

CHALMERS

EXAMINATION / TENTAMEN

Course code/kurskod	Course name/kursnamn		
DIT 344	Fundamentals of Software Engineering architecture		
Anonymous code Anonym kod		Examination date Tentamensdatum	Number of pages Antal blad
284		2020-01-09	11

* I confirm that I've no mobile or other similar electronic equipment available during the examination.
 Jag intygar att jag inte har mobiltelefon eller annan liknande elektronisk utrustning tillgänglig under
 examinationen.

No/nr	Solved task Behandlade uppgifter	Points per task Poäng på uppgiften	Observe: Areas with bold contour are to completed by the teacher. Anmärkning: Rutor inom bred kontur ifylls av lärare.
1	v	7	
2	✓	5½	
3	✓	4	
4	✓	18	
5			
6			
7		3½	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
Bonus poäng			
Total examination points Summa poäng på tentamen			

a) Publishing-subscribe is the most appropriate architectural style for this system as different components are connected to this system and each component completely operates on different data. ✓✓ Argumentation missing.

b) ~~The Blackboard architecture style~~

~~9~~ The Blackboard architectural style is the most appropriate. The black board architectural style. This is appropriate as the system stores different types of data and different components can act on both the same or different data in the system.

c) The pipe and filter architectural style.

In this system each component acts as consumer and processor of

c) The pipe and filter

In this system each component acts as a consumer of the previous data and processor of data for the next component.

✓✓ Argumentation.

CHALMERS	Anonymous code Anonym kod 284	Points for question (to be filled in by teacher) Poäng på uppgiften (fyller av lärare) BIT344	Consecutive page no. Löpande sid nr 3
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a)

N

- Security ; The system should be secure enough to prevent unidentified users from accessing and manipulating the satellite data.

1
2

- Usability ; The system should be easy to learn and use for the intended user otherwise the user would lose interest in the system.

b)

Security ; ??

- Source ; Unidentified user.

Stimulus ; Tries to delete data.

3

Artifact ; Satellite data.

Environment ; Normal mode.

Response ; The system displays a message; "you do not have permission to delete this type of data".

Response measure ; Amount of data lost.

Usability :

- Source ; Authorised system user.

Stimulus ; Tries to take pictures of a given region.

Artifact ; Picture

Environment ; Normal mode.

Response ; The satellite should prompt a user to enter a region that the user intends to monitor the biomass data.

Measure ; Amount of time taken to access the picture functionality on the system.

for usability : time for a user to complete (or learn) a task.

F1
F2

a)

2 Software Architecture is a foundation organization of a system embedded by its components, their relationships to each other and their environment and the principles guiding their design and evolution.

b)

→ By documenting the system through formulating of different views for a given system hence giving the perspective on how to maintain such a system related to that particular view. ✓ empty

→ By performing evaluation, evaluation helps in finding out how well the system fulfills the stakeholders requirements through constant evaluation a system can be improved to the best quality as possible.

c)

2 A stakeholder is any party with a stake or interest in a given system for example In the rental bicycle system in Gothenburg

A stakeholder is any party with a stake or interest in a given system for example In the gothenburg public transport system, the local council of gothenburg has a stake in the system thus being a stakeholder, the users of the public transport system have a stake in the system thus being a stakeholder in the system.

9

d)

An architectural force

'Architectural force' is like a force that acts on the early stages of a system design paving way for a given software architectural design while 'architectural driver' is a specific force (requirement) that influence the design of a specific system.

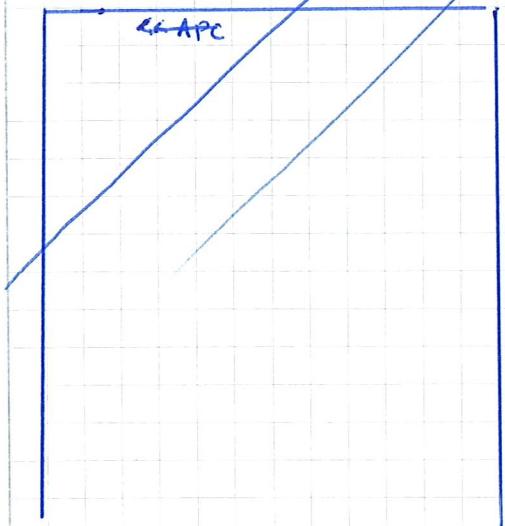
✓ force vs driver

e) Architectural styles are set of rules and constraints that dictate how components and connectors interact with each other while architectural tactics ~~these are~~ are set of practices used by used in software architecture while coming up ~~a softw~~ with an architectural design for a given system for example analysis of requirements.

=====
7

A structural view of the APC System

c)



e)

Z

- In component Report Handler.

- Secret:

- In component PDF converter.

- Secret; The secret is to hide the inner workings of how the handed in file will be processed into a pdf file

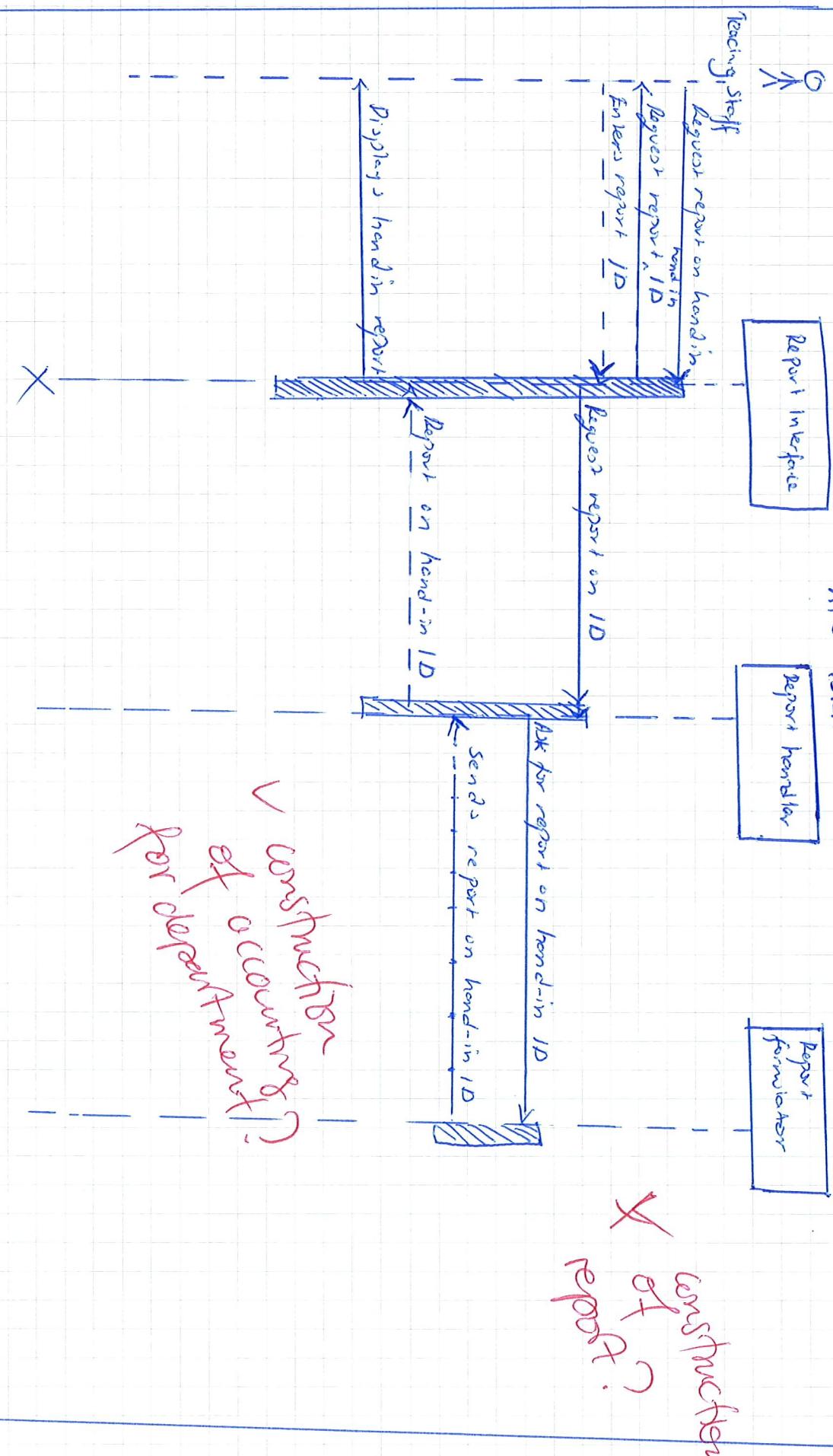
d) Sequence diagram of a report in response to the request to analyse a hand-in.

APC system

Report Interface

Report Handler

Report Formulator

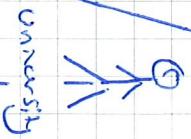


Sequence diagram of a management overview report.

A
APC System

Report interface

Report handler



University

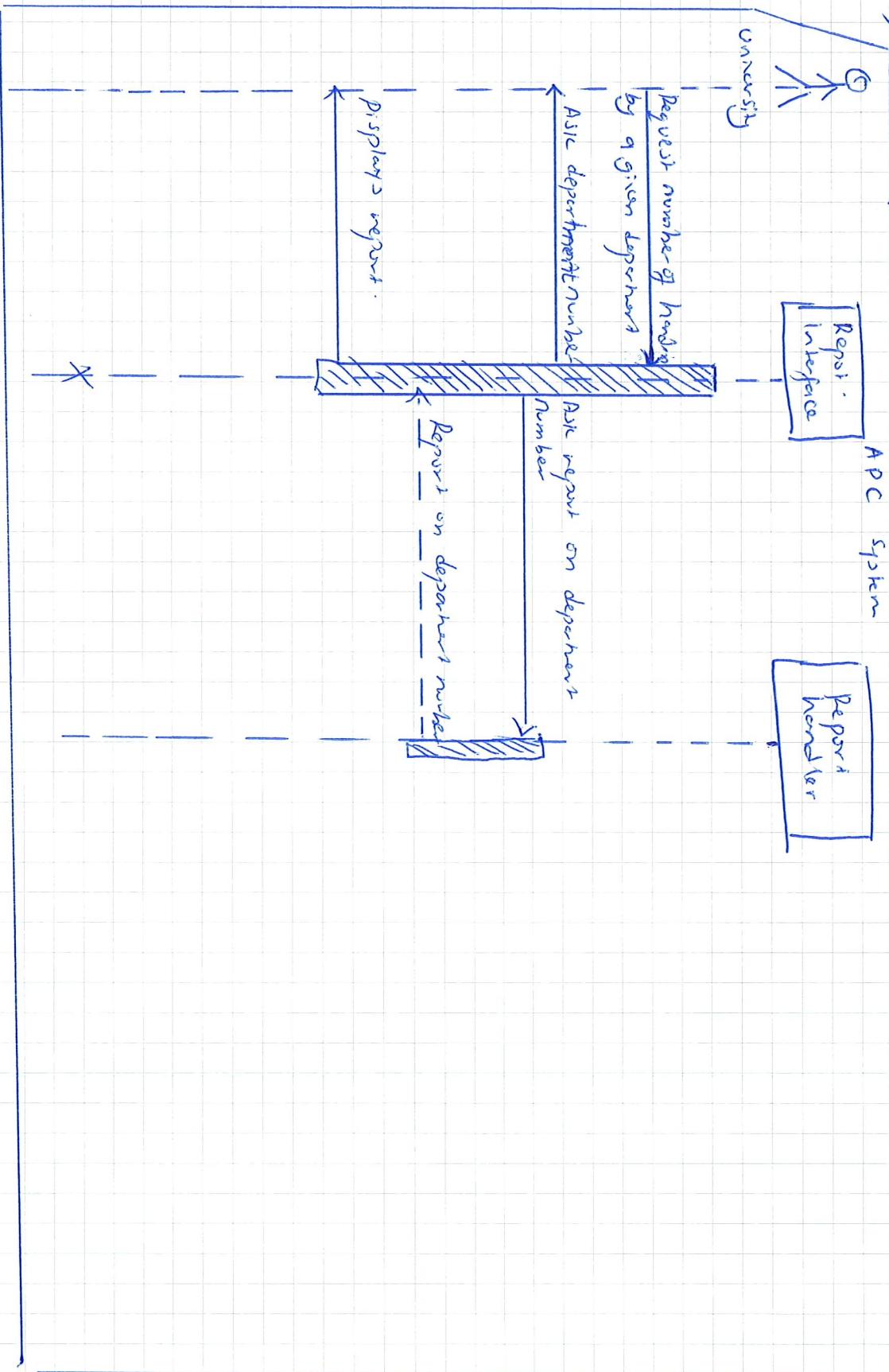
Request number of handing
by a given department

ASAC department number

Ask report on department
number

Display report.

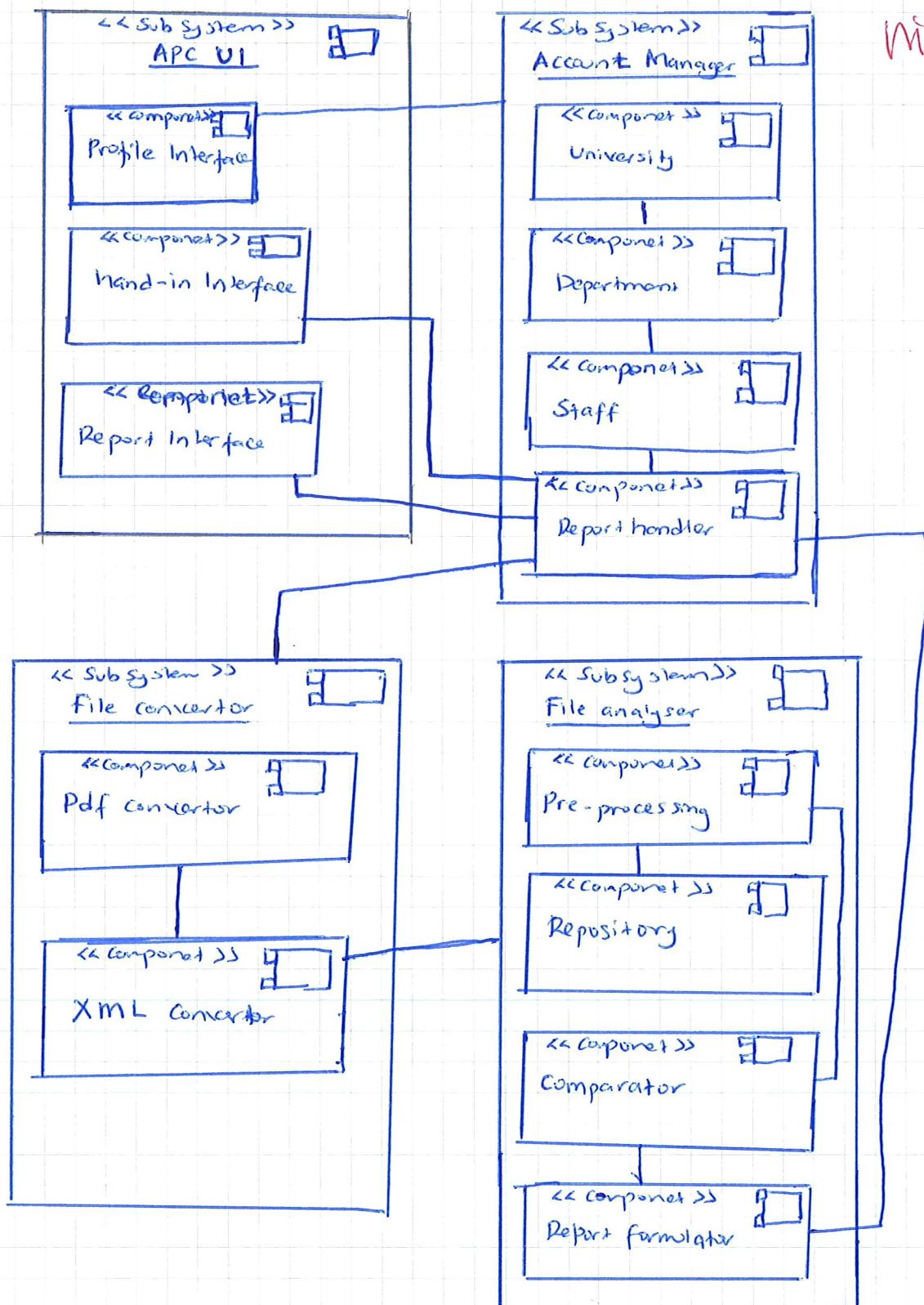
Report on department number



very
nice.

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A structural view of the APC System



Components:

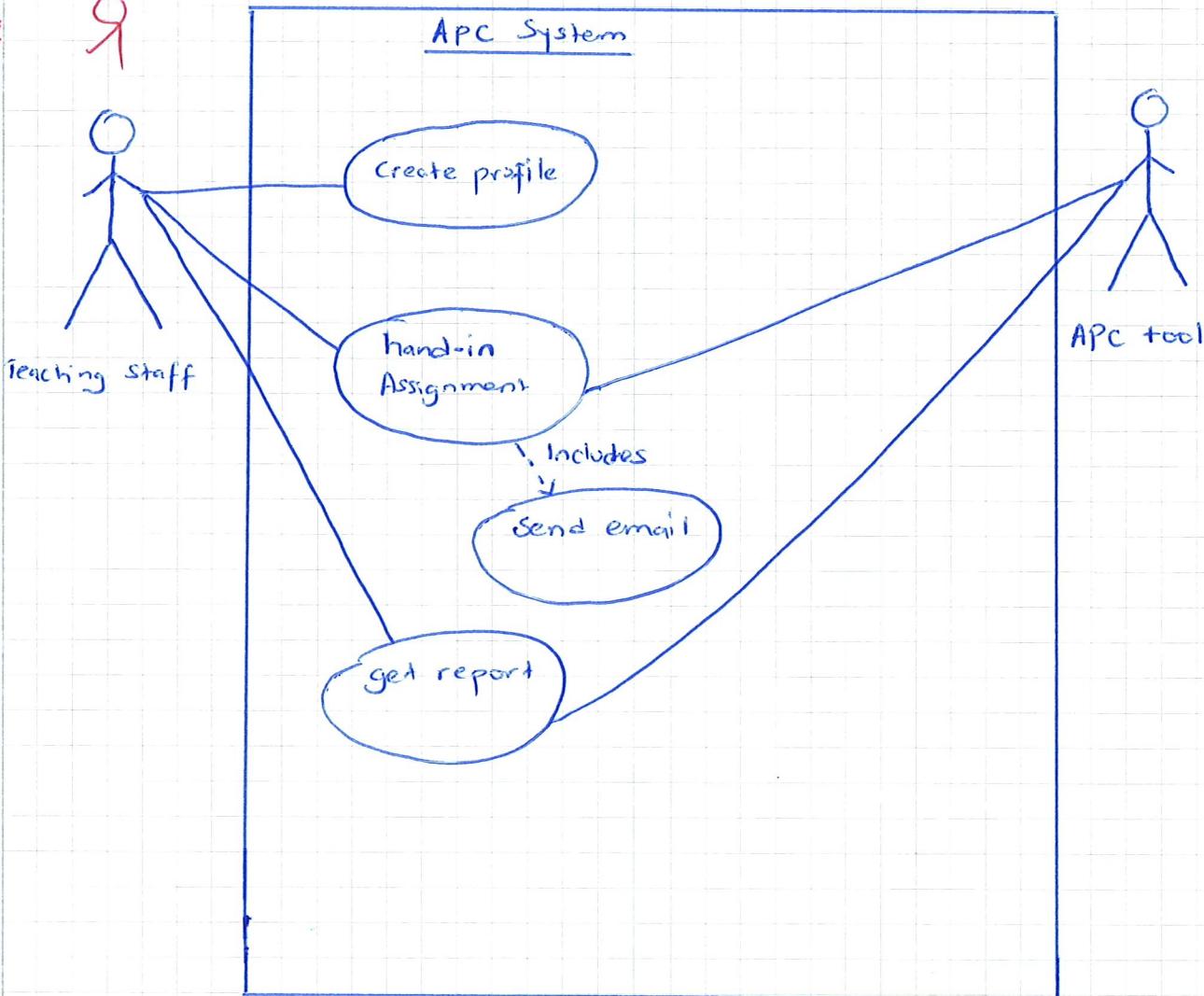
- Profile Interface: is used to access profile of a given registered user.
- Hand-in Interface: Displays the hand-in option for APC system user.
- Report Interface: Displays the report message for a given hand-in and also monthly report overview.
- University: Contains accounts of universities that subscribed to the APC tool system.
- Department: Contains accounts of departments in a given university.
- Staff: Contains accounts of teaching staff of a given department in the system.
- Report handler: Handles the hand in files/documents of a given user and also handles the report in response to a given handin of a given user.
- P.d.f converter: Converts all handed in document in accepted p.d.f file.
- X.M.L converter: Converts the produced p.d.f file into an XML file for further processing.
- Pre-processing: handles the early analysis of a handin XML file, compare it with the repository before forwarding it to the comparator for further processing.
- Comparator: Does the final comparison of the handin file formulating plagiarism score before sending the results to the report formulator.
- Report formulator: This component formulates the final hand-in report, and sends it back to the report handler.

b)

APC System Usecase diagram

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9



2

a) Security: The system should be well protected from data loss ~~and as~~ any incident of lost file

a) Security: The system should be well protected from any kind of data loss. If any files submitted by the teachers are lost most universities will lose faith in the system. = reliability / availability

Usability: The system should be designed in a way that it's easy to learn and use by the teachers otherwise they will lose interest in it.