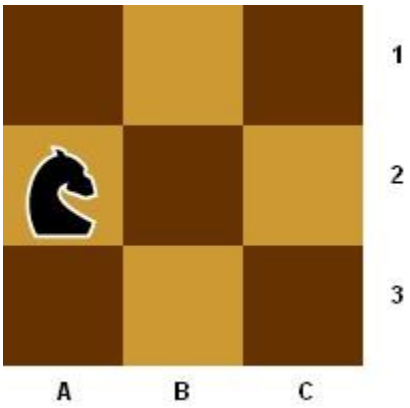
Devante Wilson Student ID: 100554361

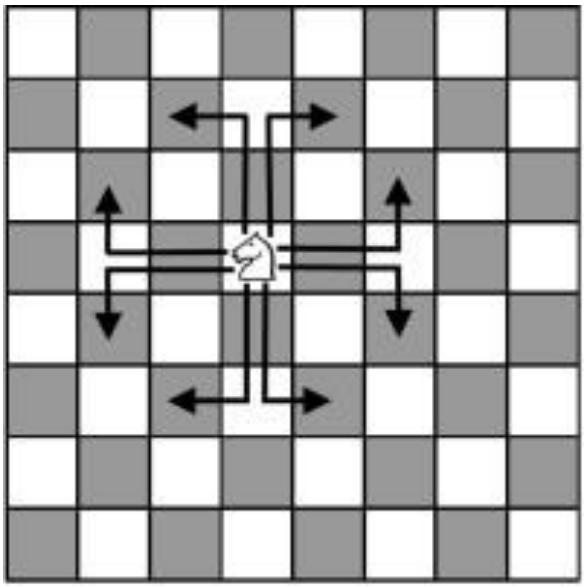
SOFE3650: Software Design and Architecture Assignment 1 Due: October 31, 2016 @ 11:00pm

Question 1 – Statecharts [8 marks]

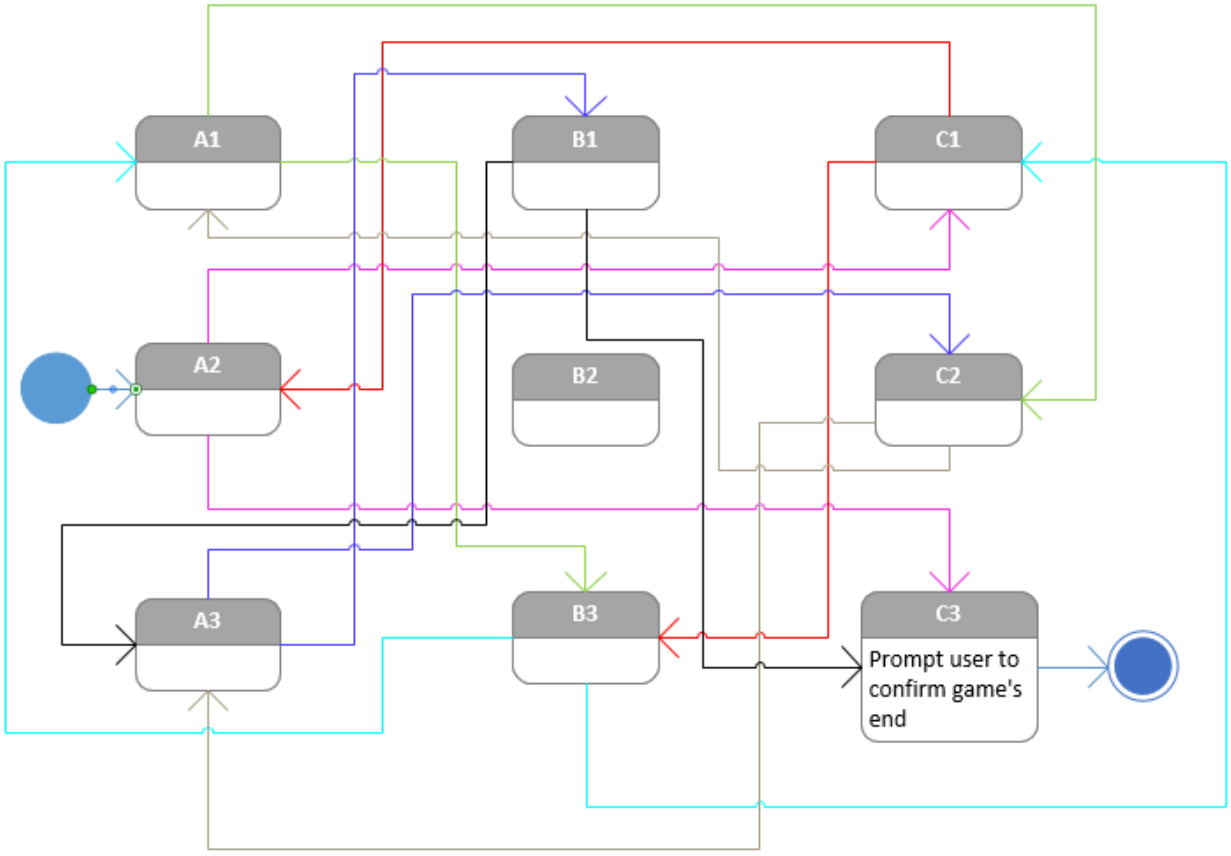
Consider the following 3x3 *mini* chessboard which has only one knight piece:

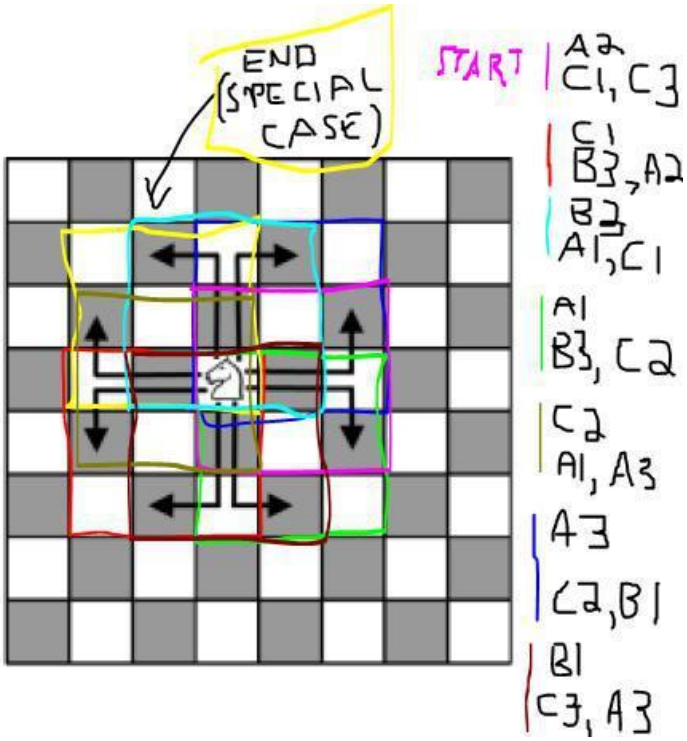


The game begins with the knight piece in the A2 position (current position). The Knight piece can move around in 'L' shape patterns. The diagram below provides an illustration of a Knight piece's eligible moves:



If the Knight piece lands in the C3 position, then the game ends. However, the user must press an OK button to confirm that the game has ended.


A1
B1
C1
A2
B2
C2
A3
B3
C3
Prompt user to confirm game's end


END (SPECIAL CASE)
START
A2
C1, C3
C1
B3, A2
B2
A1, C1
A1
B3, C2
C2
A1, A3
A3
C2, B1
B1
C3, A3

Question 2 – Use Case Modeling [17 marks]

The requirements for a UOIT Tube system are described below:

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UOIT is planning to provide "YouTube" type service for its students to use. The system will be called "UOIT Tube". With the system, student can upload and watch videos. While uploading a video the student is required to provide a description of the video. The description of the video is effectively its first comment. In fact, providing a description is the same functionality to adding a comment to the video. Students can watch a videos using cellular data which similar as watching a video in a regular setting except the resolution is lower to reduce data usage.

Students can upload videos using their phones or through a website. Students watching a video may set a rating, they may flag the video as inappropriate and they may comment on the video. If a video is flagged as inappropriate, the system administrator is notified and the administrator then reviews the video (i.e. the administrator watches the video). Upon reviewing the video the administrator may then choose to block the video.

Uploading videos requires a student to login in to the system. If login has failed too many times, the system locks the account.

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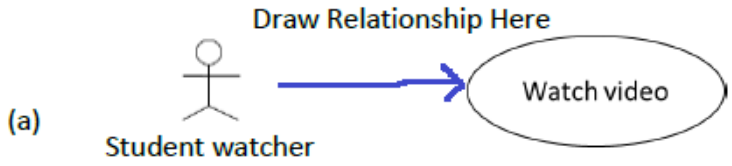
For the following 15 questions (a) → (q), you must choose the most appropriate relationship type (you MUST select 'Nothing' if you feel that no relationship actually exists). You must also draw the relationship. Note that the symbol drawn and the direction of the arrow both account for marks.

Hint: Requirements engineering is not about inventing it's about representing. So if it is not explicitly stated up there (in the description) then it has no place on the diagram. There is at least one (or more) of these questions in which the correct answer is "Nothing".

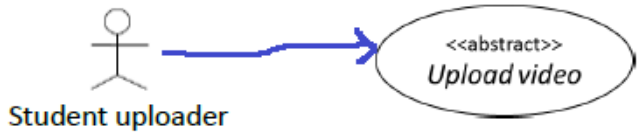


Choose Relationship Here

(a)
[ ]Include [✓]Association
[ ]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

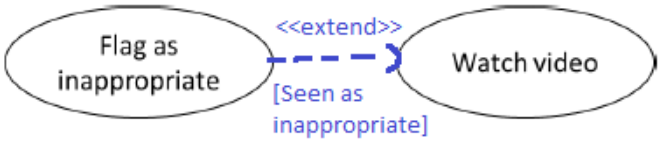
(b)
[ ]Include [ ]Association
[ ]Extend [ ]Implementation
[ ]Generalization [✓]Nothing

(c)



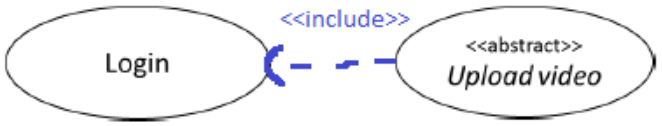
[ ]Include [✓]Association
[ ]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(d)



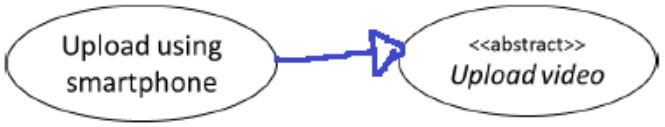
[ ]Include [ ]Association
[✓]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(e)



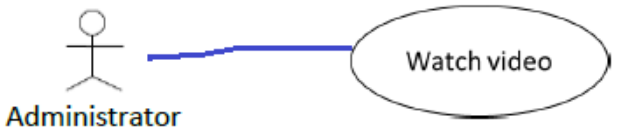
[✓]Include [ ]Association
[ ]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(f)



[ ]Include [ ]Association
[ ]Extend [✓]Implementation
[ ]Generalization [ ]Nothing

(g)



[ ]Include [✓]Association
[ ]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(h)

[ ]Include [ ]Association
[ ]Extend [ ]Implementation
[✓]Generalization [ ]Nothing

(i)

[ ]Include [ ]Association
[ ]Extend [ ]Implementation
[ ]Generalization [✓]Nothing

(j)

[ ]Include [ ]Association
[✓]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(k)

[ ]Include [ ]Association
[ ]Extend [✓]Implementation
[ ]Generalization [ ]Nothing

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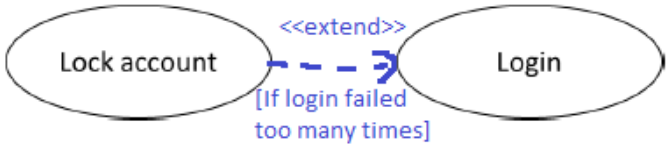
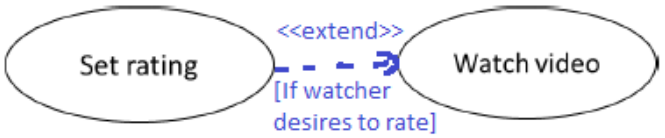
(l)



[ ]Include [ ]Association
[✓]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(m)



[ ]Include [ ]Association
[✓]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

(n)

[ ]Include [ ]Association
[ ]Extend [ ]Implementation
[ ]Generalization [✓]Nothing

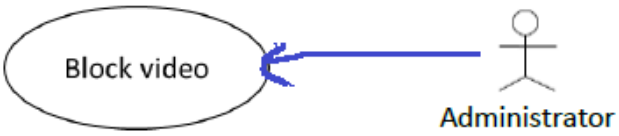
(o)

[ ]Include [ ]Association
[ ]Extend [ ]Implementation
[ ]Generalization [✓]Nothing

(p)

[ ]Include [ ]Association
[ ]Extend [ ]Implementation
[ ]Generalization [✓]Nothing

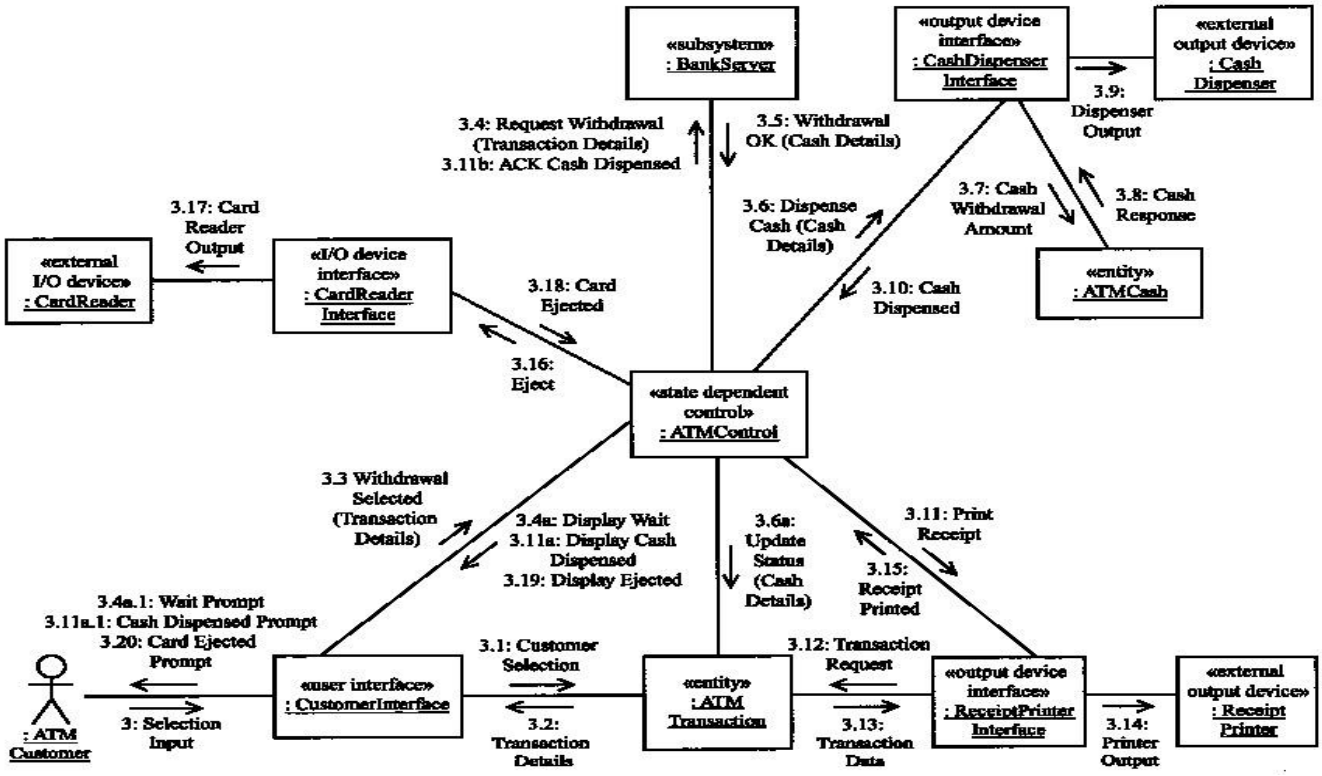
(q)



[ ]Include [✓]Association
[ ]Extend [ ]Implementation
[ ]Generalization [ ]Nothing

Question 3 – Sequence diagrams
[15 marks]

Convert the following collaboration diagram into a sequence diagram:



Note you should have the actor at the very left-hand side of the sequence diagram and the CardReader class at the very right-hand side of the diagram.