



Example Documentation

Summer Term 2015

Table of Contents

1	systemModel	3
1.1	Conceptual Model	4
1.1.1	Entity-Relationship Diagram 'Project'	4
1.1.2	Entity-Relationship Diagram 'User_View_Course_Planner'	5
1.1.3	Entity-Relationship Diagram 'User_View_Scheduler'	6
1.1.4	Entity-Relationship Diagram 'User_View_Service_Planner'	6
1.1.5	Entity-Relationship Diagram 'User_View_Time_Recording'	7
1.1.6	Entity-Relationship Diagram 'User_View_Workload_Reduction'	7
1.1.7	Entity 'Department'	9
1.1.8	Entity 'Event'	10
1.1.9	Entity 'External_Lecturer'	12
1.1.10	Entity 'Lecture'	13
1.1.11	Entity 'Lecturer'	15
1.1.12	Entity 'Professor'	16
1.1.13	Entity Relationship 'Lecture_Event'	17
1.1.14	Entity Relationship 'Department_Lecture'	18
1.1.15	Entity Relationship 'Department_Lecture_78'	18
1.1.16	Entity Relationship 'Lecture_Lecture'	19
1.1.17	Entity Relationship 'Lecturer_Event'	19
1.1.18	Entity Relationship 'Department_Professor'	20
1.1.19	Entity Relationship 'Department_Event'	21
1.1.20	Entity Relationship 'Department_Event_85'	21
1.1.21	Entity Relationship 'Event_Lecture'	22
1.1.22	Data Types	24
1.1.22.1	Data Type 'Datatype'	25
1.1.22.2	Data Type 'Datatype'	25

1 systemModel

Complete Conceptual Model

1.1 Conceptual Model

Conceptual Model for the database that supports scheduling Events at HSE University

1.1.1 Entity-Relationship Diagram 'Project'

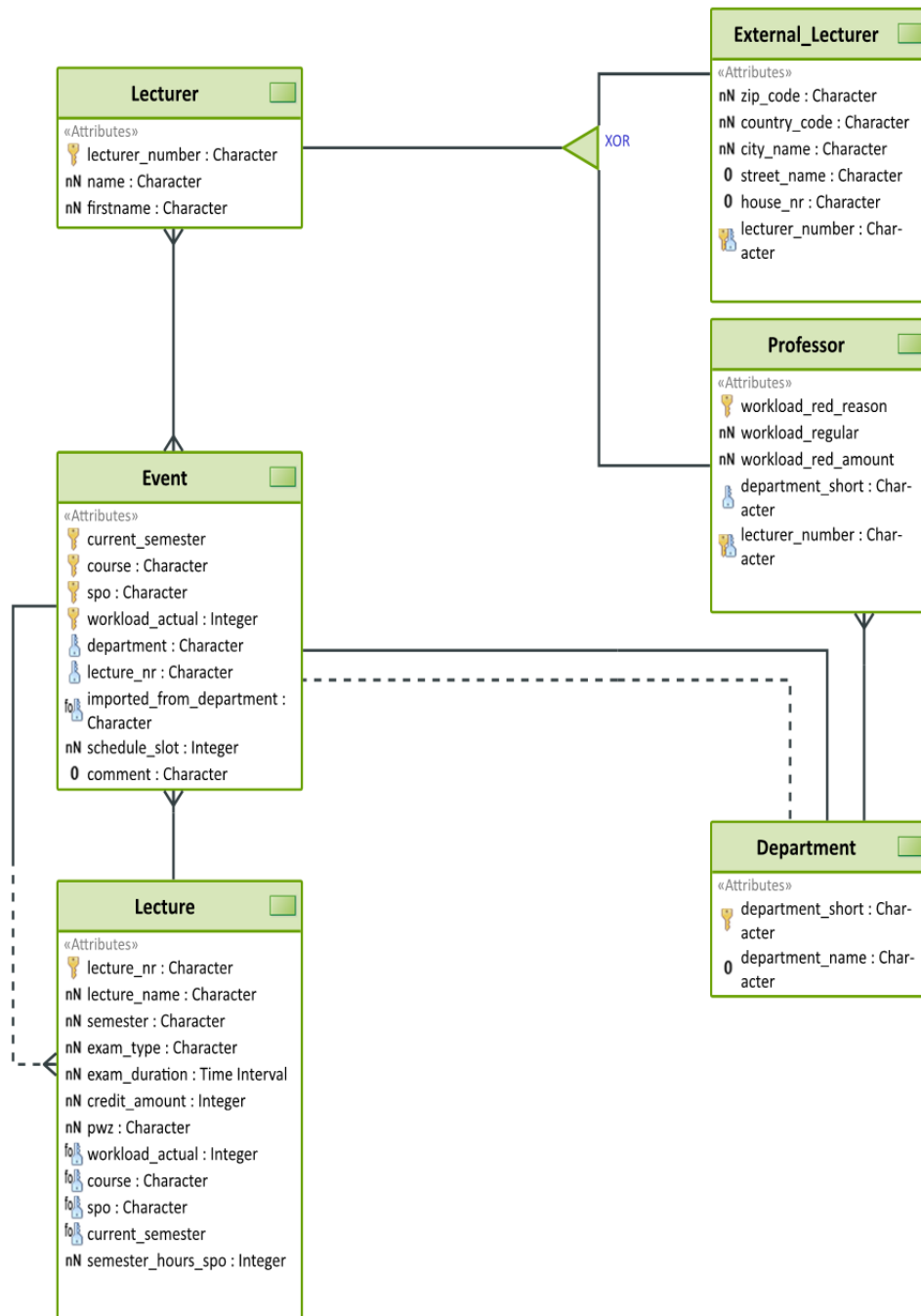


Figure 1: Entity-Relationship Diagram 'Project'

Global View of ERM for MRS-System

Entities

Name	Entity	Description
------	--------	-------------

	Type	
External Lecturer	ER type	Specialised term describing all external lecturers employed by HS Esslingen university
Lecturer	E type	General term describing all lecturers employed by HS Esslingen university
Professor	ER type	Specialised term describing all professors employed by HS Esslingen university
Event	ER type	General term describing all lecture events of HS Esslingen university
Department	ER type	General term describing all departments of HS Esslingen university
Lecture	E type	General term describing all lectures of HS Esslingen university

Table 1: Entity-Relationship Diagram 'Project'

1.1.2 Entity-Relationship Diagram 'User_View_Course_Planner'

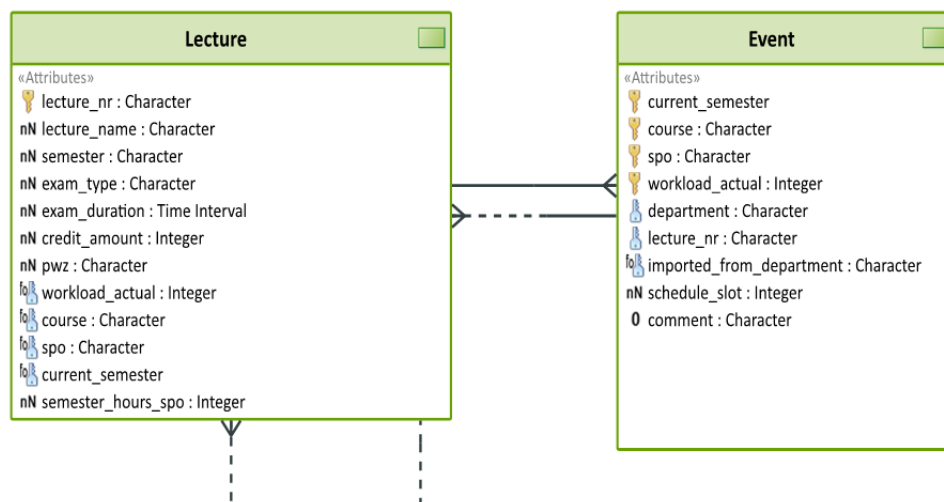


Figure 2: Entity-Relationship Diagram 'User_View_Course_Planner'

Shows the user view for the person responsible for course planning.

Entities

Name	Entity Type	Description
Lecture	E type	General term describing all lectures of HS Esslingen university
Event	ER type	General term describing all lecture events of HS Esslingen university

Table 2: Entity-Relationship Diagram 'User_View_Course_Planner'

1.1.3 Entity-Relationship Diagram 'User_View_Scheduler'

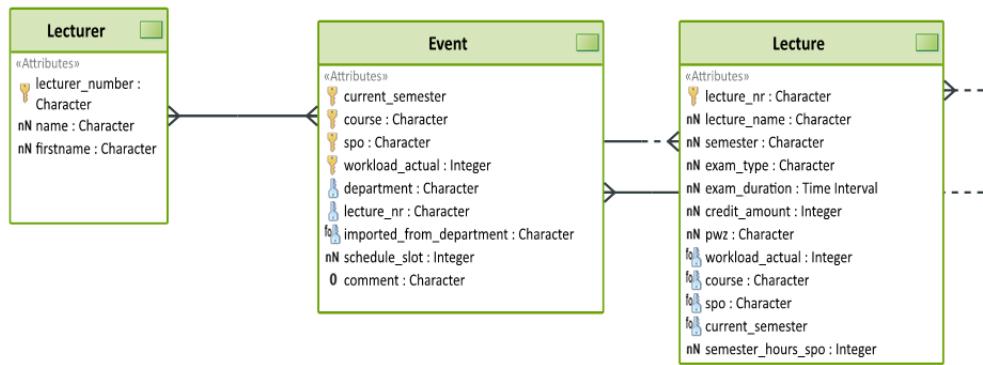


Figure 3: Entity-Relationship Diagram 'User_View_Scheduler'

Shows the user view for the person responsible for scheduling events.

Entities

Name	Entity Type	Description
Lecturer	E type	General term describing all lecturers employed by HS Esslingen university
Event	ER type	General term describing all lecture events of HS Esslingen university
Lecture	E type	General term describing all lectures of HS Esslingen university

Table 3: Entity-Relationship Diagram 'User_View_Scheduler'

1.1.4 Entity-Relationship Diagram 'User_View_Service_Planner'

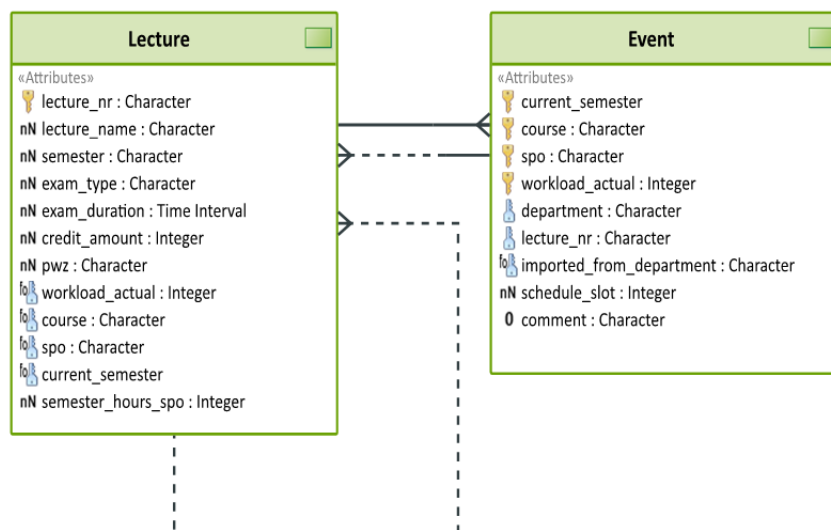


Figure 4: Entity-Relationship Diagram 'User_View_Service_Planner'

Shows the user view for the person responsible for service planning.

Entities

Name	Entity Type	Description
Lecture	E type	General term describing all lectures of HS Esslingen university
Event	ER type	General term describing all lecture events of HS Esslingen university

Table 4: Entity-Relationship Diagram 'User_View_Service_Planner'

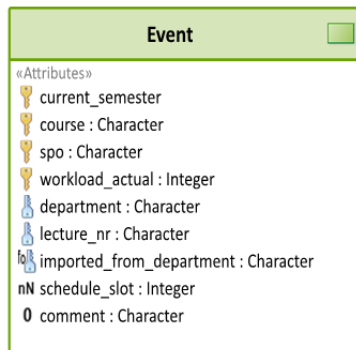
1.1.5 Entity-Relationship Diagram 'User_View_Time_Recording'

Figure 5: Entity-Relationship Diagram 'User_View_Time_Recording'

Shows the user view for the person responsible for time recordings.

Entities

Name	Entity Type	Description
Event	ER type	General term describing all lecture events of HS Esslingen university

Table 5: Entity-Relationship Diagram 'User_View_Time_Recording'

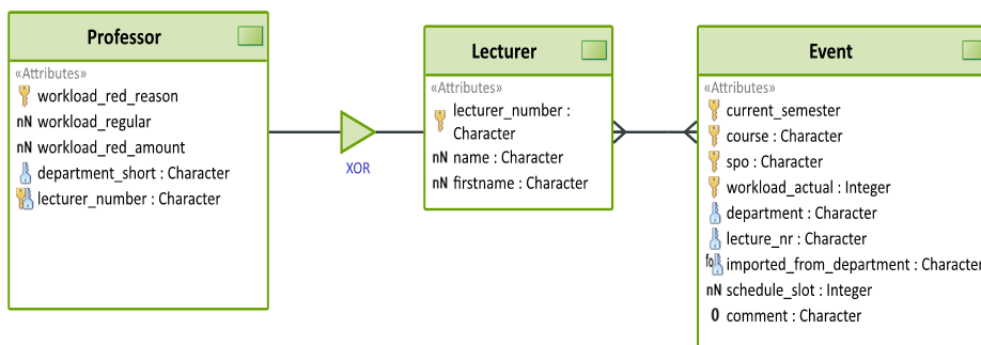
1.1.6 Entity-Relationship Diagram 'User_View_Workload_Reduction'

Figure 6: Entity-Relationship Diagram 'User_View_Workload_Reduction'

Shows the User View for the person responsible for workload reductions.

Entities

Name	Entity Type	Description
<u>Professor</u>	ER type	Specialised term describing all professors employed by HS Esslingen university
<u>Lecturer</u>	E type	General term describing all lecturers employed by HS Esslingen university
<u>Event</u>	ER type	General term describing all lecture events of HS Esslingen university

Table 6: Entity-Relationship Diagram 'User_View_Workload_Reduction'

1.1.7 Entity 'Department'

General term describing all departments of HS Esslingen university

department_short

Department's shortcut, e. g. IT for Information Technology.

department_name

Department's name, e. g. Information Technology

Unique Keys

Name	Description	Key Attributes	Foreign Keys
PK		department_short	Lecture.import_Department Lecture.export_Department Professor.Department Event.Department Event.Department_61

Table 7: Entity 'Department'

Related Entities

- Lecture (Department_Lecture - 0..1) (13)
- Lecture (Department_Lecture_78 - 0..1) (13)
- Professor (Department_Professor - 1) (16)
- Event (Department_Event - 0..1) (10)
- Event (Department_Event_85 - 1) (10)

1.1.8 Entity 'Event'

General term describing all lecture events of HS Esslingen university

current_semester

Event's Current Semester

Example: WS2015

course

Event's Course

Example: TIB

spo

Event's SPO

Example: SPO2

workload_actual

Event's actual workload per Lecturer

Example:

Lecturer		Workload
Prof X		3
Lect Y		1
Lect Z		5

9

department

Event's Department

Example: IT

lecture_nr

Event's Lecture Number

Example: AN_999100

imported_from_department

Events can be imported from exactly one Department.

Example:

Imported From G

schedule_slot

Schedule Slot holds information about scheduling the Event.

Schedule Slot has to be dividable by 2.

comment

Free text field to comment Events

Unique Keys

Name	Description	Key Attributes	Foreign Keys
PK		workload_actual course spo current_semester	Lecture.Event

Table 8: Entity 'Event'

Foreign Keys

Foreign Keys	Description	Referenced Key
Lecture		Lecture.PK
Department		Department.PK
Department_61		Department.PK

Table 9: Entity 'Event'

Related Entities

- Lecture (Lecture_Event - 1..*) (13)
- Lecturer (Lecturer_Event - 1..*) (15)
- Department (Department_Event - 0..1) (9)
- Department (Department_Event_85 - 1) (9)
- Lecture (Event_Lecture - 0..1) (13)

1.1.9 Entity 'External_Lecturer'

Specialised term describing all external lecturers employed by HS Esslingen university

inherits from

- «entity» Lecturer

(15)

zip_code

External Lecturer's ZIP Code (Part of the address)

country_code

External Lecturer's country code (part of the address)

city_name

External Lecturer's city name (part of the address)

street_name

External Lecturer's street name (part of the address)

house_nr

External Lecturer's house number

lecturer_number

Ideally a lecturer's personnel number. If this is not possible this field should hold another kind of UID.

Unique Keys

Name	Description	Key Attributes	Foreign Keys
PK		lecturer_number	

Table 10: Entity 'External_Lecturer'

Foreign Keys

Foreign Keys	Description	Referenced Key
Lecturer		Lecturer.PK

Table 11: Entity 'External_Lecturer'

1.1.10 Entity 'Lecture'

General term describing all lectures of HS Esslingen university

lecture_nr

Lecture's unique number

Example: AN_999100

lecture_name

Lecture's Name

Example: Databases 2

semester

Lecture's Semester according to Lecture's SPO

Example: DB2 in Sem6

exam_type

Lecture's Exam Type according to Lecture's SPO.

Possible values: oral exam, written exam, testate.

Example: DB2, written exam

exam_duration

Lecture's exam duration, e. g. 90 minutes

credit_amount

Lecture's credit amount, e. g. 5 credits for DB2

pwz

Encodes if a Lecture is mandatory (P), can be chosen (W), or is completely facultative (Z)

workload_actual

Actual workload of a Lecture's Event

course

Course of a Lecture's Event

Example: SWB, DB2, Lab

spo

SPO of a Lecture's Event

Example: SPO2, DB2, Lab

current_semester

Current Semester of a Lecture's Event

Example: WS2015, DB2, Lab

semester_hours_spo

Event's Semester Hours according to SPO

Example: DB2 Lab, 2h/per week

Unique Keys

Name	Description	Key Attributes	Foreign Keys
PK		lecture_nr	Event.Lecture Lecture.Lecture

Table 12: Entity 'Lecture'

Foreign Keys

Foreign Keys	Description	Referenced Key
import_Department		Department.PK
export_Department		Department.PK
Lecture		Lecture.PK
Event		Event.PK

Table 13: Entity 'Lecture'

Related Entities

- Event (Lecture_Event - 1) (10)
- Department (Department_Lecture - *) (9)
- Department (Department_Lecture_78 - *) (9)
- Lecture (Lecture_Lecture - *)
- Lecture (Lecture_Lecture - 0..1)
- Event (Event_Lecture - 1..*) (10)

1.1.11 Entity 'Lecturer'

General term describing all lecturers employed by HS Esslingen university

Specializations

is-a

- External_Lecturer (12)
- Professor (16)

lecturer_number

Ideally a lecturer's personnel number. If this is not possible this field should hold another kind of UID.

name

Lecturer's last name

firstname

Lecturer's first name

Unique Keys

Name	Description	Key Attributes	Foreign Keys
PK		lecturer_number	External_Lecturer.Lecturer Professor.Lecturer

Table 14: Entity 'Lecturer'

Related Entities

- Event (Lecturer_Event - 1..*) (10)

1.1.12 Entity 'Professor'

Specialised term describing all professors employed by HS Esslingen university

inherits from

- «entity» Lecturer

(15)

workload_red_reason

Workload reduction reason for professors, e. g. for a special function.

Example:

Professor		Reduction Reason
Prof X		Dean

workload_regular

Professor's regular workload according to their contract.

Example:

Professor		Regular Workload
Prof X		20

workload_red_amount

Professor's workload reduction amount, depends on the reduction reason.

Example:

Professor		Reduction Amount
Prof X		10

department_short

Professor's department

Example:

Professor		Department
Prof X		IT

lecturer_number

Professor's Lecturer Number, typically the personnel number.

Unique Keys

Name	Description	Key Attributes	Foreign Keys
PK		workload_red_reason lecturer_number	

Table 15: Entity 'Professor'

Foreign Keys

Foreign Keys	Description	Referenced Key
Lecturer		Lecturer.PK
Department		Department.PK

Table 16: Entity 'Professor'

Related Entities

- Department (Department_Professor - 1..*) (9)

1.1.13 Entity Relationship 'Lecture_Event'

Lectures have at least one Event.

Example:

Lecture | Event

Databases 2 | Class

Databases 2 | Lab

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Lecture'

One Lecture can have several Events. One Event must have exactly one Lecture.

Entity

- (1,*) Lecture (13)

Partner Entity

- (1,1) Event (10)

Role 'Event'

One Lecture can have several Events. One Event must have exactly one Lecture.

Entity

- (1,1) Event (10)

Partner Entity

- (1,*) Lecture (13)

Diagram Occurrences

- Project (4)
- User_View_Course_Planner (5)
- User_View_Service_Planner (6)
- User_View_Scheduler (6)

1.1.14 Entity Relationship 'Department_Lecture'

... still needs to be filled out ...

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Lecture'

... still needs to be filled out ...

Entity

- (0,1) Lecture (13)

Partner Entity

- (0,*) Department (9)

Role 'Department'

... still needs to be filled out ...

Entity

- (0,*) Department (9)

Partner Entity

- (0,1) Lecture (13)

1.1.15 Entity Relationship 'Department_Lecture_78'

... still needs to be filled out ...

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Lecture'

... still needs to be filled out ...

Entity

- (0,1) Lecture (13)

Partner Entity

- (0,*) Department (9)

Role 'Department_157'

... still needs to be filled out ...

Entity

- (0,*) Department (9)

Partner Entity

- (0,1) Lecture (13)

1.1.16 Entity Relationship 'Lecture_Lecture'

... still needs to be filled out ...

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Lecture'

... still needs to be filled out ...

Entity

- (0,1) Lecture (13)

Partner Entity

- (0,*) Lecture (13)

Role 'Lecture'

... still needs to be filled out ...

Entity

- (0,*) Lecture (13)

Partner Entity

- (0,1) Lecture (13)

Diagram Occurrences

- User_View_Course_Planner (5)
- User_View_Service_Planner (6)
- User_View_Scheduler (6)

1.1.17 Entity Relationship 'Lecturer_Event'

Events are held by at least one Lecturer.

Every Lecturer holds at least one Event.

Example:

Lecturer		Event
Prof X		Databases 2 Lab
External Lecturer Y		Databases 2 Lab
Prof X		Databases 2 Class
External Lecturer Z		Databases 2 Lab

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Lecturer'

Each Event is presided by at least one Lecturer. Events can have several Lecturers. Lecturers can have several Events.

Entity

- (1,*) Lecturer (15)

Partner Entity

- (1,*) Event (10)

Role 'Event'

Each Event is presided by at least one Lecturer. Events can have several Lecturers. Lecturers can have several Events.

Entity

- (1,*) Event (10)

Partner Entity

- (1,*) Lecturer (15)

Diagram Occurrences

- Project (4)
- User_View_Scheduler (6)
- User_View_Workload_Reduction (7)

1.1.18 Entity Relationship 'Department_Professor'

Professor has to be a member of exactly one Department, Departments typically hold more than one Professor.

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Department'

Each Department has multiple Professors

Entity

- (1,*) Department (9)

Partner Entity

- (1,1) Professor (16)

Role 'Professor'

Each Department has multiple Professors

Entity

- (1,1) Professor (16)

Partner Entity

- (1,*) Department (9)

Diagram Occurrences

- Project (4)

1.1.19 Entity Relationship 'Department_Event'

Events can be imported from exactly one Department.

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Department'

Events can be imported from a Department.

Entity

- (0,1) Department (9)

Partner Entity

- (0,1) Event (10)

Role 'Event'

Events can be imported from a Department.

Entity

- (0,1) Event (10)

Partner Entity

- (0,1) Department (9)

Diagram Occurrences

- Project (4)

1.1.20 Entity Relationship 'Department_Event_85'

Events have to be offered by exactly one Department.

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Department_2'

Every Event has to have one (responsible) Department.

Entity

- (1,1) Department (9)

Partner Entity

- (1,1) Event (10)

Role 'Event'

Every Event has to have one (responsible) Department.

Entity

- (1,1) Event (10)

Partner Entity

- (1,1) Department (9)

Diagram Occurrences

- Project (4)

1.1.21 Entity Relationship 'Event_Lecture'

Events can contain several Lecture couplings at once.

Example:

Event		Lecture

Databases 2 Lab		Databases 2
Databases 2 Lab		Information Systems

Stereotype Properties

Stereotype Property	Kind	Value
Name in the diagram	String	

Role 'Event'

One Event can have several attached Lectures (coupling)

Entity

- (1,*) Event (10)

Partner Entity

- (0,1) Lecture (13)

Role 'Lecture'

One Event can have several attached Lectures (coupling)

Entity

- (0,1) Lecture (13)

Partner Entity

- (1,*) Event (10)

Diagram Occurrences

- Project (4)
- User_View_Course_Planner (5)
- User_View_Service_Planner (6)
- User_View_Scheduler (6)

1.1.22 Data Types

Holds the Data Types used in the conceptual model.

1.1.22.1 Data Type 'Datatype'

... still needs to be filled out ...

Properties

Visibility	Public
Qualified Name	Data Types::Datatype
Base Type	
is abstract Classifier	no
is Leaf	no
Specializations	
UUID	c2eac1da-8b3b-93c3-6882-c889897761af

1.1.22.2 Data Type 'Datatype'

... still needs to be filled out ...

Table Of Figures

Figure 1: Entity-Relationship Diagram 'Project'	4
Figure 2: Entity-Relationship Diagram 'User_View_Course_Planner'	5
Figure 3: Entity-Relationship Diagram 'User_View_Scheduler'	6
Figure 4: Entity-Relationship Diagram 'User_View_Service_Planner'	6
Figure 5: Entity-Relationship Diagram 'User_View_Time_Recording'	7
Figure 6: Entity-Relationship Diagram 'User_View_Workload_Reduction'	7

Index

Bufferpools	34
city_name	13
comment	12
Conceptual Model	5
country_code	13
course	11, 14
credit_amount.....	14
current_semester	11, 14
Data Type 'Datatype'	26
Data Types	25, 31
Databases	33
Datentypen	29
DB Roles.....	32
DB2 LUW.....	27
DB-Rollen.....	30
DefaultSchema	28
department	11
department_name	10
department_short	10, 17
Entities.....	5, 6, 7, 8, 9
Entity	18, 19, 20, 21, 22, 23
Entity 'Department'	10
Entity 'Event'	11
Entity 'External_Lecturer'	13
Entity 'Lecture'	14
Entity 'Lecturer'	16
Entity 'Professor'	17
Entity Relationship 'Department_Event'	22
Entity Relationship 'Department_Event_85'	22
Entity Relationship 'Department_Lecture'	19
Entity Relationship 'Department_Lecture_78'	19
Entity Relationship 'Department_Professor'	21
Entity Relationship 'Event_Lecture'	23
Entity Relationship 'Lecture_Event'	18
Entity Relationship 'Lecture_Lecture'	20
Entity Relationship 'Lecturer_Event'	20
Entity-Relationship Diagram 'Project'	5
Entity-Relationship Diagram 'User_View_Course_Planner'	6
Entity-Relationship Diagram 'User_View_Scheduler'	7
Entity-Relationship Diagram 'User_View_Service_Planner'	7
Entity-Relationship Diagram 'User_View_Time_Recording'	8
Entity-Relationship Diagram 'User_View_Workload_Reduction'	8
exam_duration	14
exam_type	14
firstname	16
Foreign Keys	12, 13, 15, 18
house_nr.....	13
imported_from_department	11
inherits from.....	13, 17
is-a	16
lecture_name	14

lecture_nr	11, 14
lecturer_number	13, 16, 17
name	16
Partner Entity	18, 19, 20, 21, 22, 23, 24
Properties	26
pwz	14
Related Entities	10, 12, 15, 16, 18
Role 'Department'	19, 21, 22
Role 'Department_157'	19
Role 'Department_2'	22
Role 'Event'	18, 21, 22, 23
Role 'Lecture'	18, 19, 20, 23
Role 'Lecturer'	21
Role 'Professor'	21
schedule_slot	11
semester	14
semester_hours_spo	15
Specializations	16
spo	11, 14
Stereotype Properties	18, 19, 20, 21, 22, 23
street_name	13
systemModel	4
Unique Keys	10, 12, 13, 15, 16, 17
workload_actual	11, 14
workload_red_amount	17
workload_red_reason	17
workload_regular	17
zip_code	13