Scientific report generator

Main objective of this system is to simplify report generation for employees of Ivan Franko National University of Lviv. System provides easy way of adding information about scientific work during report period.

Roles: teacher, head of department, administrator.

Teacher: registers an account, provides additional personal information. Also he can add data about his scientific work, generate individual reports, create and edit publications and mark scientific work themes he worked on.

Head of department: edits data of his department's users, i.e. approving them, sets position and modifies their information. Head of department can register and update themes for scientific work, manage his department's staff, generate and edit department reports.

Administrator: can approve users, can edit roles and other information of his faculty's workers, can generate and modify faculty reports, can create departments.

Subsystems

User Management

№	Role	Use Case	Description	Action Method	Tests
1	Head of Department	Edit user	Edits information of his department's users	Edit(Guid id, UserProfileEditModel model)	*TST2* *TST5* *TST6*
2		Approve registration	Approves new registered user of his department	Edit(Guid id, UserProfileEditModel model)	*TST2* *TST5* *TST6*
3		Set user role	Edits the position of his department's users	Edit(Guid id, UserProfileEditModel model)	*TST2* *TST5* *TST6*
4		Delete user	Deletes user completely	Delete(Guid id)	

5		Activate/deactivate user	Enables or disables user account	SetActive(Guid id, bool isActive)	
6	Teacher	Register	Registers a new account	Register(RegisterModel model)	*TST1* *TST7*
7		Edit personal information	Fills personal information fields	Edit(Guid id, UserProfileEditModel model)	
8		Change password	Changes account's password		

Report Management

№	Role	Use Case	Description	Action Method	Tests
1	Administrator	Edit faculty report	Edits data of faculty report		
2		Generate faculty report	Generates report of his faculty		
3	Head of department	Generate department report	Head of department can create report of his department based on teachers' reports		
4		Edit department report	Head of department can edit his department's report		
5	Teacher	Fill report fields	Teacher can fill additional fields according to his personal report	Edit(Guid id, TeacherReport report)	*TST9* *TST12* *TST13*
6		Edit teacher report	Teacher can edit information of his personal report	Edit(Guid id, TeacherReport report)	*TST9* *TST12* *TST13*
7		Generate teacher report	Teacher can generate personal report of his work during the year	Create(TeacherReport model)	

Department Management

№	Role	Use Case	Description	Action Method	Tests
1	Administrator	Create department	Creates a new department	Create(DepartmentCreateModel model)	
2		Delete department	Removes existing department	Delete(Guid id)	
3	Head of Department	Edit department	Changes department's information	Edit(Guid id, DepartmentEditModel model)	
4		Delete department	Removes department	Delete(Guid id)	
5		Manage staff	Adds and removes users from department		

Publication Management

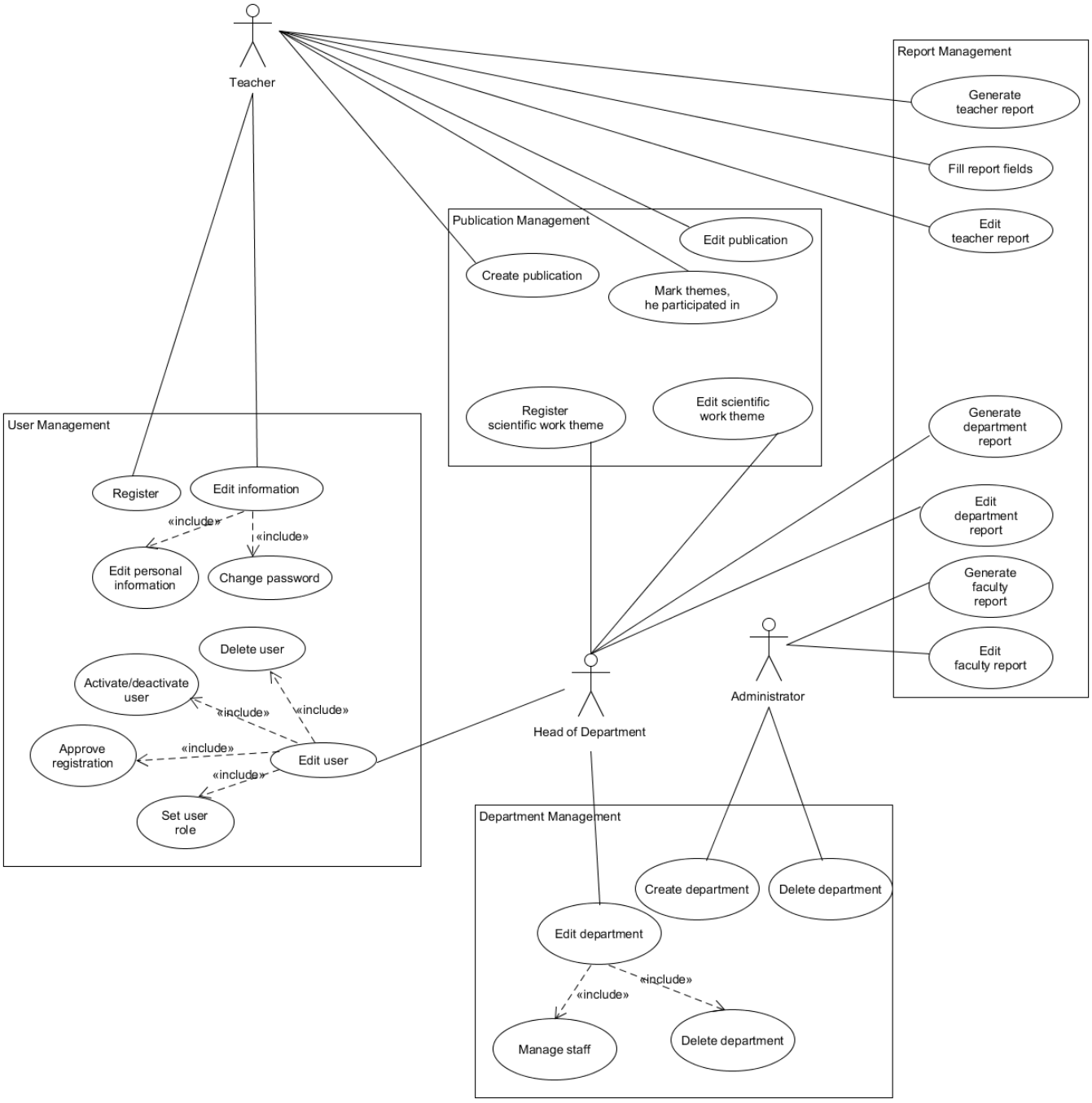
№	Role	Use Case	Description	Action Method	Tests
1	Head of department	Register scientific work theme	Registers scientific work themes of his department	Create(ScientificWorkModel model)	*TST22* *TST28*
2		Edit scientific work theme	Edits registered scientific work themes	Edit(Guid id, ScientificWorkModel model)	*TST23* *TST26* *TST27*
3	Teacher	Create publication	Adds publications as single or co-author	Create(PublicationModel model)	*TST15* *TST21*
4		Edit publication	Edits created publications	Edit(Guid id, PublicationModel model)	*TST16* *TST19* *TST20*
5		Mark themes he participated in.	Sets himself as co-author of scientific works	Edit(Guid id, ScientificWorkModel model)	*TST23* *TST26* *TST27*

Tests

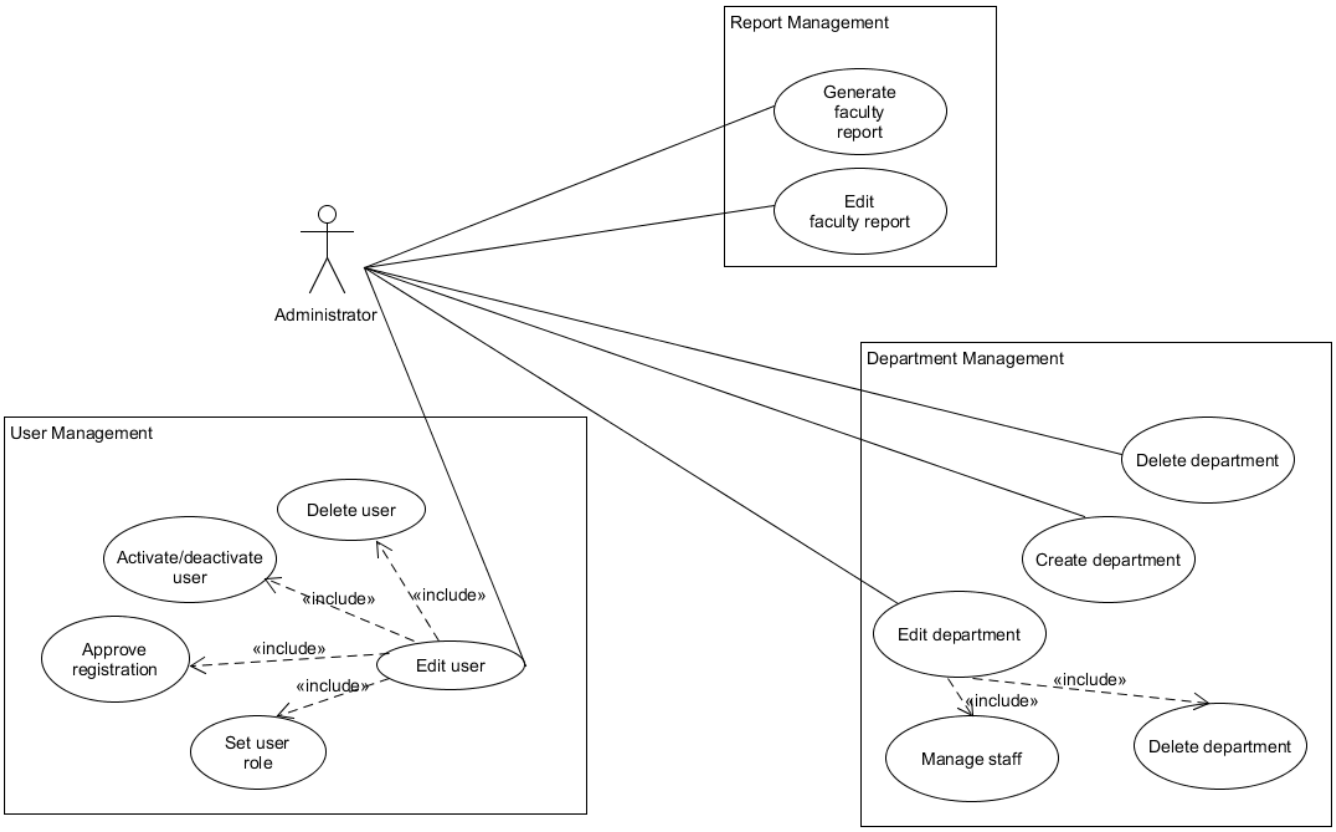
№	**Test class**	**Test method**	**Code coverage**
TST1	UserProfileServiceTests	CreateItemTest()	18%
TST2		UpdateItemTest()	
TST3		GetAllTest()	
TST4		GetAllWhereTest()	
TST5		GetByIdTest()	
TST6		ExistsTest()	
TST7		DoesNotExistTest()	
TST8	TeacherReportServiceTests	CreateItemTest()	91%
TST9		UpdateItemTest()	
TST10		GetAllTest()	
TST11		GetAllWhereTest()	
TST12		GetByIdTest()	
TST13		ExistsTest()	
TST14		DoesNotExistTest()	
TST15	PublicationServiceTests	CreateItemTest()	50%
TST16		UpdateItemTest()	
TST17		GetAllTest()	
TST18		GetAllWhereTest()	
TST19		GetByIdTest()	
TST20		ExistsTest()	
TST21		DoesNotExistTest()	
TST22	ScientificWorkServiceTests	CreateItemTest()	48%
TST23		UpdateItemTest()	
TST24		GetAllTest()	
TST25		GetAllWhereTest()	
TST26		GetByIdTest()	
TST27		ExistsTest()	
TST28		DoesNotExistTest()	

Diagrams

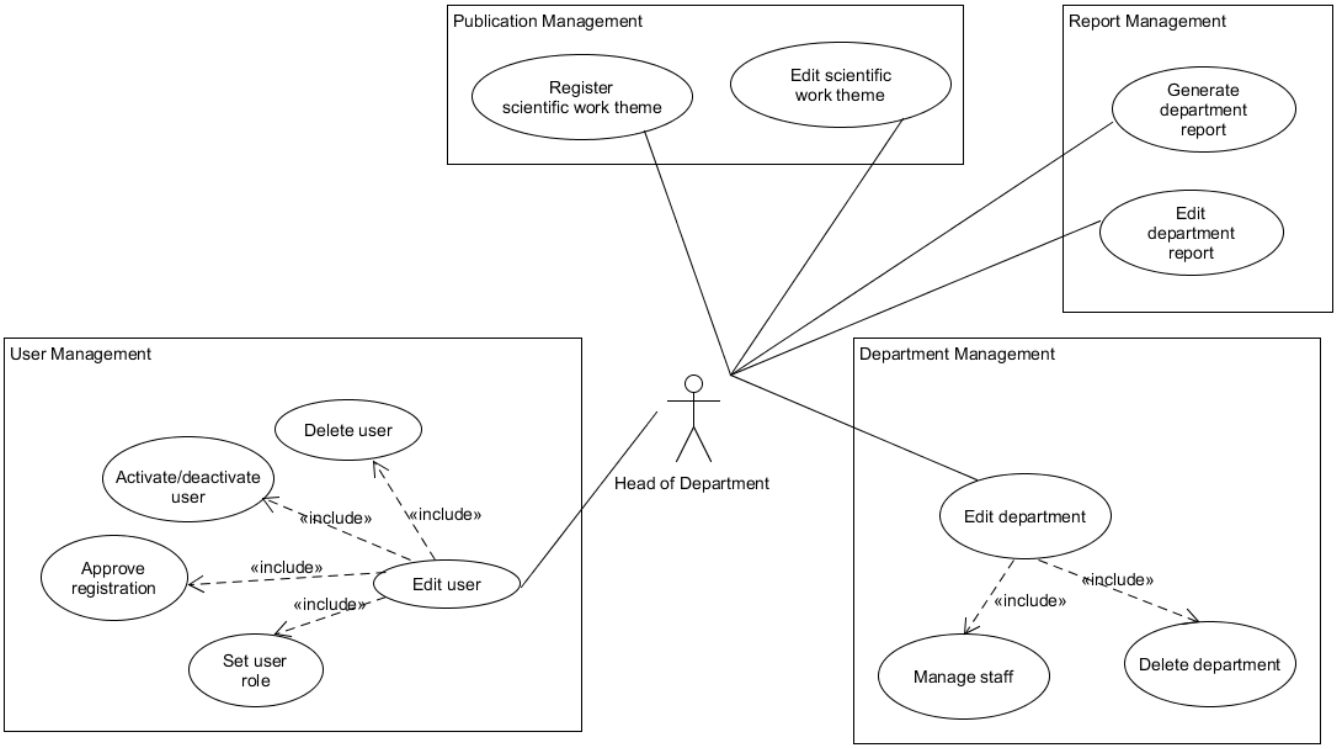
General use case diagram



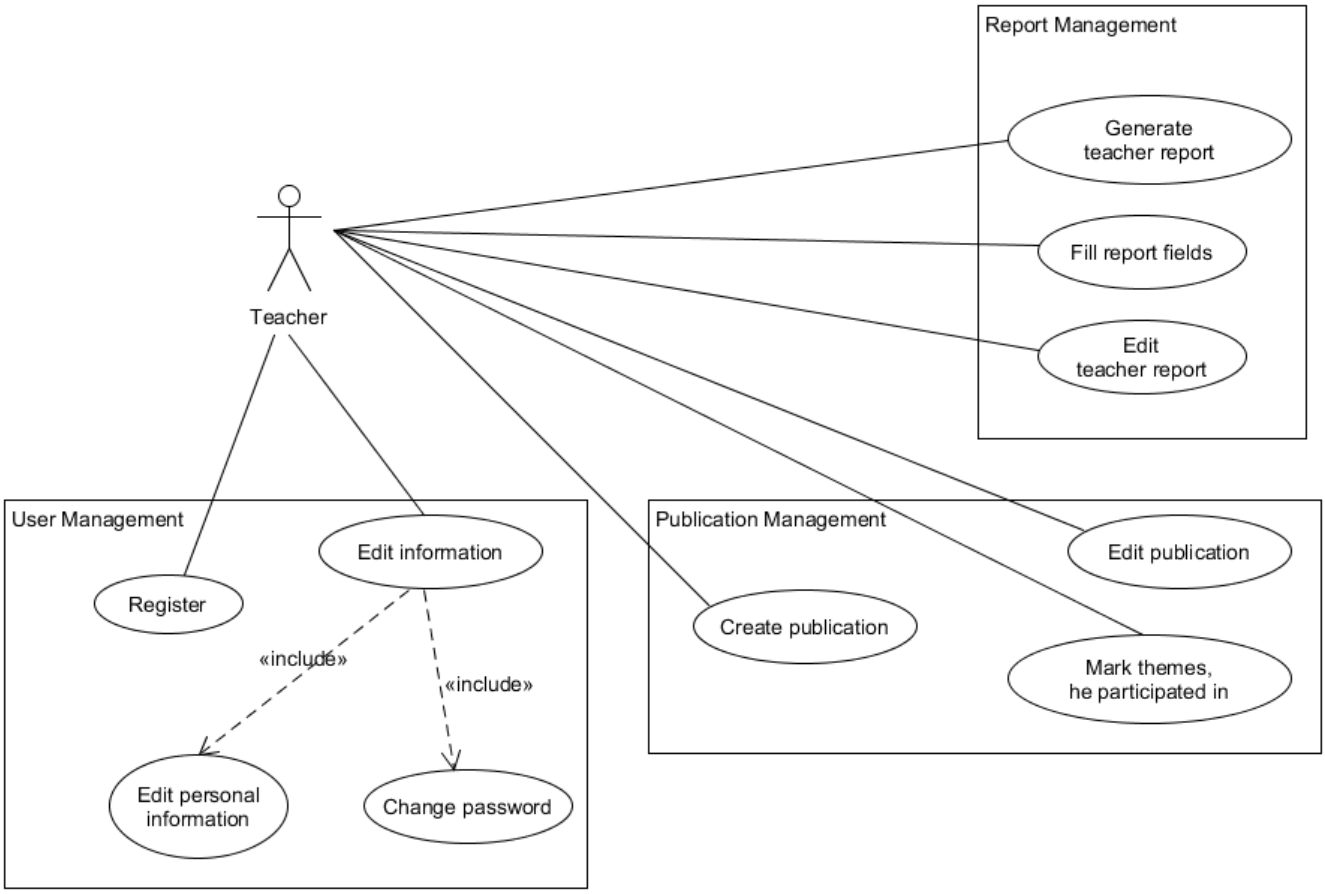
Use case for Administrator role



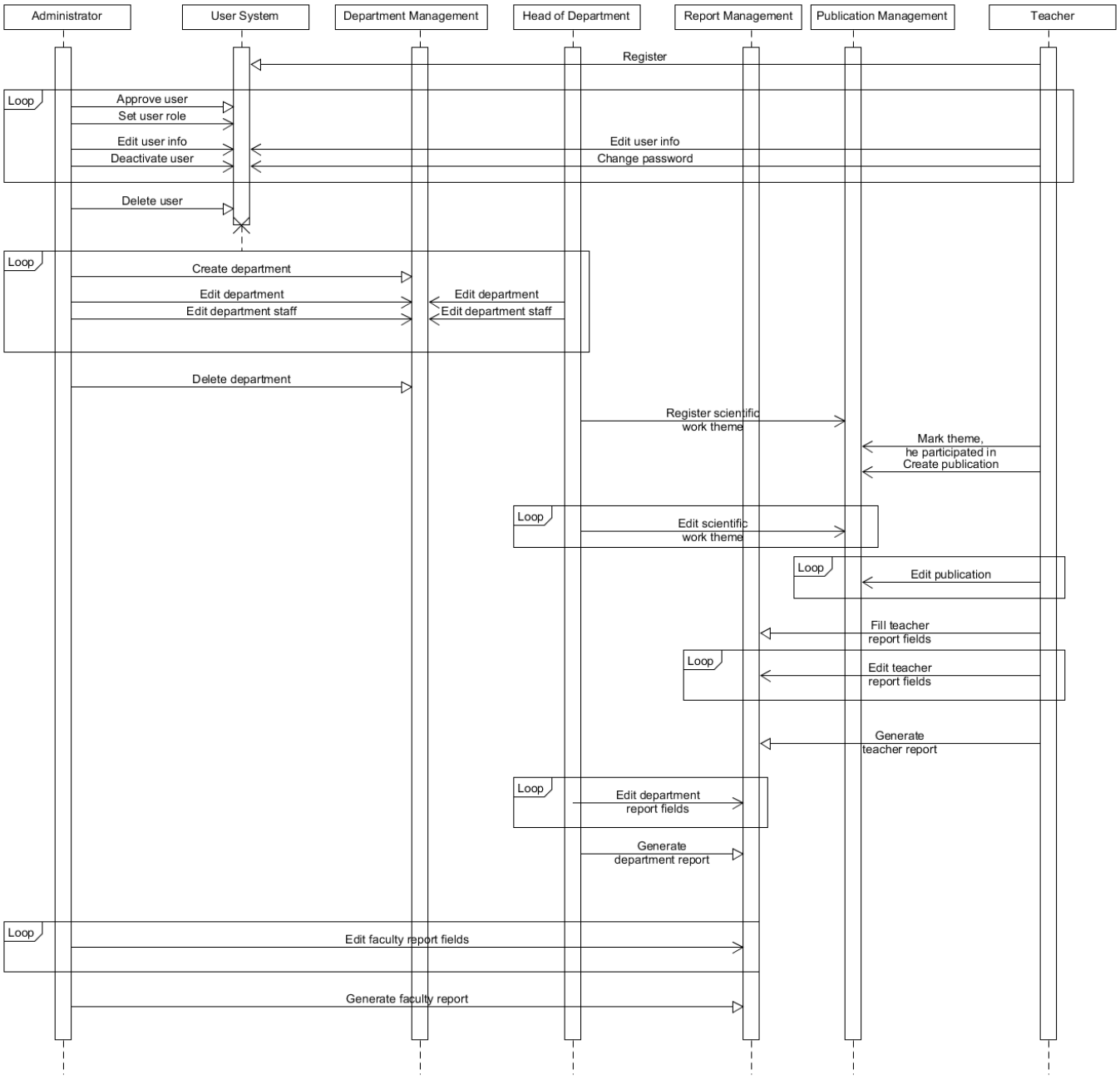
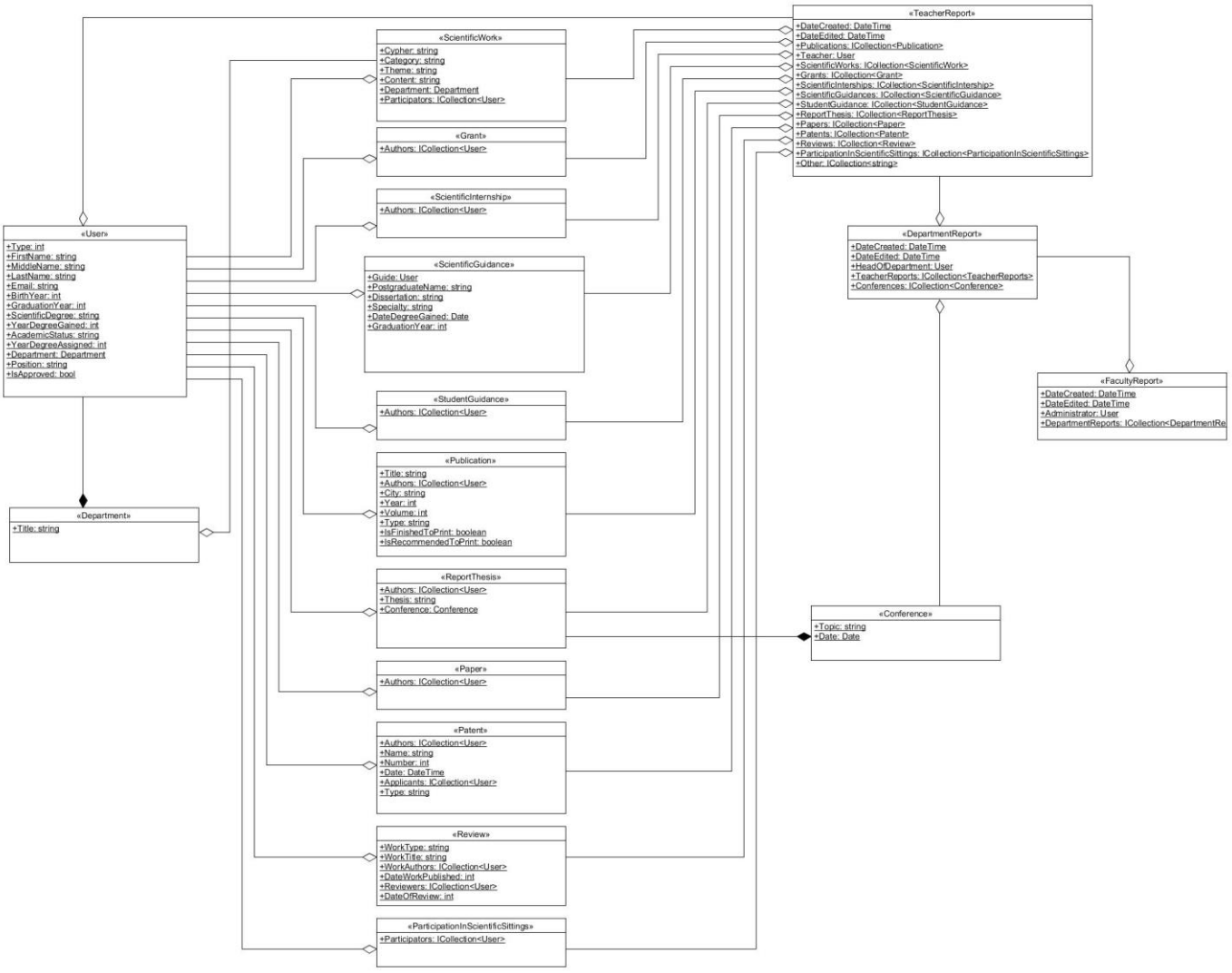
Use case for Head of Department role



Use case for Teacher role



Sequence diagram



Class diagram