getLead():Developer
setLead(Developer):void
isValidLead(Developer):boolean
getStartDate():GregorianCalendar
setStartDate(GregorianCalendar):void
isValidStartDate(GregorianCalendar,GregorianCalendar):boolean
isValidStartDate(GregorianCalendar):boolean
getCreationDate():GregorianCalendar
setCreationDate(GregorianCalendar):void
isValidCreationDate(GregorianCalendar):boolean
getBudgetEstimate():long
setBudgetEstimate(long):void
isValidBudgetEstimate(long):boolean
getParent():Project
setRole(Developer,Role):void
setRole(User,Developer,Role):void
getAllDev():PList<Developer>
getAllRolesDev(Developer):PList<Role>
hasPermission(Developer,RolePerm):boolean
getDetails():String
cloneProject(VersionID,Developer,GregorianCalendar,long):Project
-tag
0..1
<<Java Enumeration>>
Tag
bugtrap03.bugdomain
NEW: Tag
ASSIGNED: Tag
NOT_A_BUG: Tag
UNDER_REVIEW: Tag
CLOSED: Tag
RESOLVED: Tag
DUPLICATE: Tag
neededPerm: RolePerm
Tag(RolePerm)
getNeededPerm():RolePerm
isValidTag(Tag):boolean
-commentList
0..*
<<Java Class>>
Comment
bugtrap03.bugdomain
creator: User
text: String
Comment(User,String)
getCreator():User
setCreator(User):void
isValidCreator(User):boolean
getText():String
setText(String):void
isValidText(String):boolean
getSubComments():PList<Comment>
getAllComments():PList<Comment>
setSubComments(PList<Comment>):void
isValidSubComments(PList<Comment>):boolean
addSubComment(Comment):Comment
addSubComment(User,String):Comment
isValidSubComment(Comment):boolean
-SubComments
0..*

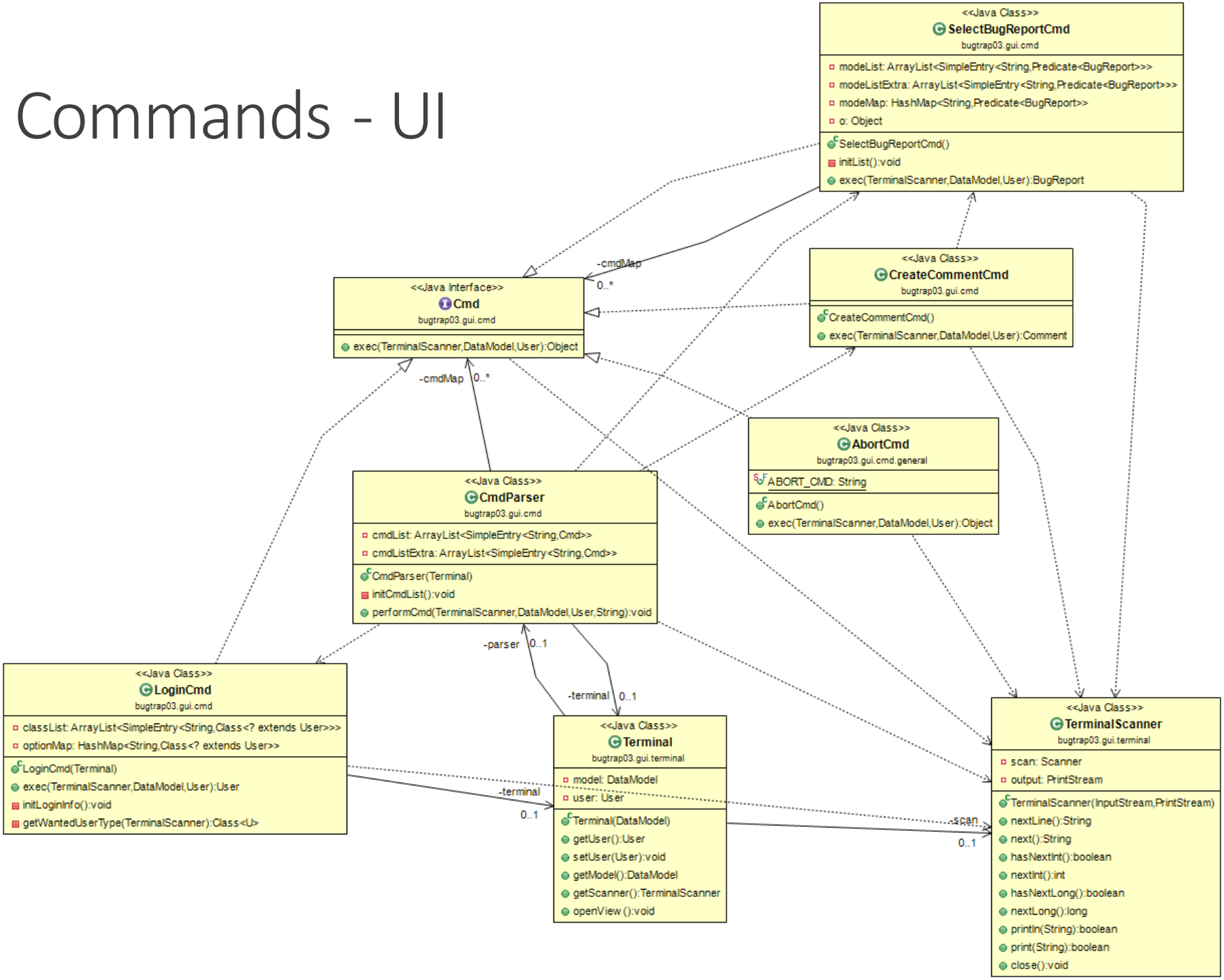
Project,BugReport, User & permissions



Project,BugReport, User & permissions

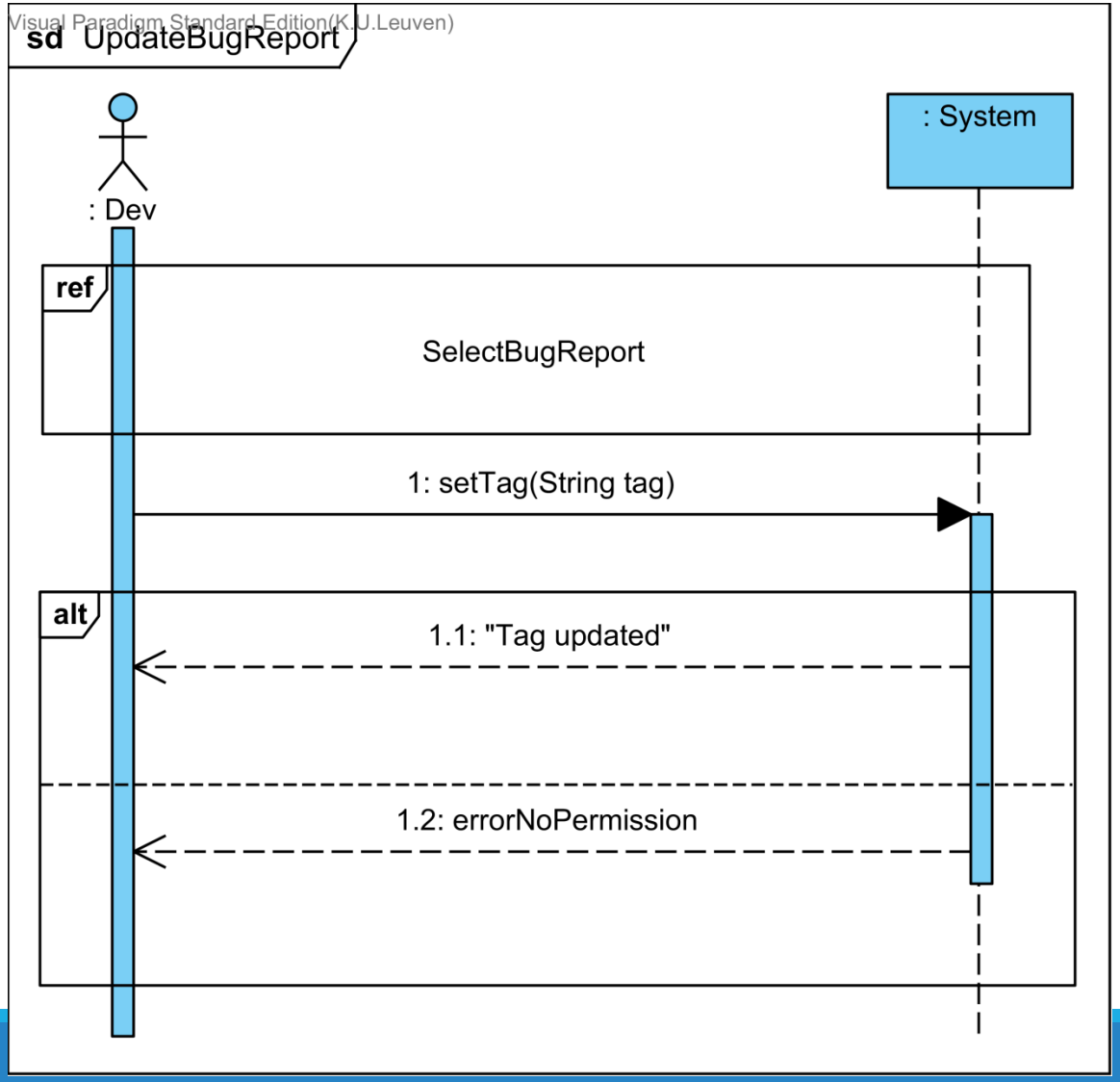


Commands - UI

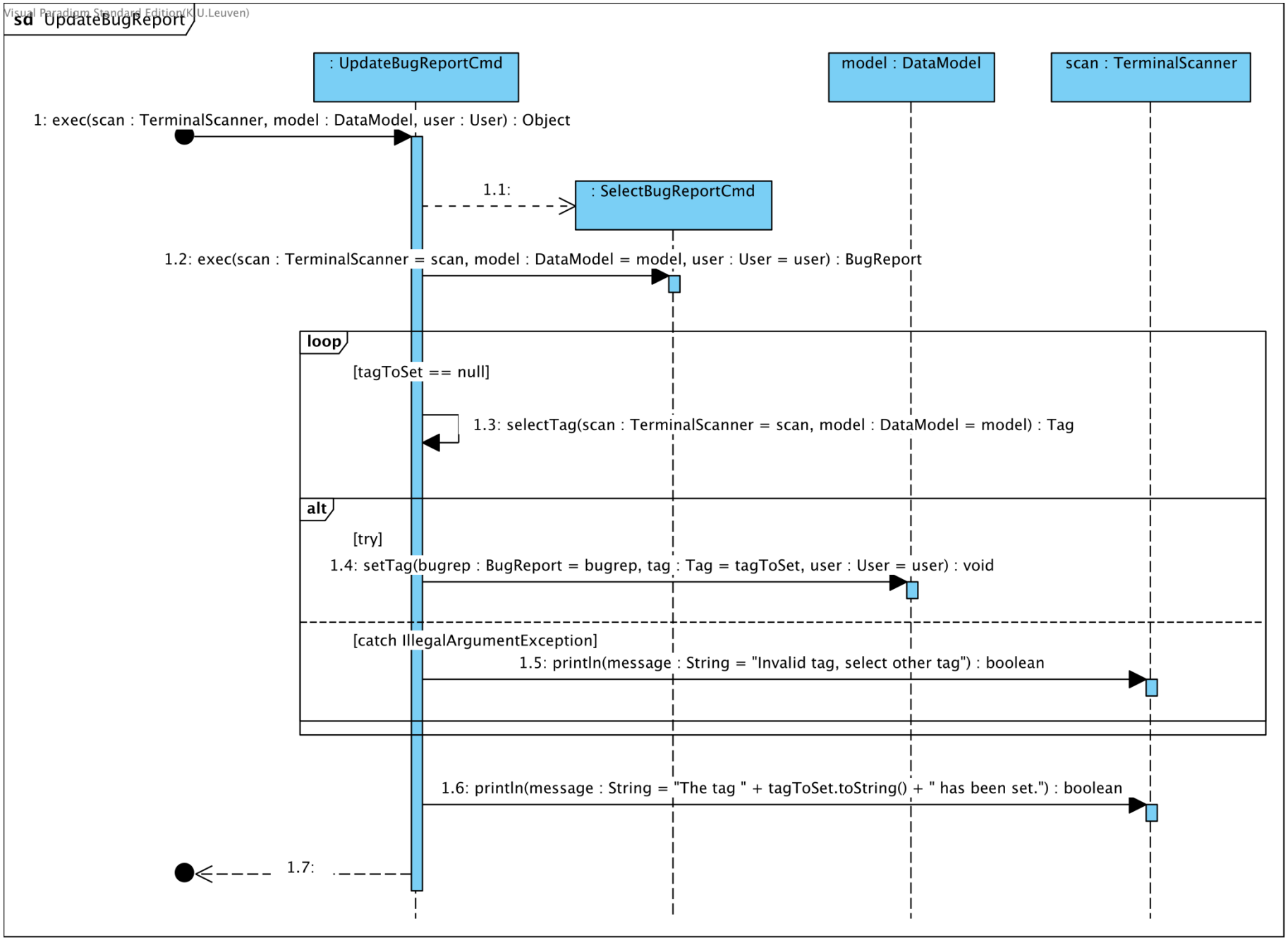

<<Java Class>>
SelectBugReportCmd
bugtrap03.gui.cmd
modeList: ArrayList<SimpleEntry<String,Predicate<BugReport>>>
modeListExtra: ArrayList<SimpleEntry<String,Predicate<BugReport>>>
modeMap: HashMap<String,Predicate<BugReport>>
o: Object
SelectBugReportCmd()
initList():void
exec(TerminalScanner,DataModel,User):BugReport
-cmdMap
0..*
<<Java Interface>>
Cmd
bugtrap03.gui.cmd
exec(TerminalScanner,DataModel,User):Object
<<Java Class>>
CreateCommentCmd
bugtrap03.gui.cmd
CreateCommentCmd()
exec(TerminalScanner,DataModel,User):Comment
-cmdMap
0..*
<<Java Class>>
AbortCmd
bugtrap03.gui.cmd.general
ABORT_CMD: String
AbortCmd()
exec(TerminalScanner,DataModel,User):Object
<<Java Class>>
CmdParser
bugtrap03.gui.cmd
cmdList: ArrayList<SimpleEntry<String,Cmd>>
cmdListExtra: ArrayList<SimpleEntry<String,Cmd>>
CmdParser(Terminal)
initCmdList():void
performCmd(TerminalScanner,DataModel,User,String):void
-parser
0..1
-terminal
0..1
<<Java Class>>
LoginCmd
bugtrap03.gui.cmd
classList: ArrayList<SimpleEntry<String,Class<? extends User>>>
optionMap: HashMap<String,Class<? extends User>>
LoginCmd(Terminal)
exec(TerminalScanner,DataModel,User):User
initLoginInfo():void
getWantedUserType(TerminalScanner):Class<U>
-terminal
0..1
<<Java Class>>
Terminal
bugtrap03.gui.terminal
model: DataModel
user: User
Terminal(DataModel)
getUser():User
setUser(User):void
getModel():DataModel
getScanner():TerminalScanner
openView():void
-scan
0..1
<<Java Class>>
TerminalScanner
bugtrap03.gui.terminal
scan: Scanner
output: PrintStream
TerminalScanner(InputStream,PrintStream)
nextLine():String
next():String
hasNextInt():boolean
nextInt():int
hasNextLong():boolean
nextLong():long
println(String):boolean
print(String):boolean
close():void

Use case

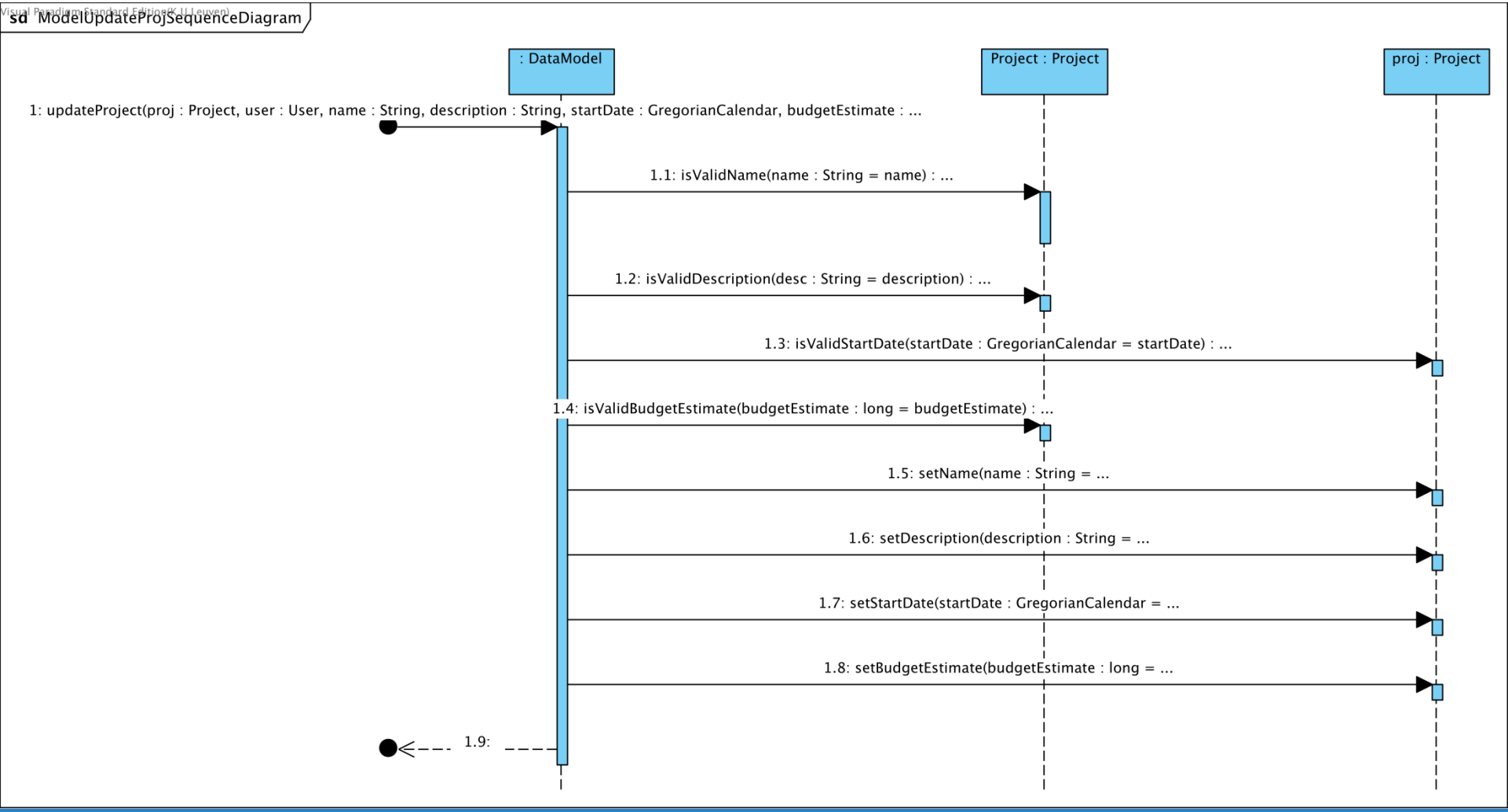
e.g UpdateBugReport



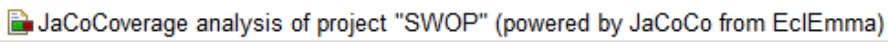
Detailed use case



DataModel UpdateProjectSequence



Test Coverage



JaCoCoCoverage analysis of project "SWOP" (powered by JaCoCo from EclEmma)

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
bugtrap03.bugdomain		98%		94%	17	269	7	515	1	138	0	7
bugtrap03.bugdomain.permission		92%		n/a	4	9	0	24	4	9	0	3
bugtrap03.bugdomain.usersystem		99%		92%	5	62	0	80	1	38	0	5
bugtrap03.gui.cmd		98%		95%	10	156	14	480	1	54	0	14
bugtrap03.gui.cmd.general		89%		76%	16	66	14	133	0	33	0	12
bugtrap03.gui.terminal		67%		89%	2	25	16	63	1	16	0	2
bugtrap03.model		93%		79%	7	53	6	112	0	36	0	1
Total	300 of 6,807	96%	56 of 632	91%	61	640	57	1407	8	324	0	44

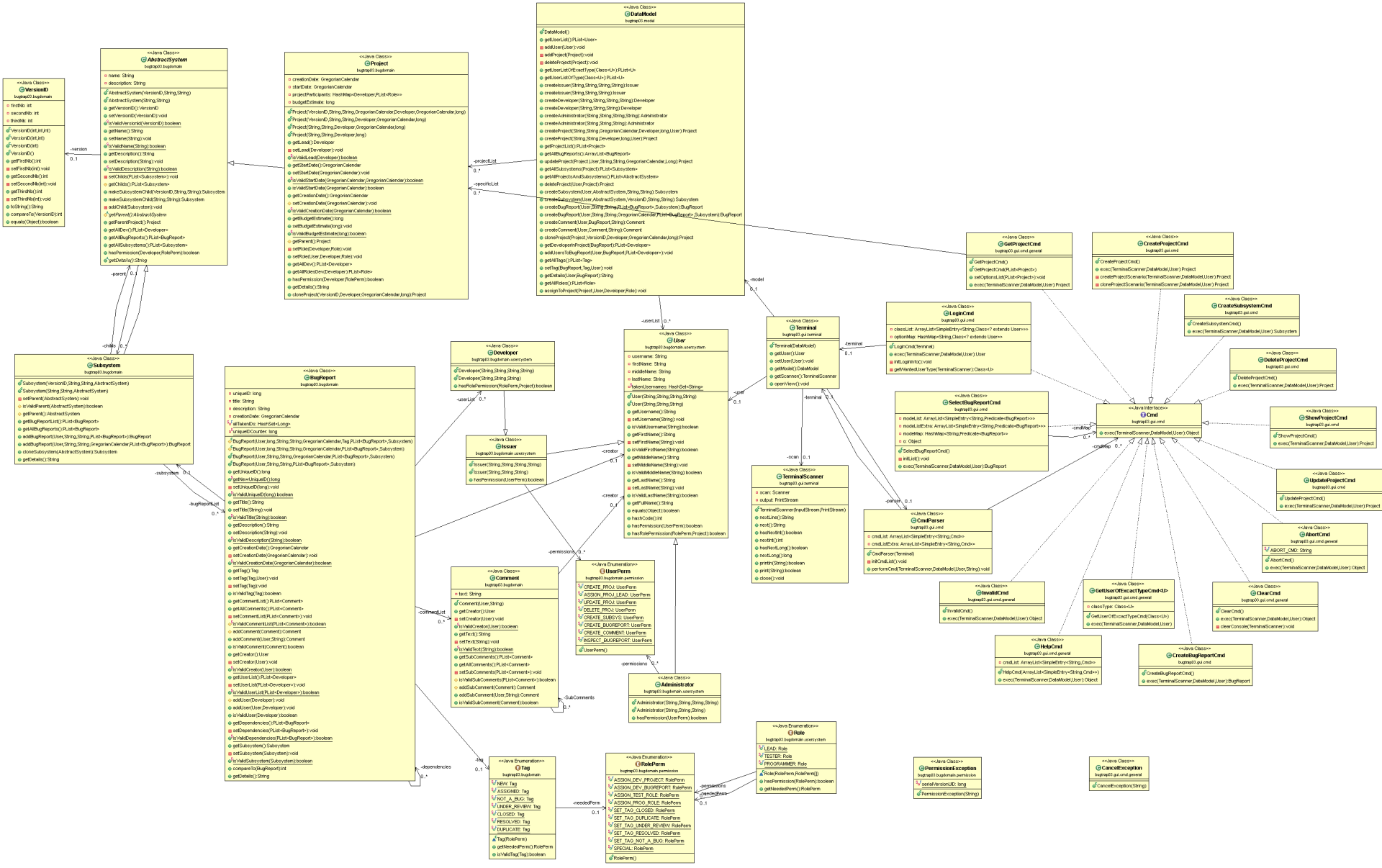
TimeTable

iteration	1	2	3
ben	109:50		
vincent	107:05		
mathias	73:45		
kwinten	62:15		

In h:mm

Roles

- Design Coordinator - Derkinderen Vincent
- Testing Coordinator - Buytaert Kwinten
- Domain Coordinator - Dekempeneer Mathias


«Java Class»
DataModel
bugtrap03.model
DataModel()
getUserList():PList<User>
addUser(User):void
addProject(Project):void
deleteProject(Project):void
getUserListOfExactType(Class<U>):PList<U>
getUserListOfType(Class<U>):PList<U>
createIssuer(String,String,String,String):Issuer
createIssuer(String,String,String):Issuer
createDeveloper(String,String,String,String):Developer
createDeveloper(String,String,String):Developer
createAdministrator(String,String,String,String):Administrator
createAdministrator(String,String,String):Administrator
createProject(String,String,GregorianCalendar,Developer,long,User):Project
createProject(String,String,Developer,long,User):Project
getProjectList():PList<Project>
getAllBugReports():ArrayList<BugReport>
updateProject(Project,User,String,String,GregorianCalendar,long):Project
getAllSubsystems(Project):PList<Subsystem>
getAllProjectsAndSubsystems():PList<AbstractSystem>
deleteProject(User,Project):Project
createSubsystem(User,AbstractSystem,String,String):Subsystem
createSubsystem(User,AbstractSystem,String,String):Subsystem
createBugReport(User,String,String,PList<BugReport>,Subsystem):BugReport
createBugReport(User,String,String,GregorianCalendar,PList<BugReport>,Subsystem):BugReport
createComment(User,BugReport,String):Comment
createComment(User,Comment,String):Comment
cloneProject(Project,VersionID,Developer,GregorianCalendar,long):Project
getDeveloperInProject(BugReport):PList<Developer>
addUsersToBugReport(User,BugReport,PList<Developer>):void
getAllTags():PList<Tag>
setTag(BugReport,Tag,User):void
getDetails(User,BugReport):String
getAllRoles():PList<Role>
assignToProject(Project,User,Developer,Role):void
«Java Class»
AbstractSystem
bugtrap03.bugdomain
name: String
description: String
AbstractSystem(VersionID,String,String)
AbstractSystem(String,String)
getVersionID():VersionID
setVersionID(VersionID):void
isValidVersionId(VersionID):boolean
getName():String
setName(String):void
isValidName(String):boolean
getDescription():String
setDescription(String):void
isValidDescription(String):boolean
setChilds(PList<Subsystem>):void
getChilds():PList<Subsystem>
makeSubsystemChild(VersionID,String,String):Subsystem
makeSubsystemChild(String,String):Subsystem
addChild(Subsystem):void
getParent():AbstractSystem
getParentProject():Project
getAllDev():PList<Developer>
getAllBugReports():PList<BugReport>
getAllSubsystems():PList<Subsystem>
hasPermission(Developer,RolePerm):boolean
getDetails():String
«Java Class»
Project
bugtrap03.bugdomain
creationDate: GregorianCalendar
startDate: GregorianCalendar
projectParticipants: HashMap<Developer,PList<Role>>
budgetEstimate: long
Project(VersionID,String,String,GregorianCalendar,Developer,GregorianCalendar,long)
Project(VersionID,String,String,Developer,GregorianCalendar,long)
Project(String,String,Developer,GregorianCalendar,long)
Project(String,String,Developer,long)
getLead():Developer
setLead(Developer):void
isValidLead(Developer):boolean
getStartDate():GregorianCalendar
setStartDate(GregorianCalendar):void
isValidStartDate(GregorianCalendar,GregorianCalendar):boolean
isValidStartDate(GregorianCalendar):boolean
getCreationDate():GregorianCalendar
setCreationDate(GregorianCalendar):void
isValidCreationDate(GregorianCalendar):boolean
getBudgetEstimate():long
setBudgetEstimate(long):void
isValidBudgetEstimate(long):boolean
getParent():Project
setRole(Developer,Role):void
setRole(User,Developer,Role):void
getAllDev():PList<Developer>
getAllRolesOnDeveloper():PList<Role>
hasPermission(Developer,RolePerm):boolean
getDetails():String
cloneProject(VersionID,Developer,GregorianCalendar,long):Project
«Java Class»
VersionID
bugtrap03.bugdomain
firstNb: int
secondNb: int
thirdNb: int
VersionID(int,int,int)
VersionID(int,int)
VersionID(int)
VersionID()
getFirstNb():int
setFirstNb(int):void
getSecondNb():int
setSecondNb(int):void
getThirdNb():int
setThirdNb(int):void
toString():String
compareTo(VersionID):int
equals(Object):boolean
«Java Class»
Subsystem
bugtrap03.bugdomain
Subsystem(VersionID,String,String,AbstractSystem)
Subsystem(String,String,AbstractSystem)
setParent(AbstractSystem):void
isValidParent(AbstractSystem):boolean
getParent():AbstractSystem
getBugReportList():PList<BugReport>
getAllBugReports():PList<BugReport>
addBugReport(User,String,String,PList<BugReport>):BugReport
addBugReport(User,String,String,GregorianCalendar,PList<BugReport>):BugReport
cloneSubsystem(AbstractSystem):Subsystem
getDetails():String
«Java Class»
BugReport
bugtrap03.bugdomain
uniqueID: long
title: String
description: String
creationDate: GregorianCalendar
allTakenIDs: HashSet<Long>
uniqueIDCounter: long
BugReport(User,long,String,String,GregorianCalendar,Tag,PList<BugReport>,Subsystem)
BugReport(User,long,String,String,GregorianCalendar,PList<BugReport>,Subsystem)
BugReport(User,String,String,GregorianCalendar,PList<BugReport>,Subsystem)
BugReport(User,String,String,PList<BugReport>,Subsystem)
getUniqueID():long
getNewUniqueID():long
setUniqueID(long):void
isValidUniqueID(long):boolean
getTitle():String
setTitle(String):void
isValidTitle(String):boolean
getDescription():String
setDescription(String):void
isValidDescription(String):boolean
getCreationDate():GregorianCalendar
setCreationDate(GregorianCalendar):void
isValidCreationDate(GregorianCalendar):boolean
getTag():Tag
setTag(Tag,User):void
setTag(Tag):void
isValidTag(Tag):boolean
getCommentList():PList<Comment>
getAllComments():PList<Comment>
setCommentList(PList<Comment>):void
isValidCommentList(PList<Comment>):boolean
addComment(Comment):Comment
addComment(User,String):Comment
isValidComment(Comment):boolean
getCreator():User
setCreator(User):void
isValidCreator(User):boolean
getUserList():PList<Developer>
setUserList(PList<Developer>):void
isValidUserList(PList<Developer>):boolean
addUser(Developer):void
addUser(User,Developer):void
isValidUser(Developer):boolean
getDependencies():PList<BugReport>
setDependencies(PList<BugReport>):void
isValidDependencies(PList<BugReport>):boolean
getSubsystem():Subsystem
setSubsystem(Subsystem):void
isValidSubsystem(Subsystem):boolean
compareTo(BugReport):int
getDetails():String
«Java Class»
Developer
bugtrap03.bugdomain.usersystem
Developer(String,String,String,String)
Developer(String,String,String)
hasRolePermission(RolePerm,Project):boolean
«Java Class»
Issuer
bugtrap03.bugdomain.usersystem
Issuer(String,String,String,String)
Issuer(String,String,String)
hasPermission(UserPerm):boolean
«Java Class»
User
bugtrap03.bugdomain.usersystem
username: String
firstName: String
middleName: String
lastName: String
takenUsernames: HashSet<String>
User(String,String,String,String)
User(String,String,String)
getUsername():String
setUsername(String):void
isValidUsername(String):boolean
getFirstName():String
setFirstName(String):void
isValidFirstName(String):boolean
getMiddleName():String
setMiddleName(String):void
isValidMiddleName(String):boolean
getLastName():String
setLastName(String):void
isValidLastName(String):boolean
getFullName():String
equals(Object):boolean
hashCode():int
hasPermission(UserPerm):boolean
hasRolePermission(RolePerm,Project):boolean
«Java Class»
Comment
bugtrap03.bugdomain
text: String
Comment(User,String)
getCreator():User
setCreator(User):void
isValidCreator(User):boolean
getText():String
setText(String):void
isValidText(String):boolean
getSubComments():PList<Comment>
getAllComments():PList<Comment>
setSubComments(PList<Comment>):void
isValidSubComments(PList<Comment>):boolean
addSubComment(Comment):Comment
addSubComment(User,String):Comment
isValidSubComment(Comment):boolean
«Java Enumeration»
UserPerm
bugtrap03.bugdomain.permission
CREATE_PROJ: UserPerm
ASSIGN_PROJ_LEAD: UserPerm
UPDATE_PROJ: UserPerm
DELETE_PROJ: UserPerm
CREATE_SUBSYS: UserPerm
CREATE_BUGREPORT: UserPerm
CREATE_COMMENT: UserPerm
INSPECT_BUGREPORT: UserPerm
UserPerm()
«Java Class»
Administrator
bugtrap03.bugdomain.usersystem
Administrator(String,String,String,String)
Administrator(String,String,String)
hasPermission(UserPerm):boolean
«Java Enumeration»
Tag
bugtrap03.bugdomain
NEW: Tag
ASSIGNED: Tag
NOT_A_BUG: Tag
UNDER_REVIEW: Tag
CLOSED: Tag
RESOLVED: Tag
DUPLICATE: Tag
Tag(RolePerm)
getNeededPerm():RolePerm
isValidTag(Tag):boolean
«Java Enumeration»
RolePerm
bugtrap03.bugdomain.permission
ASSIGN_DEV_PROJECT: RolePerm
ASSIGN_DEV_BUGREPORT: RolePerm
ASSIGN_TEST_ROLE: RolePerm
ASSIGN_PROG_ROLE: RolePerm
SET_TAG_CLOSED: RolePerm
SET_TAG_DUPLICATE: RolePerm
SET_TAG_UNDER_REVIEW: RolePerm
SET_TAG_RESOLVED: RolePerm
SET_TAG_NOT_A_BUG: RolePerm
SPECIAL: RolePerm
RolePerm()
«Java Enumeration»
Role
bugtrap03.bugdomain.usersystem
LEAD: Role
TESTER: Role
PROGRAMMER: Role
Role(RolePerm,RolePerm[])
hasPermission(RolePerm):boolean
getNeededPerm():RolePerm
«Java Class»
Terminal
bugtrap03.gui.terminal
Terminal(DataModel)
getUser():User
setUser(User):void
getModel():DataModel
getScanner():TerminalScanner
openView():void
«Java Class»
TerminalScanner
bugtrap03.gui.terminal
scan: Scanner
output: PrintStream
TerminalScanner(InputStream,PrintStream)
nextLine():String
next():String
hasNextInt():boolean
nextInt():int
hasNext():boolean
hasNextLong():boolean
nextLong():long
println(String):boolean
print(String):boolean
close():void
«Java Class»
CmdParser
bugtrap03.gui.cmd
cmdList: ArrayList<SimpleEntry<String,Cmd>>
cmdListExtra: ArrayList<SimpleEntry<String,Cmd>>
CmdParser(Terminal)
initCmdList():void
performCmd(TerminalScanner,DataModel,User,String):void
«Java Class»
LoginCmd
bugtrap03.gui.cmd
classList: ArrayList<SimpleEntry<String,Class<? extends User>>>
optionMap: HashMap<String,Class<? extends User>>
LoginCmd(Terminal)
exec(TerminalScanner,DataModel,User):User
initLoginInfo():void
getWantedUserType(TerminalScanner):Class<U>
«Java Class»
SelectBugReportCmd
bugtrap03.gui.cmd
modeList: ArrayList<SimpleEntry<String,Predicate<BugReport>>>
modeListExtra: ArrayList<SimpleEntry<String,Predicate<BugReport>>>
modeMap: HashMap<String,Predicate<BugReport>>
o: Object
SelectBugReportCmd()
initList():void
exec(TerminalScanner,DataModel,User):BugReport
«Java Interface»
Cmd
bugtrap03.gui.cmd
exec(TerminalScanner,DataModel,User):Object
«Java Class»
GetProjectCmd
bugtrap03.gui.cmd.general
GetProjectCmd()
GetProjectCmd(PList<Project>)
setOptionsList(PList<Project>):void
exec(TerminalScanner,DataModel,User):Project
«Java Class»
CreateProjectCmd
bugtrap03.gui.cmd
CreateProjectCmd()
exec(TerminalScanner,DataModel,User):Project
createProjectScenario(TerminalScanner,DataModel,User):Project
cloneProjectScenario(TerminalScanner,DataModel,User):Project
«Java Class»
CreateSubsystemCmd
bugtrap03.gui.cmd
CreateSubsystemCmd()
exec(TerminalScanner,DataModel,User):Subsystem
«Java Class»
DeleteProjectCmd
bugtrap03.gui.cmd
DeleteProjectCmd()
exec(TerminalScanner,DataModel,User):Project
«Java Class»
ShowProjectCmd
bugtrap03.gui.cmd
ShowProjectCmd()
exec(TerminalScanner,DataModel,User):Project
«Java Class»
UpdateProjectCmd
bugtrap03.gui.cmd
UpdateProjectCmd()
exec(TerminalScanner,DataModel,User):Project
«Java Class»
AbortCmd
bugtrap03.gui.cmd.general
ABORT_CMD: String
AbortCmd()
exec(TerminalScanner,DataModel,User):Object
«Java Class»
InvalidCmd
bugtrap03.gui.cmd.general
InvalidCmd()
exec(TerminalScanner,DataModel,User):Object
«Java Class»
GetUserOfExcactTypeCmd<U>
bugtrap03.gui.cmd.general
classType: Class<U>
GetUserOfExcactTypeCmd(Class<U>)
exec(TerminalScanner,DataModel,User)
«Java Class»
ClearCmd
bugtrap03.gui.cmd.general
ClearCmd()
exec(TerminalScanner,DataModel,User):Object
clearConsole(TerminalScanner):void
«Java Class»
HelpCmd
bugtrap03.gui.cmd.general
cmdList: ArrayList<SimpleEntry<String,Cmd>>
HelpCmd(ArrayList<SimpleEntry<String,Cmd>>)
exec(TerminalScanner,DataModel,User):Object
«Java Class»
CreateBugReportCmd
bugtrap03.gui.cmd
CreateBugReportCmd()
exec(TerminalScanner,DataModel,User):BugReport
«Java Class»
PermissionException
bugtrap03.bugdomain.permission
serialVersionUID: long
PermissionException(String)
«Java Class»
CancelException
bugtrap03.gui.cmd.general
CancelException(String)
-version
0..1
-parent
0..1
-childs
0..*
-projectList
0..*
-specificList
0..*
-model
0..1
-userList
0..*
-user
0..1
-terminal
0..1
-terminal
0..1
-cmdMap
0..*
-cmdMap
0..*
-scan
0..1
-parent
0..1
-subsystem
0..1
-bugReportList
0..*
-creator
0..1
-creator
0..1
-userList
0..*
-permissions
0..*
-permissions
0..*
-connectList
0..*
-SubComments
0..*
-tag
0..1
-dependencies
0..*
-neededPerm
0..1
-permissions
0..*
-neededPerm
0..1