SECJ 2253 Requirements Engineering & Software Modeling

Sem.2 2020/2021

PHASE 2: REQUIREMENTS MODEL DOCUMENT (FUNCTIONAL, DATA, BEHAVIORAL PERSPECTIVES)

Mipanzu Online File Management System

<Mipanzu>

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Business Process Mapping to Use Cases

Which Business Process related to the use case	UC ID	UC	Use case specification	PIC
Handle the open file procedure	UC001	Open new file	***Use Case Specification for UC001 <Open new file>***	Wan Luqman
Handle the close file procedure	UC002	Close file	***Use Case Specification for UC002 <Close file>***	Husny
Handle the borrow file procedure	UC003	Track the file location	***Use Case Specification for UC003 <Track file location>***	Wan Luqman
	UC006	Borrow file	***Use Case Specification for UC006 <Borrow file>***	See Wen Xiang
Handle the return file procedure	UC009	Return file	***Use Case Specification for UC009 <Return file>***	See Wen Xiang
Handle the dispose file procedure	UC005	Dispose of file	***Use Case Specification for UC005 <Dispose of file>***	Tan Chiaw Torng
Monitor file access	UC004	Report the loss of file	***Use Case Specification for UC004 <Report the loss of file>***	Husny
	UC007	View file access record	***Use Case Specification for UC007 <View file access record>***	Tan Chiaw Torng
	UC008	Detect the late return of file	***Use Case Specification for UC008 <Detect the late return of file>***	Wan Luqman

Remark: *Italic text* is cross-reference hyperlink.

Use cases mapping with Activity, and Sequence Diagram, State, Domain

Use Cases	**Activity Diagram**	**Sequence Diagram**	**State diagram (ONE) Give the ONE controller class in sequence diagram which you you will represent in state diagram**	**Domain Model Give the name of entity class in sequence that which you will include in domain model**
UC001	***Activity Diagram for UC001 <Open new file>***	***Figure 2.1.1: Sequence Diagram for UC001 <Open new file>***	***State-Transition Diagram for <File Class>***	File SAOfficer RUClerk Letter
UC002	***Activity Diagram for UC002 <Close file>***	***Figure 2.2.1: Sequence Diagram for UC002 <Close file>***	***State-Transition Diagram for <File Class>***	File SAOfficer RUClerk
UC003	***Activity Diagram for UC003 <Track file location>***	***Figure 2.3.1: Sequence Diagram for UC003 <Track file location>***	***State-Transition Diagram for <File Class>***	File SAOfficer RUClerk
UC004	***Activity Diagram for UC004 <Report the loss of file>***	***Figure 2.4.1: Sequence Diagram for UC004 <Report the loss of file>***	**None**	borrowFileRecord File SAOfficer RUClerk
UC005	***Activity Diagram for UC005 <Dispose of file>***	***Figure 2.5.1: Sequence Diagram for UC005 <Dispose of file>***	***State-Transition Diagram for <disposedFileHandler*** **Controller>** ***State-Transition Diagram for <FileDisposedRecord Class>***	fileDisposeRecord File SAOfficer RUClerk
UC006	***Activity Diagram for UC006 <Borrow file>***	***Figure 2.6.1: Sequence Diagram for UC006 <Borrow file>***	***State-Transition Diagram for <borrowFileHandler Controller>***	borrowFileRecord Staff
UC007	***Activity Diagram for UC007 <View file access record>***	***Figure 2.7.1: Sequence Diagram for UC007 <View file access record>***	***State-Transition Diagram for <BorrowedFileRecord Class>***	borrowFileRecord SAOfficer RUClerk
UC008	***Activity Diagram for UC008 <Detect the late return of file>***	***Figure 2.8.1: Sequence Diagram for UC008 <Detect the late return of file>***	***State-Transition Diagram for <BorrowedFileRecord Class>***	borrowFileRecord Staff
UC009	***Activity Diagram for UC009 <Return file>***	***Figure 2.9.1: Sequence Diagram for UC009 <Return file>***	***State-Transition Diagram for <BorrowedFileRecord Class>***	borrowFileRecord Staff

Remark: ***Italic text*** **is cross-reference hyperlink.**

1. Introduction

The purpose of the RMD created is used in order for us to describe all the requirements elicit from the file management system in JKSNJ. This is because we want to create and develop a new file management system that will be changed from manual system to online system. RMD is best used for us to document the functional requirements of the system that need to be developed. The document will specify all the user expectations toward what the software is able to do. In the RMD, we will use UML Use Case diagram, UC specifications, UML activity diagram, UML domain class diagram, UML state diagram in order to get a more detailed understanding towards each process in the system. All the documents related towards the file management system also will be recorded in the RMD. It is also easy for us to see clearly all the issues and improvements that can be made towards each process. All the requirements gathered in the RMD are elicited from the stakeholders of JKSNJ on 11 April 2020. The parties involved for this RMD are Clerk of Record Unit (CRU) and Syariah Assistant Officer (SAO).

The software product is Mipanzu Online File Management System to replace the current manual file management system from JKSNJ. This file management system has the function of keeping track of the location of the files and records. So, when the user wants to borrow the files, they need to key in the code of the file. All file access information including the user identity, date and time of borrowing and returning and file code will be stored online therefore it can replace the physical version of "Kertas Minit". Therefore, it is easier for SAO as they can know who borrowed the file and can keep track of the file location.

All the staff need to log in with passwords to verify their identities. Different groups of staff can access different types of files according to their security levels. When the staff return files, the system will record the date and time of return. The staff can also report the loss of file in the system. The system will automatically notify the officers about the late return of files. The system can also be used to dispose of files, open new files and close files. When they want to dispose of files, they need the approval from Arkeb Negara Malaysia (ANM). Therefore, with this online version approval from ANM can be done in minutes instead of hours or even days. The system will notify the officers of the files that shall be disposed of according to Jabatan Pelupusan Record (JPR).

On the other hand, viewing files and store files does not need approval from ANM, instead the CRU only needs to update the file status in the system. This system brings benefits to all JKSNJ staffs, CRU and SAO where they can manage the file records and the daily procedures like borrowing, returning, disposal and classification of files more efficiently. All the file records can be backup to secure those records and prevent them from missing. Our goal is to produce an online file management system that provides one-stop services to all JKSNJ staff with an objective to offer a path for the users to have an easier work in managing the files and records while maintaining its integrity.

2. Functional Perspective: Use Case (UC) Documentation (Diagram – UML UCD)

The system features include several diagrams that helps us to create a good to-be system in the future. There will be several diagrams created and all of them are used to explain all the requirement and process needed for Mipanzu File Management System. The diagram that will be created are use case diagram to show interaction between user and all the use case in the system, activity diagram to documents the action sequences in the use case, domain model to show all the class with their attributes in the system and state machine diagram to show the state of the class when there is a trigger that made the state of the class to change if any. For every use case in the use case diagram, we will create use case description and sequence diagram to see the flow and process for every use case.

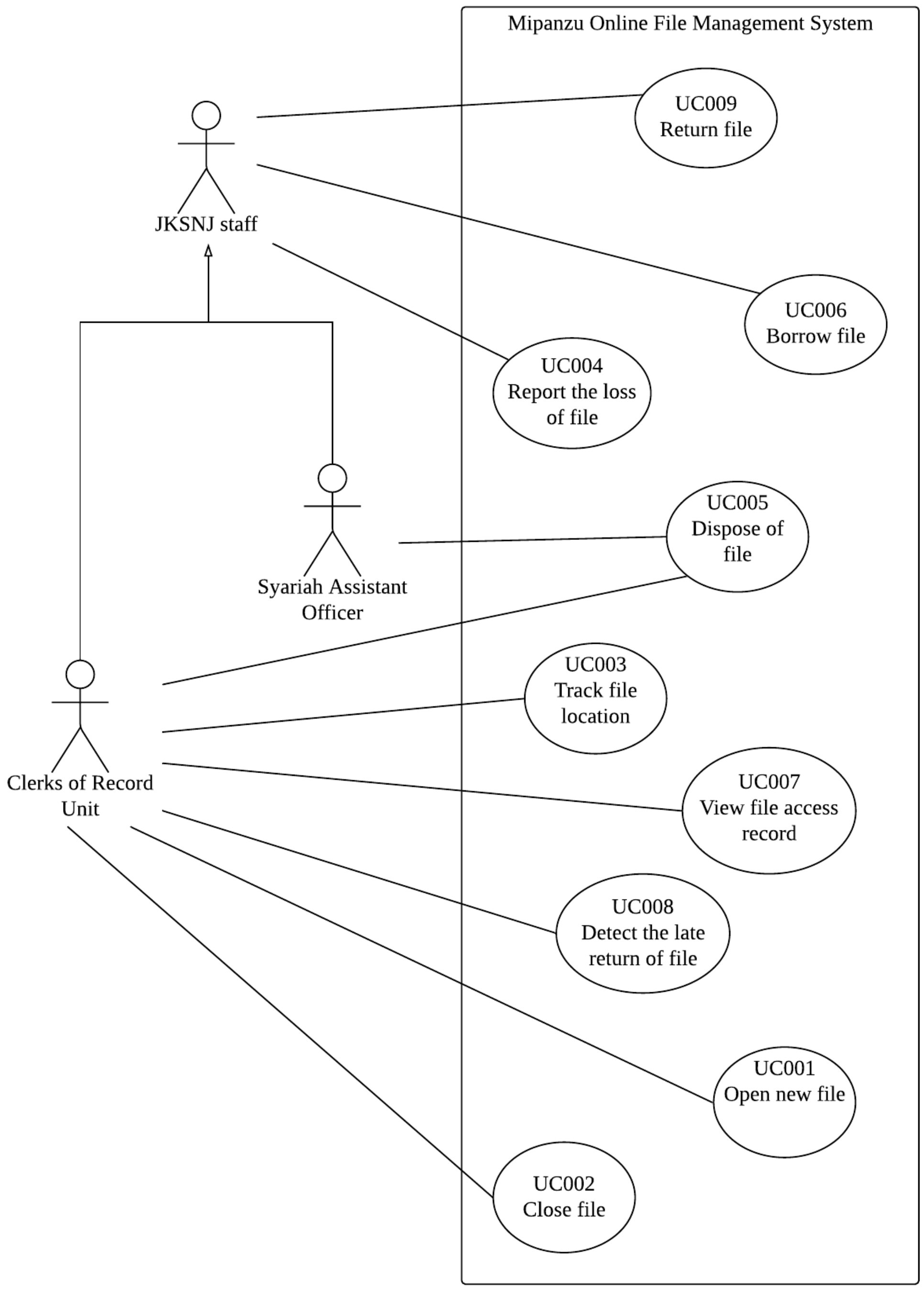

Mipanzu Online File Management System
JKSNJ staff
Syariah Assistant Officer
Clerks of Record Unit
UC009 Return file
UC006 Borrow file
UC004 Report the loss of file
UC005 Dispose of file
UC003 Track file location
UC007 View file access record
UC008 Detect the late return of file
UC001 Open new file
UC002 Close file

Figure 1: Use Case Diagram for Mipanzu Online File Management System

2.1 Functional Perspective: Use Case (UC) Documentation (Specification – UCS) & UML Activity Diagram (AD)

Table 2.1 Use Case Specification for UC001 <Open new file>

Use Case ID	UC001
Use Case Name	Open new file
Description	This use case is used by Clerk of the record unit to open new file in Mipanzu Online File Management System.
Actor(s)	Clerks of the record unit
Pre-condition(s)	A valid clerk of the record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of the record unit keys in the file code of the file. 2. The system automatically checks whether the file with the file code entered exists. 3. If the file exists already, **Exception E1** is performed. 4. The system displays message File does not exist. 5. The clerk of the record unit keys in the file code, security level of file, room number and shelf number of file storage space. 6. The system registers the new file with the file info entered by the clerk of the record unit. 7. The clerk of the record unit keys in the reference number, title and judge note of a letter. 8. The system registers the letter in the letter database. 9. The system adds the letter info into the file created in the file database. 10. The system updates the file database.
Exception Flow(s) - EF	**E1: File exists already** 1. The system displays the file info. 2. Clerk of record unit keys in the reference number of the letter. 3. The system checks whether the letter with the reference number entered exists. 4. If the letter exists 4.1. The system displays an error message. 4.2. The use case ends. 5. Else 5.1. The use case resumes step 7.
Post-condition(s)	A new file is successfully created by the Clerks of the record unit.

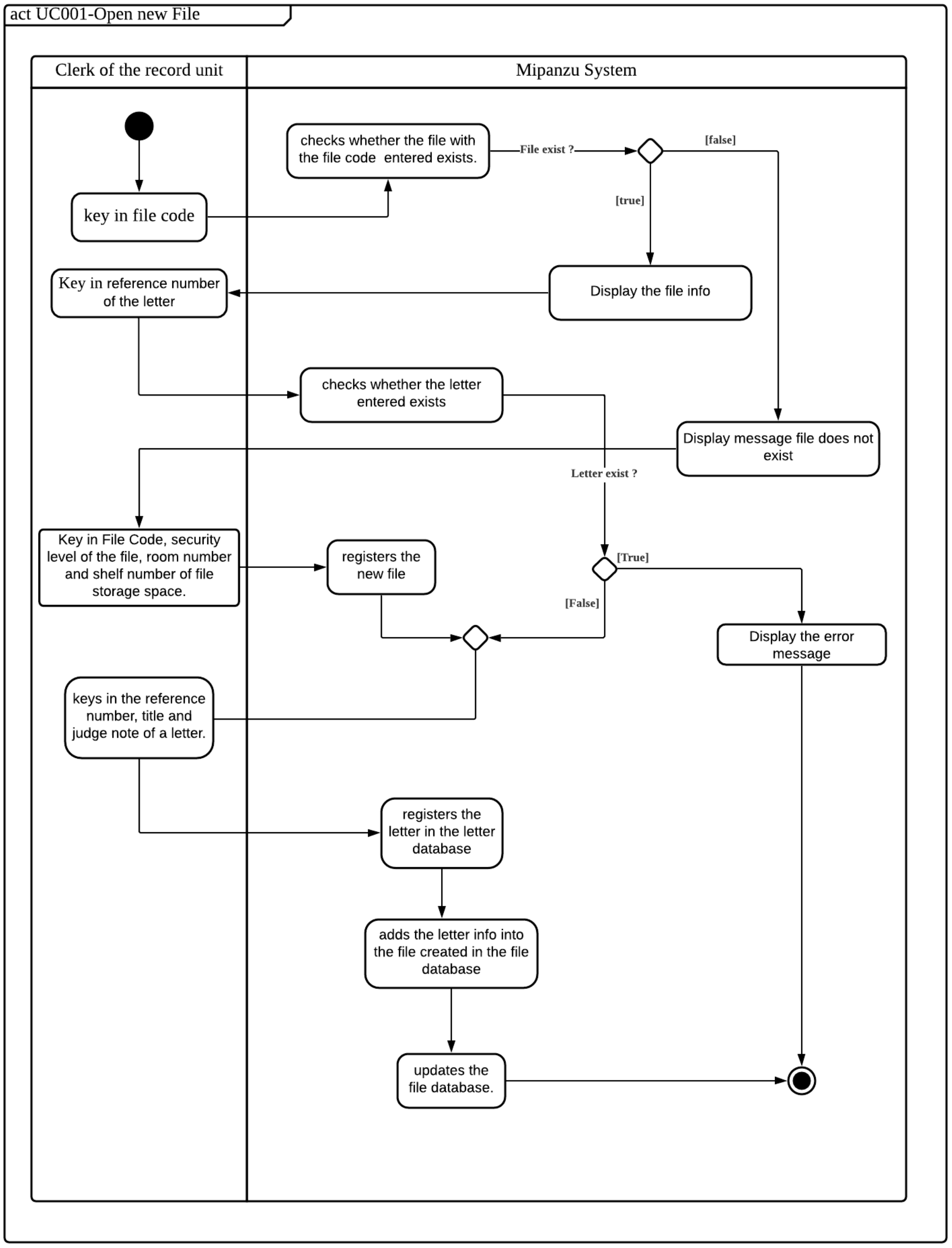

act UC001-Open new File
Clerk of the record unit
Mipanzu System
key in file code
checks whether the file with the file code entered exists.
File exist ?
[false]
[true]
Display the file info
Key in reference number of the letter
checks whether the letter entered exists
Display message file does not exist
Letter exist ?
Key in File Code, security level of the file, room number and shelf number of file storage space.
registers the new file
[True]
[False]
Display the error message
keys in the reference number, title and judge note of a letter.
registers the letter in the letter database
adds the letter info into the file created in the file database
updates the file database.

Figure 2.1: Activity Diagram for UC001 <Open new file>

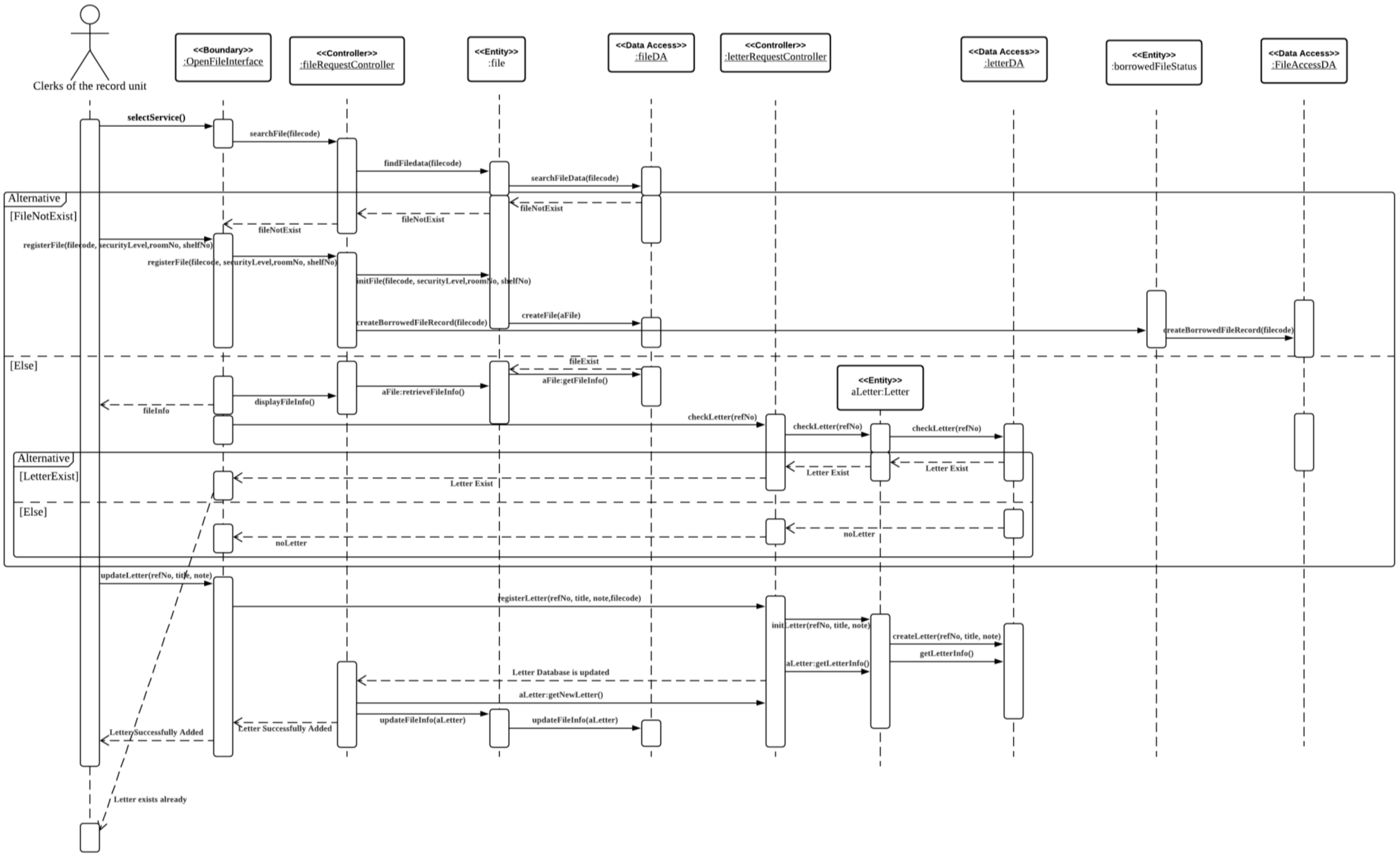

Clerks of the record unit
<<Boundary>> :OpenFileInterface
<<Controller>> :fileRequestController
<<Entity>> :file
<<Data Access>> :fileDA
<<Controller>> :letterRequestController
<<Data Access>> :letterDA
<<Entity>> :borrowedFileStatus
<<Data Access>> :FileAccessDA
selectService()
searchFile(filecode)
findFiledata(filecode)
searchFileData(filecode)
Alternative
[FileNotExist]
fileNotExist
fileNotExist
fileNotExist
registerFile(filecode, securityLevel,roomNo, shelfNo)
registerFile(filecode, securityLevel,roomNo, shelfNo)
initFile(filecode, securityLevel,roomNo, shelfNo)
createFile(aFile)
createBorrowedFileRecord(filecode)
createBorrowedFileRecord(filecode)
[Else]
fileExist
aFile:getFileInfo()
aFile:retrieveFileInfo()
displayFileInfo()
fileInfo
<<Entity>> aLetter:Letter
checkLetter(refNo)
checkLetter(refNo)
checkLetter(refNo)
Alternative
[LetterExist]
Letter Exist
Letter Exist
Letter Exist
[Else]
noLetter
noLetter
updateLetter(refNo, title, note)
registerLetter(refNo, title, note,filecode)
initLetter(refNo, title, note)
createLetter(refNo, title, note)
getLetterInfo()
aLetter:getLetterInfo()
Letter Database is updated
aLetter:getNewLetter()
updateFileInfo(aLetter)
updateFileInfo(aLetter)
Letter Successfully Added
Letter Successfully Added
Letter exists already

Figure 2.1.1: Sequence Diagram for UC001 <Open new file>

Table 2.2 Use Case Specification for UC002 <Close file>

Use Case ID	UC002
Use Case Name	Close file
Description	This use case is used by Clerk of the record unit to close file in Mipanzu Online File Management System.
Actor(s)	Clerks of the record unit
Pre-condition(s)	A valid clerk of the record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of record unit keys in the file code of the file. 2. The system automatically checks whether the file with the file code entered exists. 3. If the file does not exist, **Exception E1** is performed. 4. The system displays file exists message. 5. The clerk of the record unit clicks on the close file button. 6. The system updates the file status to "Closed" in the file database. 7. The system automatically registers a new file with the same file info as the original closed file in the file database. 8. The system sets the subsequent file code to the new file. 9. The system displays the new file code. 10. The clerk of the record unit clicks on delete file to delete the original file info. **[A1]** 11. The system deletes the original file info from the file database.
Post-condition(s)	File is successfully closed by the clerk of the record unit
Alternative Flow(s) - AF	**[A1: The clerk of the record unit doesn't click on delete file button]** 1. The use case ends.
Post-condition(s)	File is successfully closed by the clerk of the record unit
Exception Flow(s) - EF	**E1: File does not exist** 1. The system displays an error message. 2. The use case ends.

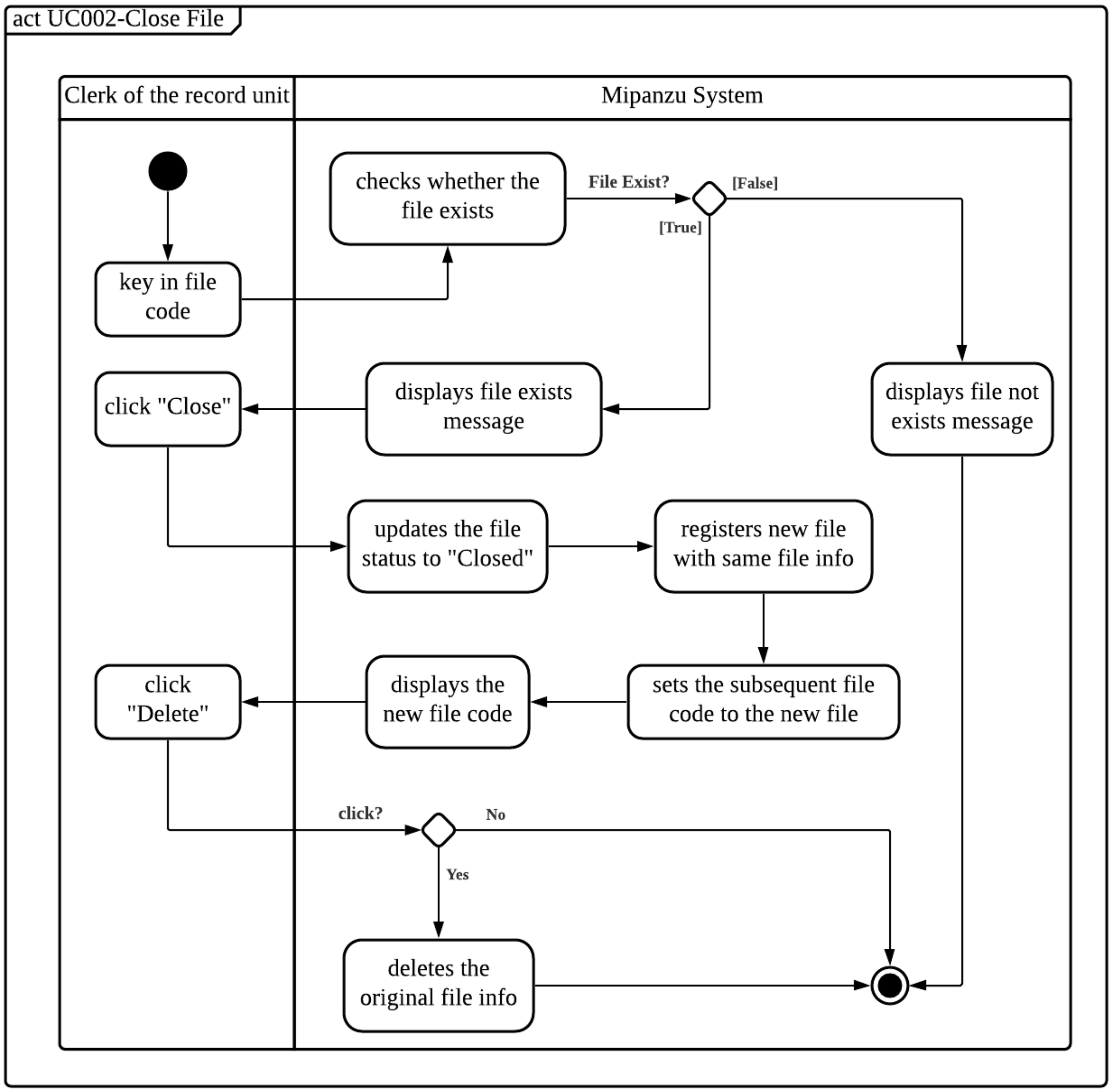

act UC002-Close File
Clerk of the record unit
Mipanzu System
key in file code
checks whether the file exists
File Exist?
[False]
[True]
displays file exists message
displays file not exists message
click "Close"
updates the file status to "Closed"
registers new file with same file info
sets the subsequent file code to the new file
displays the new file code
click "Delete"
click?
No
Yes
deletes the original file info

Figure 2.2: Activity Diagram for UC002 <Close file>

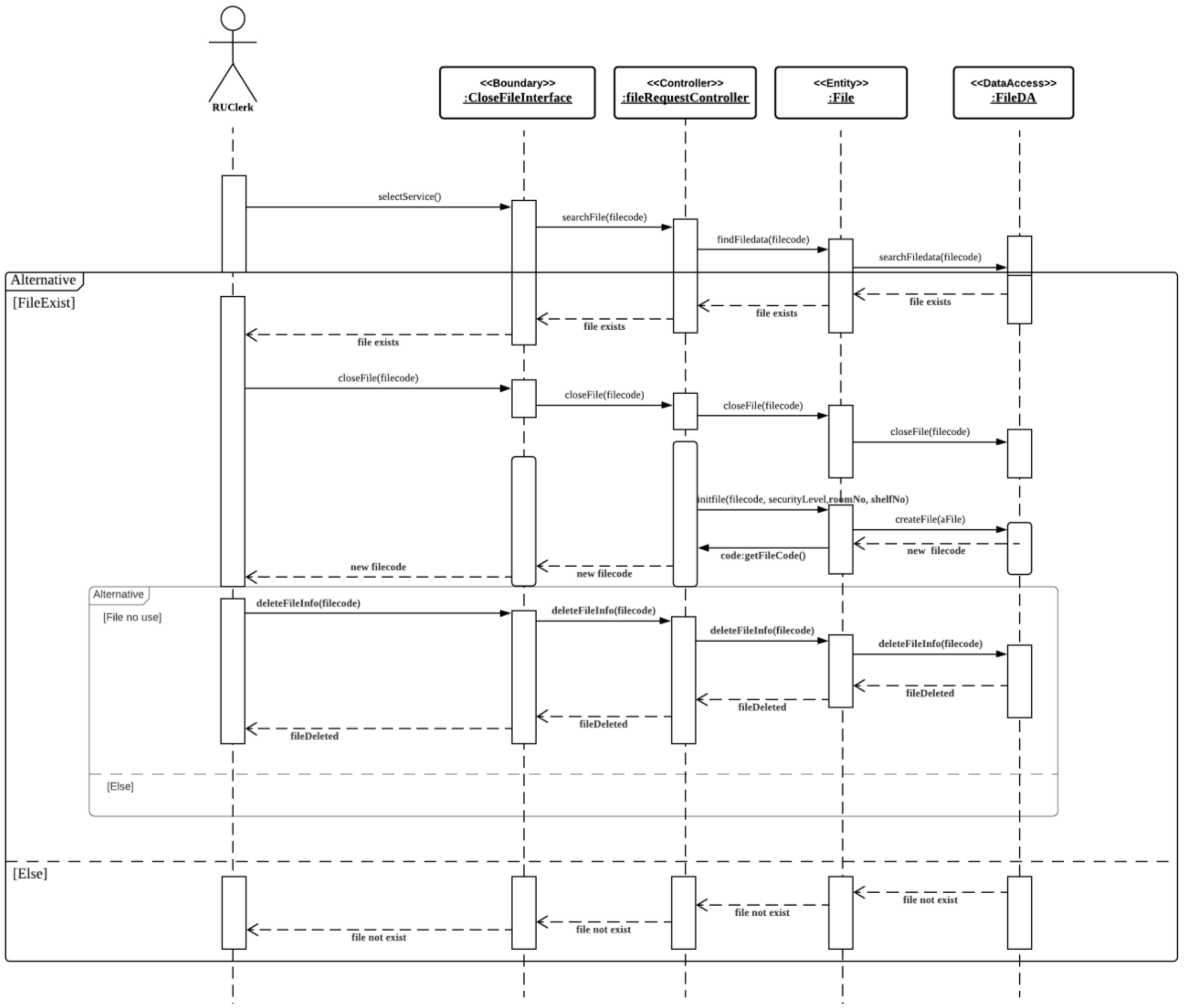


Figure 2.2.1: Sequence Diagram for UC002 <Close file>

Table 2.3 Use Case Specification for UC003 <Track file location>

Use Case ID	UC003
Use Case Name	Track file location
Description	This use case is used by Clerk of the record unit to track file location in Mipanzu Online File Management System.
Actor(s)	Clerks of the record unit
Pre-condition(s)	A valid clerk of the record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of record unit keys in the file code of the file. 2. The system automatically checks whether the file with the file code entered exists. 3. If the file does not exist, **Exception E1** is performed. 4. The system displays file exists message. 5. The clerk of the record unit clicks on the search file button. 6. The system displays the location of the file (room number and shelf number).
Exception Flow(s) - EF	**E1: File does not exist** 1. The system displays an error message. 2. The use case ends.
Post-condition(s)	The file location is successfully tracked.

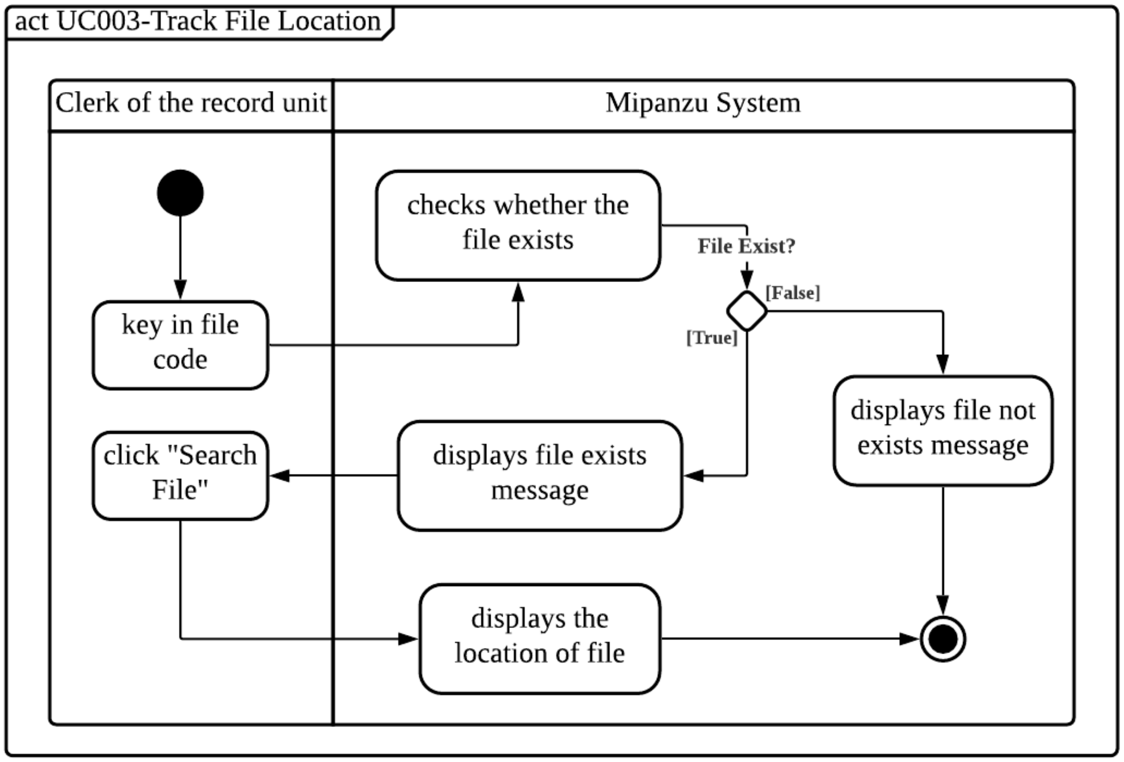

act UC003-Track File Location
Clerk of the record unit
Mipanzu System
checks whether the file exists
File Exist?
[False]
[True]
key in file code
displays file not exists message
click "Search File"
displays file exists message
displays the location of file

Figure 2.3: Activity Diagram for UC003 <Track file location>

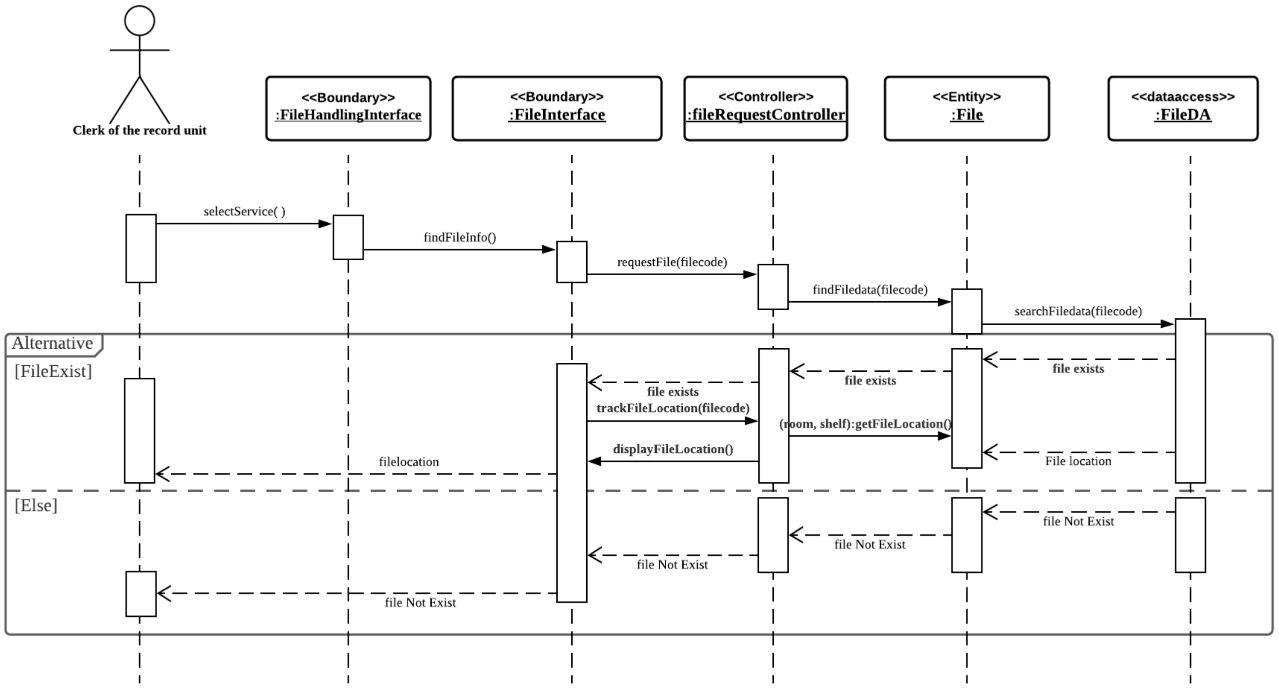


Figure 2.3.1: Sequence Diagram for UC003 <Track file location>

Table 2.4 Use Case Specification for UC004 <Report the loss of file>

Use Case ID	UC004
Use Case Name	Report the loss of file
Description	This use case is used by Clerk of the record unit and JKSNJ staff to report the loss of file in Mipanzu Online File Management System.
Actor(s)	Clerk of record unit Syariah Assistant Officer JKSNJ staff
Pre-condition(s)	A valid clerk of the record unit is logged on to the system.
Normal Flow(s)- NF	1. The JKSNJ staff keys in the file code. 2. The system automatically checks whether the borrow record with the staff's ID and the file code entered exists. 3. If the borrow record does not exist, **Exception E1** is performed. 4. The system displays borrow record found message. 5. The JKSNJ staff clicks on the report file lost button. 6. The system updates the borrow status as lost in the file access database. 7. The system updates the file status as lost in the file database. 8. The system sends notification to Syariah Assistant Officer and the clerk of Record Unit about the file lost with the file code and the info of staff who lost the file.
Exception Flow(s) - EF	**E1: File does not exist** 1. The system displays an error message. 2. The use case ends.
Post-condition(s)	The loss of file is successfully reported.

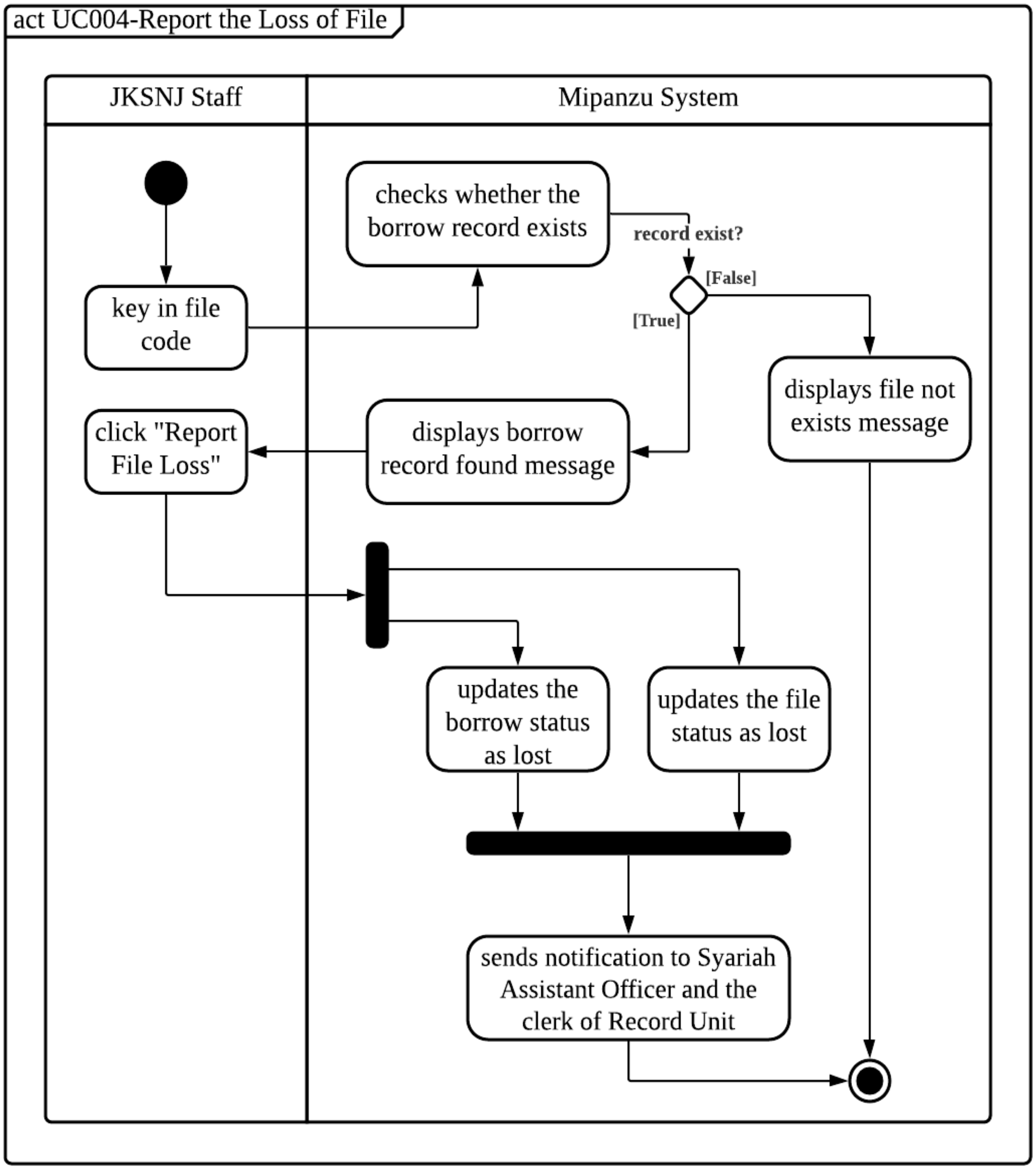

act UC004-Report the Loss of File
JKSNJ Staff
Mipanzu System
key in file code
checks whether the borrow record exists
record exist?
[False]
[True]
displays file not exists message
click "Report File Loss"
displays borrow record found message
updates the borrow status as lost
updates the file status as lost
sends notification to Syariah Assistant Officer and the clerk of Record Unit

Figure 2.4: Activity Diagram for UC004 <Report the loss of file>

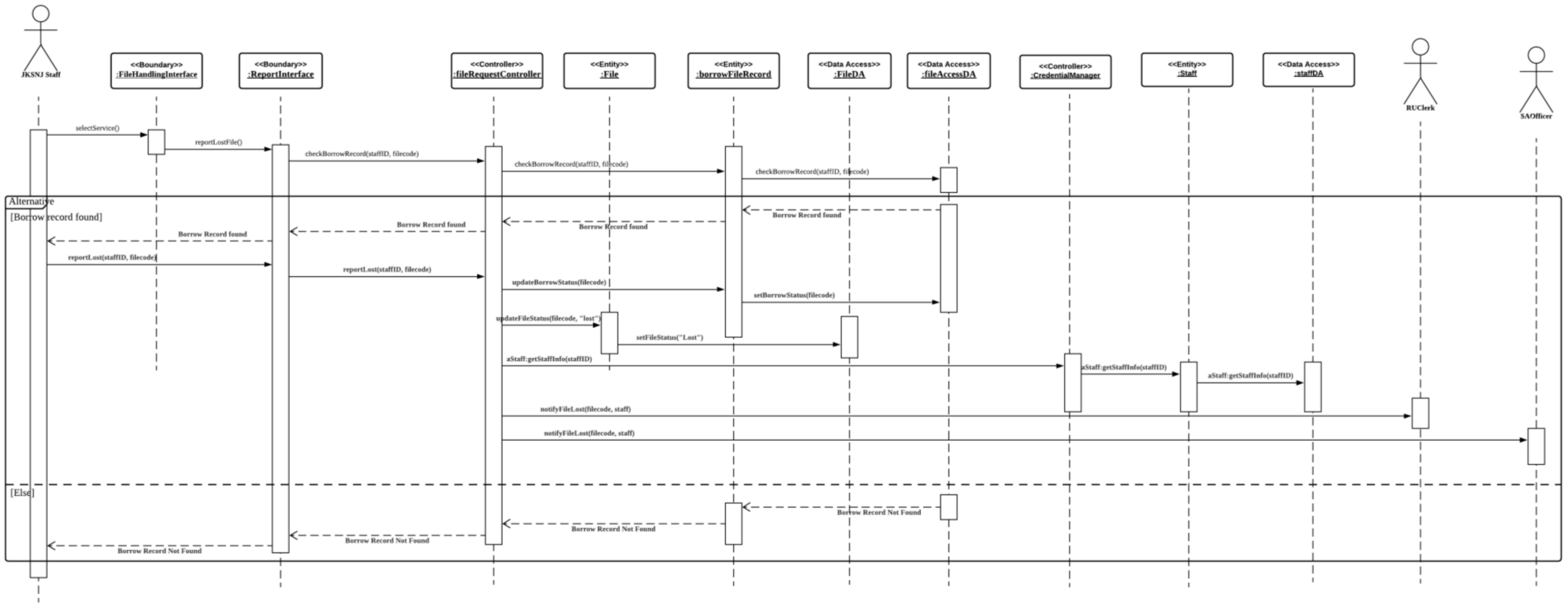

JKSNJ Staff
<<Boundary>> :FileHandlingInterface
<<Boundary>> :ReportInterface
<<Controller>> :fileRequestController
<<Entity>> :File
<<Entity>> :borrowFileRecord
<<Data Access>> :FileDA
<<Data Access>> :fileAccessDA
<<Controller>> :CredentialManager
<<Entity>> :Staff
<<Data Access>> :staffDA
RUClerk
SAOfficer
selectService()
reportLostFile()
checkBorrowRecord(staffID, filecode)
checkBorrowRecord(staffID, filecode)
checkBorrowRecord(staffID, filecode)
Alternative
[Borrow record found]
Borrow Record found
Borrow Record found
Borrow Record found
Borrow Record found
reportLost(staffID, filecode)
reportLost(staffID, filecode)
updateBorrowStatus(filecode)
setBorrowStatus(filecode)
updateFileStatus(filecode, "lost")
setFileStatus("Lost")
aStaff:getStaffInfo(staffID)
aStaff:getStaffInfo(staffID)
aStaff:getStaffInfo(staffID)
notifyFileLost(filecode, staff)
notifyFileLost(filecode, staff)
[Else]
Borrow Record Not Found
Borrow Record Not Found
Borrow Record Not Found
Borrow Record Not Found

Figure 2.4.1: Sequence Diagram for UC004 <Report the loss of file>

Table 2.5 Use Case Specification for UC005 <Dispose of file>

Use Case ID	UC005
Use Case Name	Dispose of file
Description	This use case is used by Clerk of the record unit to dispose file in Mipanzu Online File Management System.
Actor(s)	Clerk of record unit Syariah Assistant Officer JKSNJ staff
Pre-condition(s)	A valid clerk of the record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of record unit clicks on “Show outdated files” to display the files that exceed the maximum storage time. 2. The clerk of the record unit enters the file codes of other damaged files to be disposed of. 3. The clerk of the record unit clicks on Send to submit the file dispose list through the system to Syariah Assistant Officer. 4. Syariah Assistant Officer updates the thickness of files from the file dispose list on the dispose file page. 5. Syariah Assistant Officer applies the file disposal through email to Arkib Negara Malaysia. 6. Syariah Assistant Officer clicks on Add to Disposal Record to insert the files from file disposal list to disposal record in the system. 7. Syariah Assistant Officer receives email of file disposal list with approval status and disposal method from Arkib Negara Malaysia. 8. If the application of file disposal is rejected, **Exception E1** is performed. 9. Syariah Assistant Officer updates the file dispose status as “Approved”. 10. Syariah Assistant Officer updates the file disposal method. 11. The clerk of the record unit views the list of files with approved file disposed status. 12. The clerk of the record unit updates the file dispose date. 13. The clerk of record unit updates the file dispose status as “Disposed”.
Exception Flow(s) - EF	**E1: The application of file disposal is rejected** 1. Syariah Assistant Officer updates the file dispose status as “Rejected”. 2. The use case ends.
Post-condition(s)	File is successfully disposed.

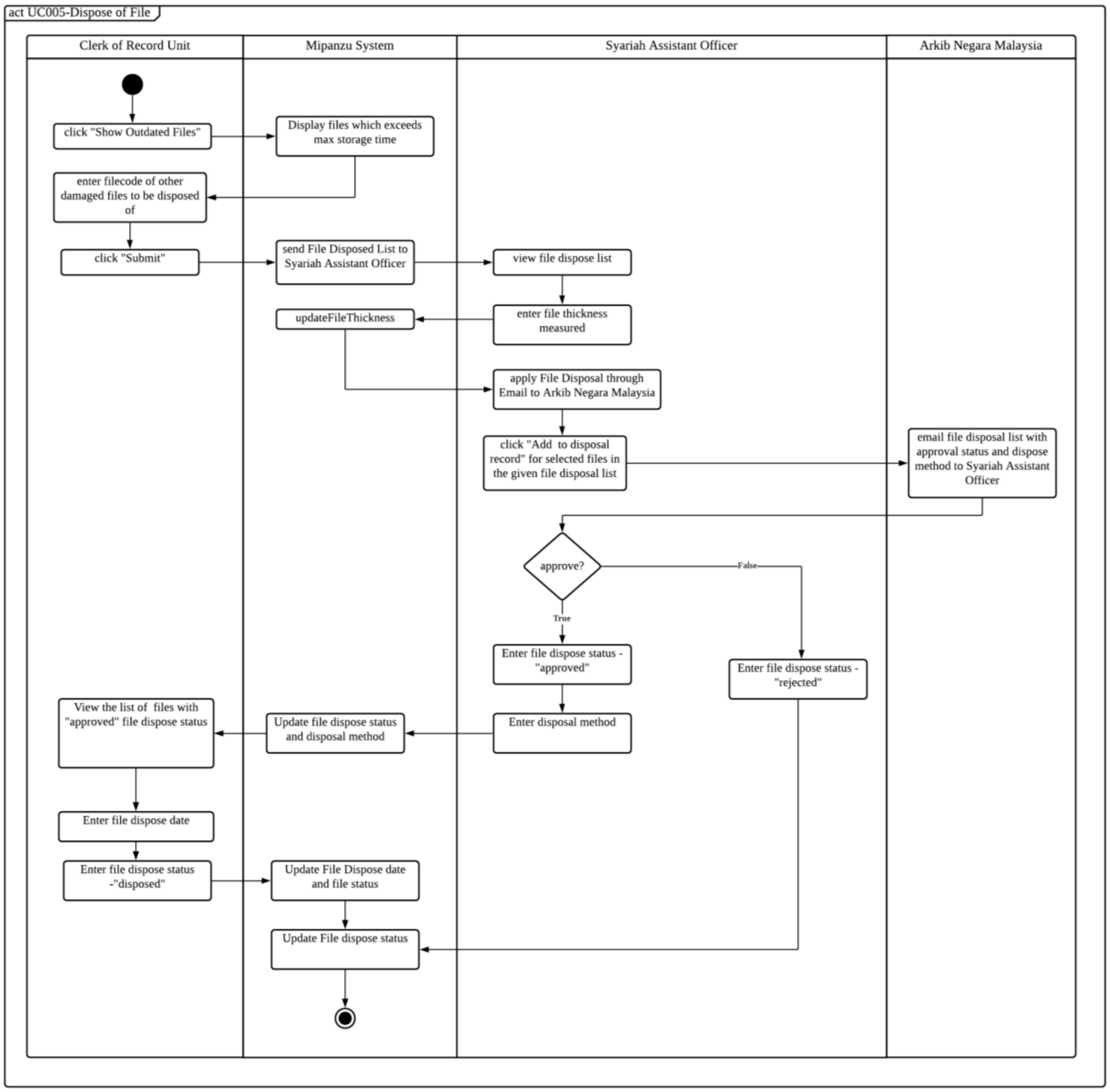
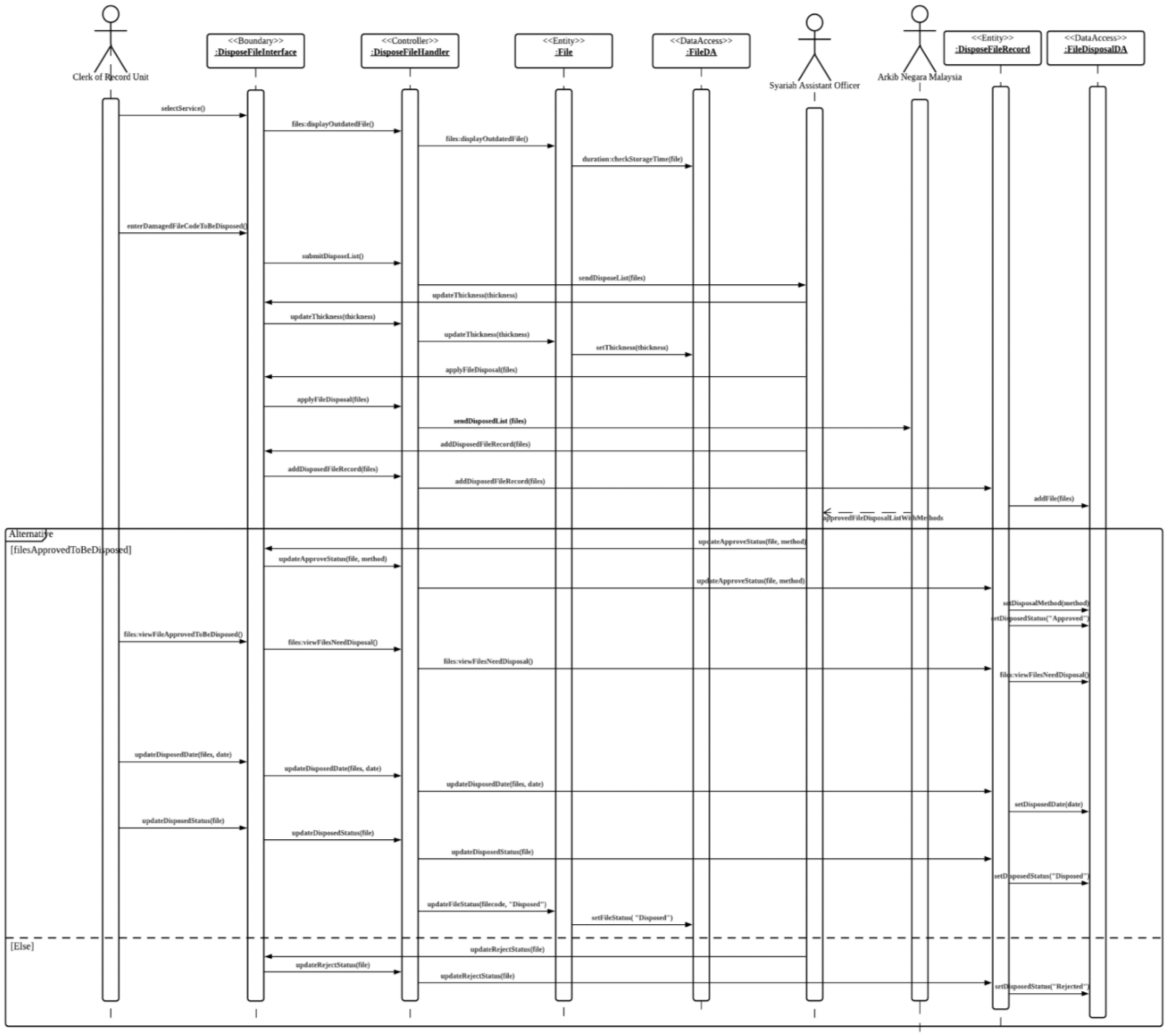

act UC005-Dispose of File
Clerk of Record Unit
Mipanzu System
Syariah Assistant Officer
Arkib Negara Malaysia
click "Show Outdated Files"
Display files which exceeds max storage time
enter filecode of other damaged files to be disposed of
click "Submit"
send File Disposed List to Syariah Assistant Officer
view file dispose list
updateFileThickness
enter file thickness measured
apply File Disposal through Email to Arkib Negara Malaysia
click "Add to disposal record" for selected files in the given file disposal list
email file disposal list with approval status and dispose method to Syariah Assistant Officer
approve?
False
True
Enter file dispose status - "approved"
Enter file dispose status - "rejected"
View the list of files with "approved" file dispose status
Update file dispose status and disposal method
Enter disposal method
Enter file dispose date
Enter file dispose status -"disposed"
Update File Dispose date and file status
Update File dispose status

Figure 2.5: Activity Diagram for UC005 <Dispose of file>



Clerk of Record Unit
<<Boundary>>
:DisposeFileInterface
<<Controller>>
:DisposeFileHandler
<<Entity>>
:File
<<DataAccess>>
:FileDA
Syariah Assistant Officer
Arkib Negara Malaysia
<<Entity>>
:DisposeFileRecord
<<DataAccess>>
:FileDisposalDA
selectService()
files:displayOutdatedFile()
files:displayOutdatedFile()
duration:checkStorageTime(file)
enterDamagedFileCodeToBeDisposed()
submitDisposeList()
sendDisposeList(files)
updateThickness(thickness)
updateThickness(thickness)
updateThickness(thickness)
setThickness(thickness)
applyFileDisposal(files)
applyFileDisposal(files)
sendDisposedList (files)
addDisposedFileRecord(files)
addDisposedFileRecord(files)
addDisposedFileRecord(files)
addFile(files)
approvedFileDisposalListWithMethods
Alternative
[filesApprovedToBeDisposed]
updateApproveStatus(file, method)
updateApproveStatus(file, method)
updateApproveStatus(file, method)
setDisposalMethod(method)
setDisposedStatus("Approved")
files:viewFileApprovedToBeDisposed()
files:viewFilesNeedDisposal()
files:viewFilesNeedDisposal()
files:viewFilesNeedDisposal()
updateDisposedDate(files, date)
updateDisposedDate(files, date)
updateDisposedDate(files, date)
setDisposedDate(date)
updateDisposedStatus(file)
updateDisposedStatus(file)
updateDisposedStatus(file)
setDisposedStatus("Disposed")
updateFileStatus(filecode, "Disposed")
setFileStatus("Disposed")
[Else]
updateRejectStatus(file)
updateRejectStatus(file)
updateRejectStatus(file)
setDisposedStatus("Rejected")

Figure 2.5.1: Sequence Diagram for UC005 <Dispose of file>

Table 2.6 Use Case Specification for UC006 <Borrow file>

Use Case ID	UC006
Use Case Name	Borrow file
Description	This use case is used by JKSNJ staff to borrow file from Clerk of the record unit in Mipanzu Online File Management System.
Actor(s)	Clerk of record unit JKSNJ staff
Pre-condition(s)	A valid JKSNJ staff is logged on to the system.
Normal Flow(s)- NF	1. The JKSNJ staff keys in the file code. 2. The system automatically checks whether the file with the file code entered exists. 3. If the file does not exist, **Exception E1** is performed. 4. The system automatically checks whether the file with the file code entered is still available (not borrowed). 5. If the file is not available, **Exception E2** is performed. 6. The system automatically checks whether the staff has the privilege to borrow the file. 7. If the staff does not have the privilege to borrow the file, **Exception E3** is performed. 8. The system creates a borrow ID. 9. The system updates the file access database. 10. The system shows the borrow ID to the staff on the borrow file interface. 11. The clerk of the record unit keys in the borrow ID. 12. The system displays the borrow record.
Exception Flow(s) - EF	**E1: File does not exist** 1. The system displays File not found message. 2. The use case ends. **E2: File is not available** 1. The system displays the last borrower's name and staff ID. 2. The system displays File is not available message. 3. The use case ends. **E3: The staff does not have the privilege to borrow the file** 1. The system displays message No right to borrow the file. 2. The use case ends.
Post-condition(s)	File is successfully borrowed by the JKSNJ staff.

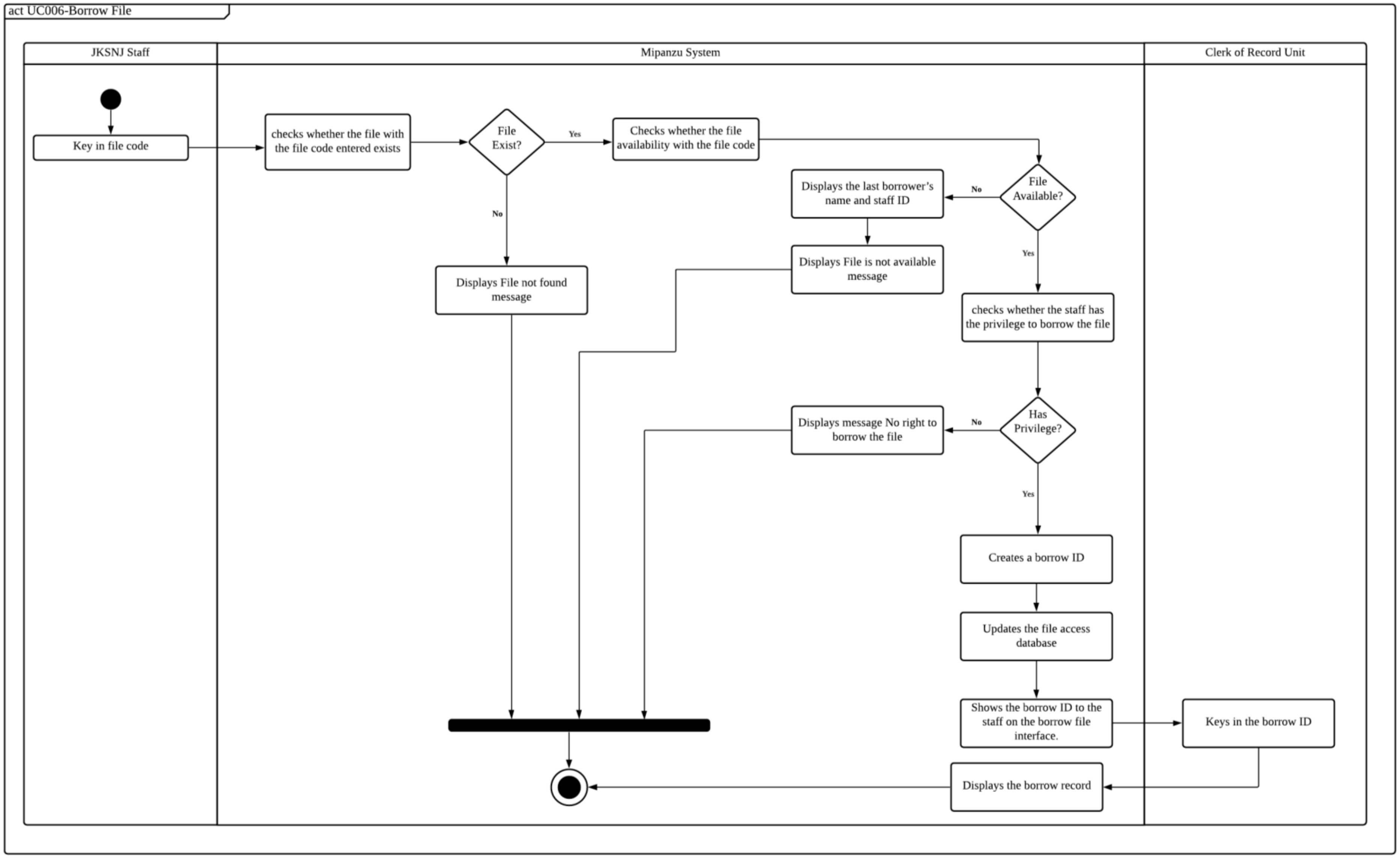

act UC006-Borrow File
JKSNJ Staff
Mipanzu System
Clerk of Record Unit
Key in file code
checks whether the file with the file code entered exists
File Exist?
Yes
No
Checks whether the file availability with the file code
File Available?
No
Yes
Displays the last borrower's name and staff ID
Displays File is not available message
Displays File not found message
checks whether the staff has the privilege to borrow the file
Has Privilege?
No
Yes
Displays message No right to borrow the file
Creates a borrow ID
Updates the file access database
Shows the borrow ID to the staff on the borrow file interface.
Keys in the borrow ID
Displays the borrow record

Figure 2.6: Activity Diagram for UC006 <Borrow file>

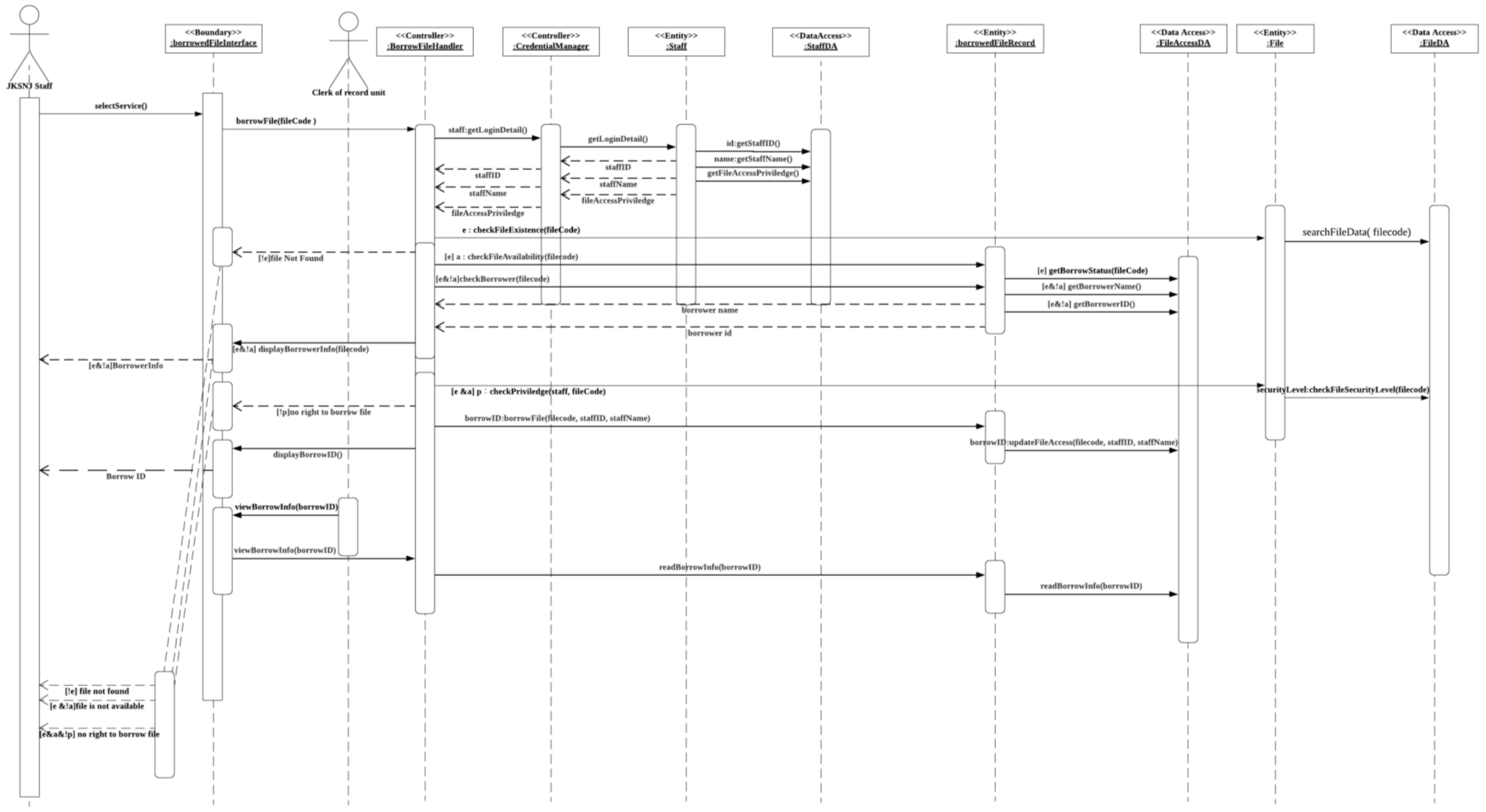

JKSNJ Staff
<<Boundary>> :borrowedFileInterface
Clerk of record unit
<<Controller>> :BorrowFileHandler
<<Controller>> :CredentialManager
<<Entity>> :Staff
<<DataAccess>> :StaffDA
<<Entity>> :borrowedFileRecord
<<Data Access>> :FileAccessDA
<<Entity>> :File
<<Data Access>> :FileDA
selectService()
borrowFile(fileCode)
staff:getLoginDetail()
getLoginDetail()
id:getStaffID()
name:getStaffName()
getFileAccessPriviledge()
staffID
staffName
fileAccessPriviledge
staffID
staffName
fileAccessPriviledge
e : checkFileExistence(fileCode)
searchFileData(filecode)
[!e]file Not Found
[e] a : checkFileAvailability(filecode)
[e] getBorrowStatus(fileCode)
[e&!a]checkBorrower(filecode)
[e&!a] getBorrowerName()
[e&!a] getBorrowerID()
borrower name
borrower id
[e&!a] displayBorrowerInfo(filecode)
[e&!a]BorrowerInfo
[e &a] p：checkPriviledge(staff, fileCode)
securityLevel:checkFileSecurityLevel(filecode)
[!p]no right to borrow file
borrowID:borrowFile(filecode, staffID, staffName)
borrowID:updateFileAccess(filecode, staffID, staffName)
displayBorrowID()
Borrow ID
viewBorrowInfo(borrowID)
viewBorrowInfo(borrowID)
readBorrowInfo(borrowID)
readBorrowInfo(borrowID)
[!e] file not found
[e &!a]file is not available
[e&a&!p] no right to borrow file

Figure 2.6.1: Sequence Diagram for UC006 <Borrow file>

Table 2.7 Use Case Specification for UC007 <View file access record>

Use Case ID	UC007
Use Case Name	View file access record
Description	This use case is used by Clerk of the record unit t view file access record in Mipanzu Online File Management System.
Actor(s)	Clerk of record unit
Pre-condition(s)	A valid Clerk of record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of record unit keys in the file code of the file. 2. The system automatically checks whether the file with the file code entered exists. 3. If the file does not exist, **Exception E1** is performed. 4. The system displays the file access record.
Exception Flow(s) - EF	**E1: File does not exist** The system displays an error message. The use case ends.
Post-condition(s)	File access record is successfully viewed by Clerk of the record unit

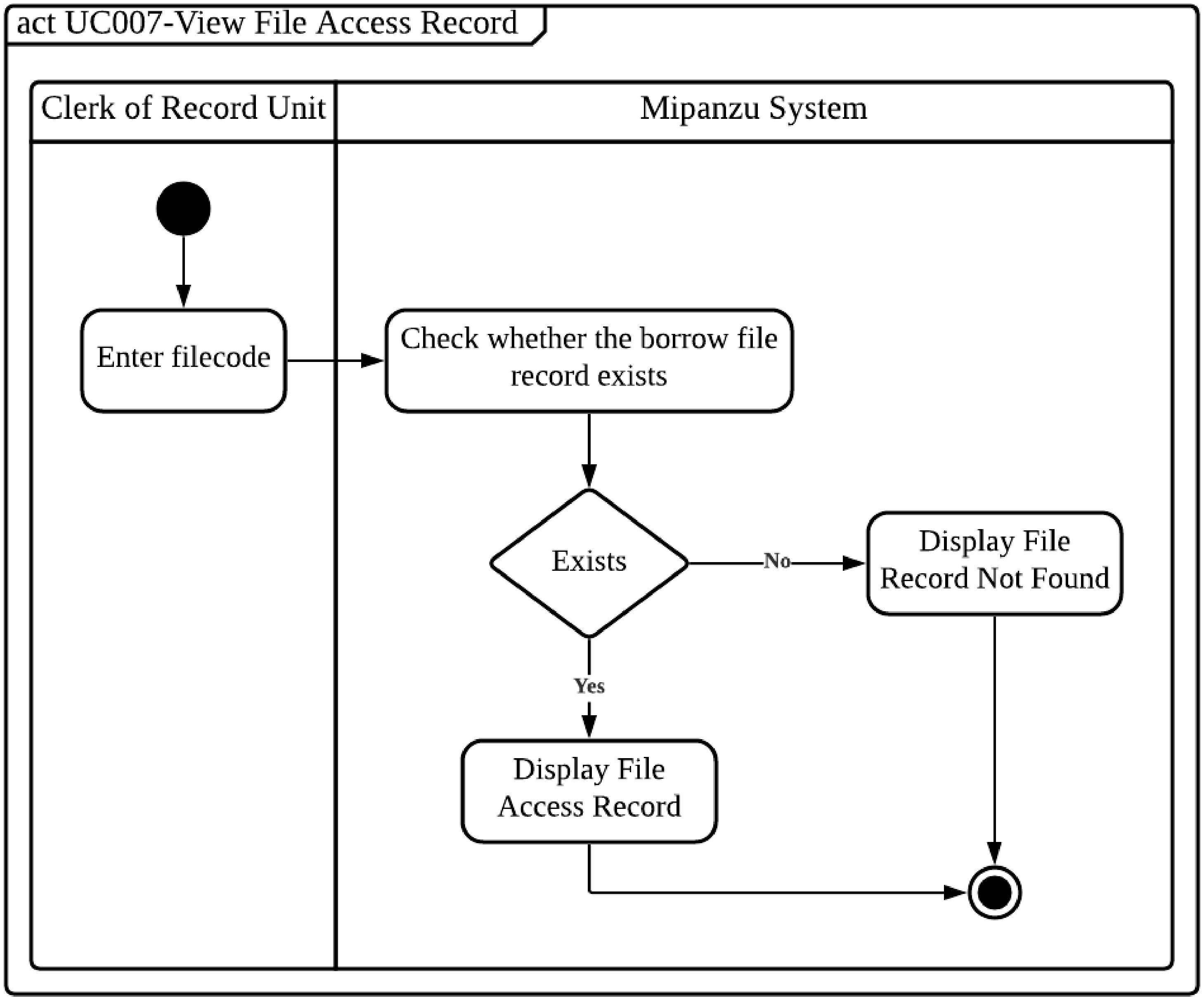

act UC007-View File Access Record
Clerk of Record Unit
Mipanzu System
Enter filecode
Check whether the borrow file record exists
Exists
No
Display File Record Not Found
Yes
Display File Access Record

Figure 2.7: Activity Diagram for UC007 <View file access record>

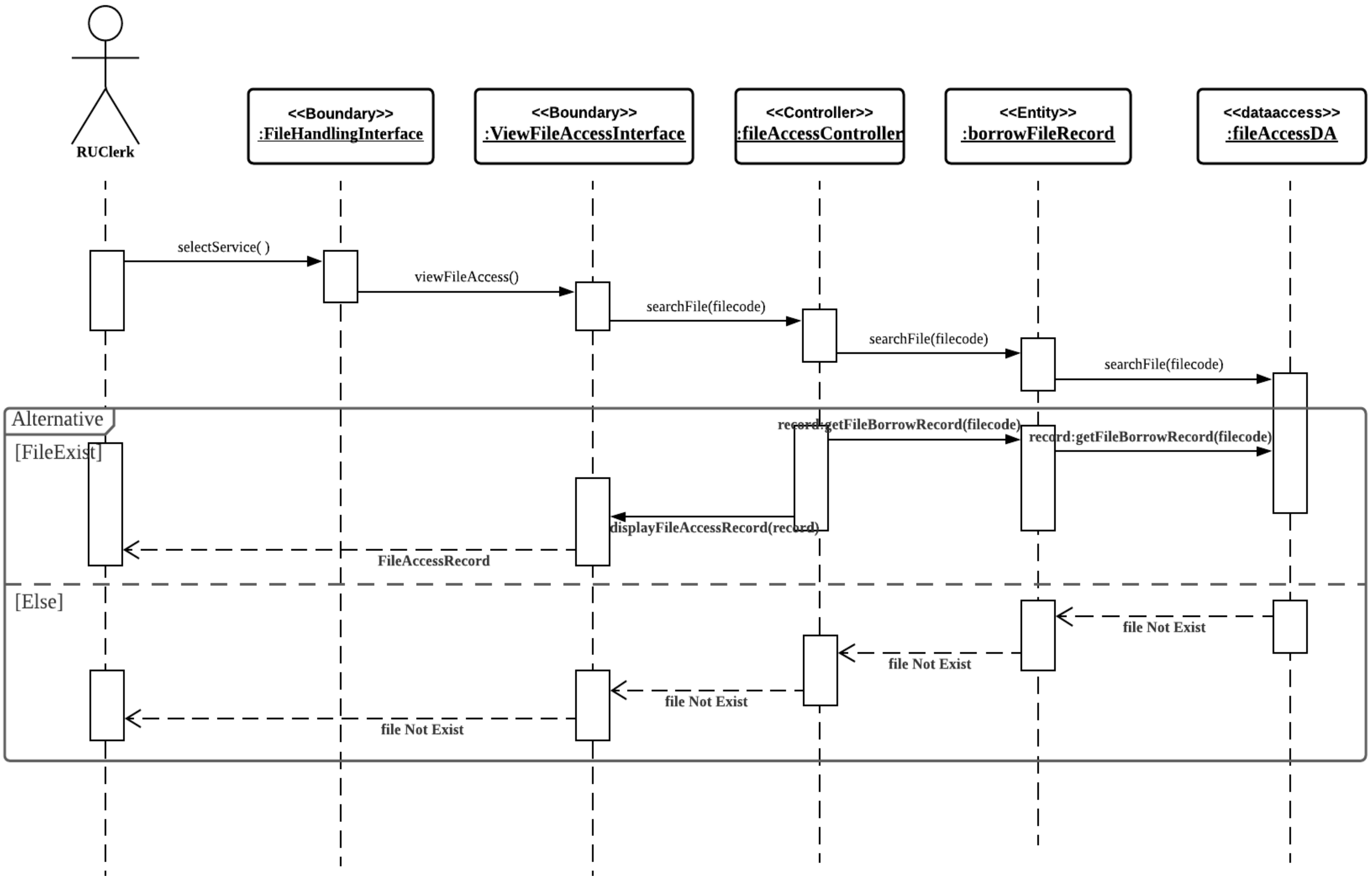

RUClerk
<<Boundary>> :FileHandlingInterface
<<Boundary>> :ViewFileAccessInterface
<<Controller>> :fileAccessController
<<Entity>> :borrowFileRecord
<<dataaccess>> :fileAccessDA
selectService( )
viewFileAccess()
searchFile(filecode)
searchFile(filecode)
searchFile(filecode)
Alternative
[FileExist]
record:getFileBorrowRecord(filecode)
record:getFileBorrowRecord(filecode)
displayFileAccessRecord(record)
FileAccessRecord
[Else]
file Not Exist
file Not Exist
file Not Exist
file Not Exist

Figure 2.7.1: Sequence Diagram for UC007 <View file access record>

Table 2.8 Use Case Specification for UC008 <Detect the late return of file>

Use Case ID	UC008
Use Case Name	Detect the late return of file
Description	This use case is used by Clerk of the record unit to detect the late return of file by JJKSNJ staff in Mipanzu Online File Management System.
Actor(s)	JKSNJ staff Clerk of the record unit
Pre-condition(s)	A valid Clerk of record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of the record unit clicks on the View File Late Return button. 2. The system displays the list of files that exceeds the return deadline with their file access record. 3. The system notifies the last borrower of the files in the late return file list.
Post-condition(s)	1. The list of files that exceed the deadline of return is successfully viewed. 2. The return file notification is successfully sent to the last borrowers.

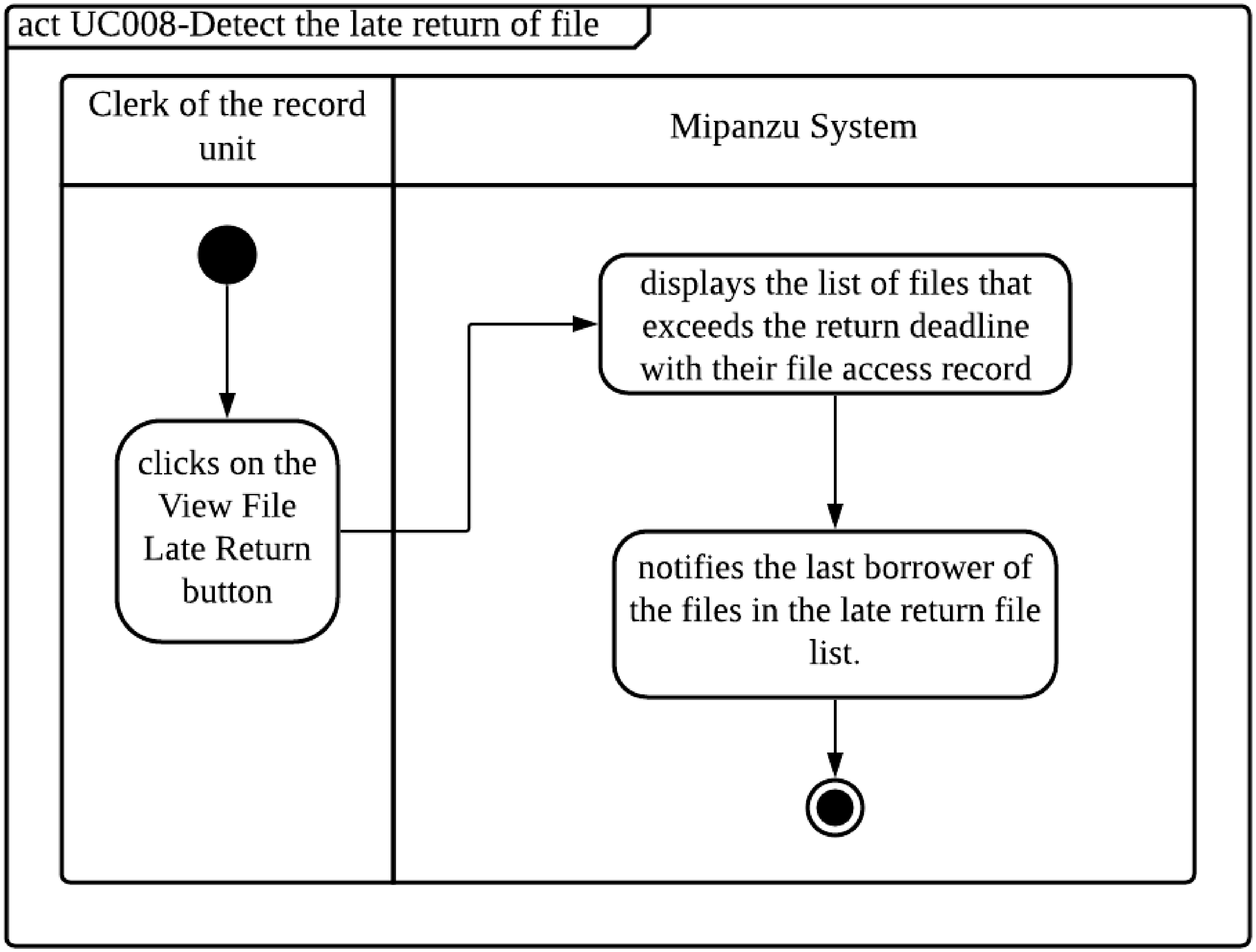

act UC008-Detect the late return of file
Clerk of the record unit
Mipanzu System
clicks on the View File Late Return button
displays the list of files that exceeds the return deadline with their file access record
notifies the last borrower of the files in the late return file list.

Figure 2.8: Activity Diagram for UC008 <Detect the late return of file>

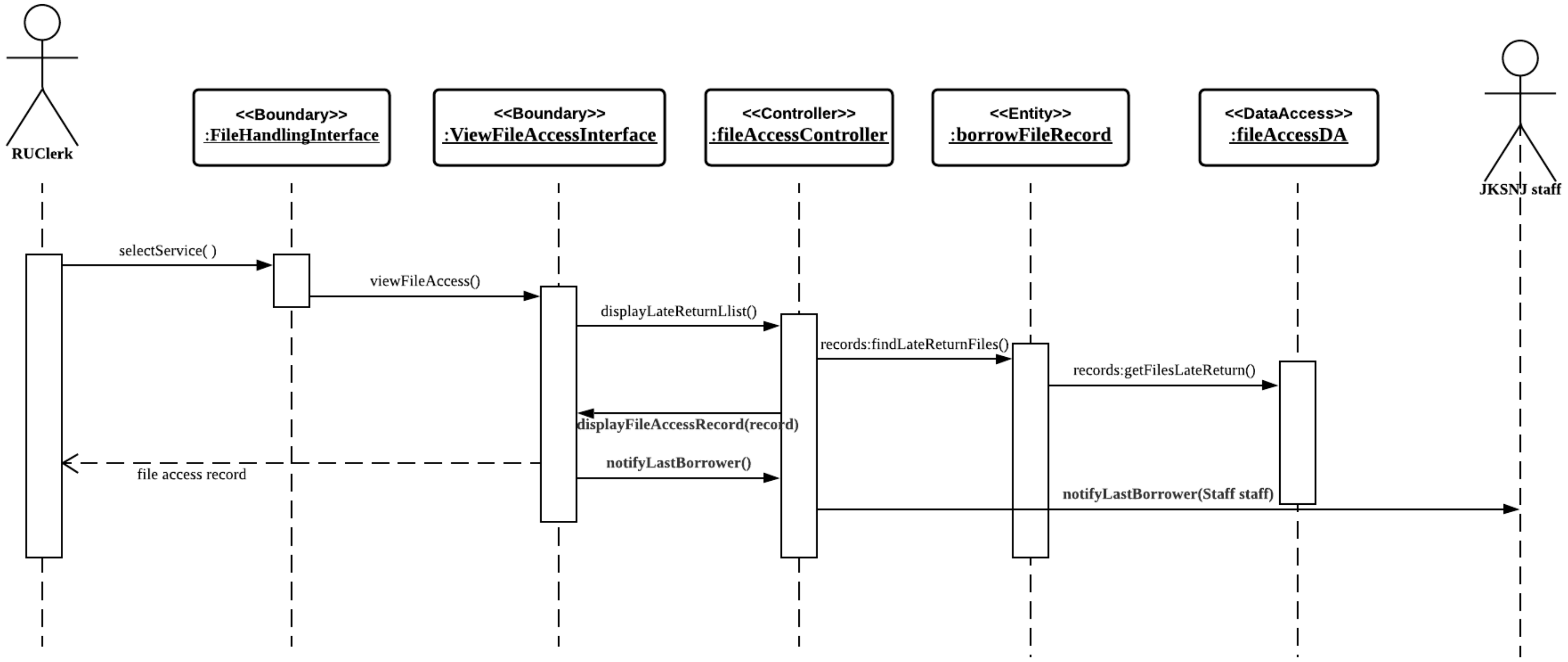

RUClerk
<<Boundary>> :FileHandlingInterface
<<Boundary>> :ViewFileAccessInterface
<<Controller>> :fileAccessController
<<Entity>> :borrowFileRecord
<<DataAccess>> :fileAccessDA
JKSNJ staff
selectService( )
viewFileAccess()
displayLateReturnLlist()
records:findLateReturnFiles()
records:getFilesLateReturn()
displayFileAccessRecord(record)
file access record
notifyLastBorrower()
notifyLastBorrower(Staff staff)

Figure 2.8.1: Sequence Diagram for UC008 <Detect the late return of file>

Table 2.9 Use Case Specification for UC009 <Return file>

Use Case ID	UC009
Use Case Name	Return file
Description	This use case is used by JKSNJ staff to return file to Clerk of the record unit in Mipanzu Online File Management System.
Actor(s)	JKSNJ staff Clerk of the record unit
Pre-condition(s)	1. A JKSNJ staff is taking the file that they borrowed to the counter of JKSNJ. 2. A valid clerk of the record unit is logged on to the system.
Normal Flow(s)- NF	1. The clerk of the record unit keys in the borrow ID. 2. The system automatically checks whether the borrow record with the borrow ID entered exists. 3. If the borrow record does not exist, **Exception E1** is performed. 4. The system displays the file borrow info. 5. The clerk of the record unit clicks on the Return File button. 6. The system updates the borrow status in the file access database.
Exception Flow(s) - EF	**E1: Borrow Record does not exist** The system displays an error message. The use case ends.
Post-condition(s)	File is successfully returned from the JKSNJ staff

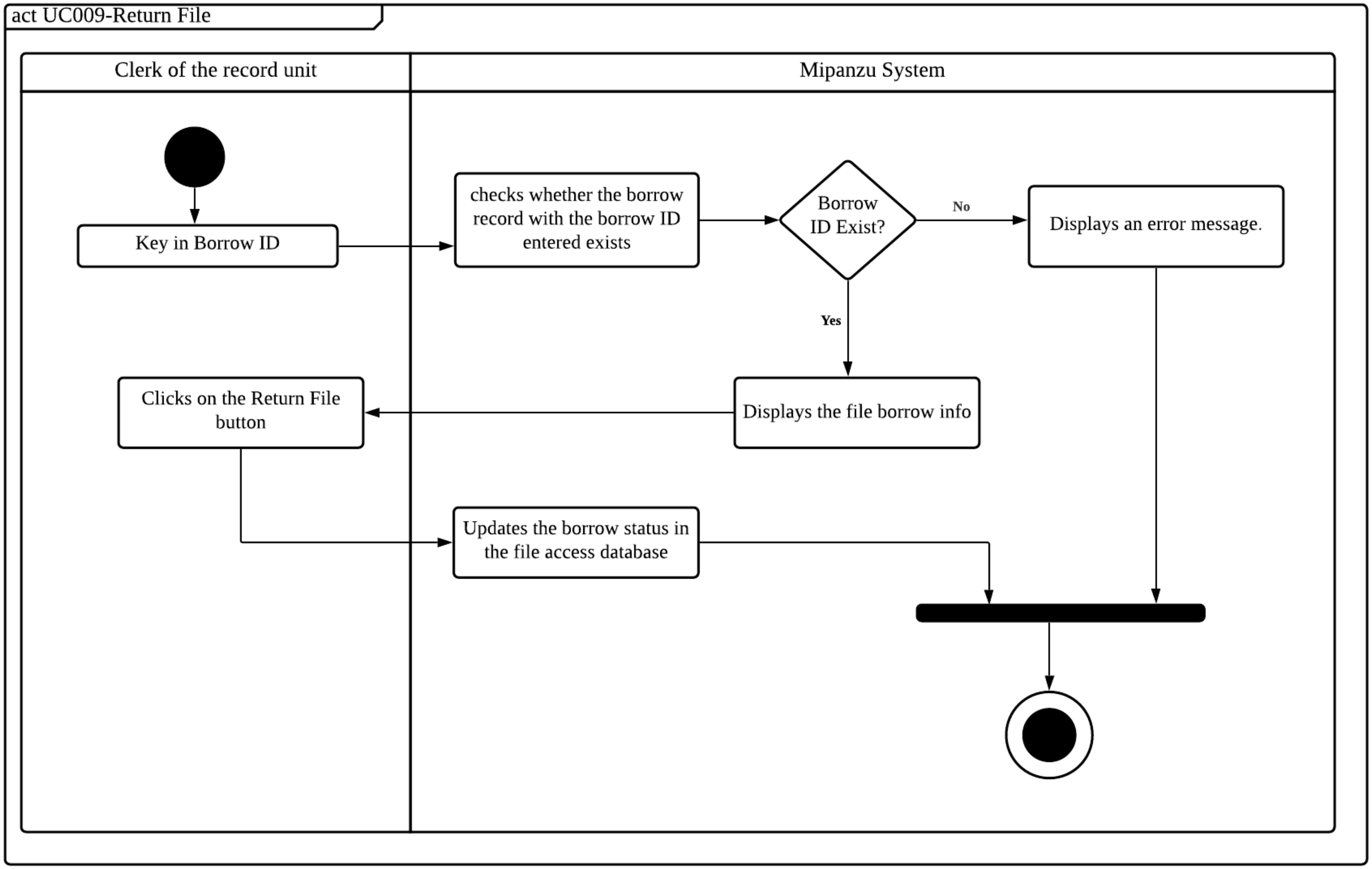

act UC009-Return File
Clerk of the record unit
Mipanzu System
Key in Borrow ID
checks whether the borrow record with the borrow ID entered exists
Borrow ID Exist?
No
Displays an error message.
Yes
Displays the file borrow info
Clicks on the Return File button
Updates the borrow status in the file access database

Figure 2.9: Activity Diagram for UC009 <Return file>

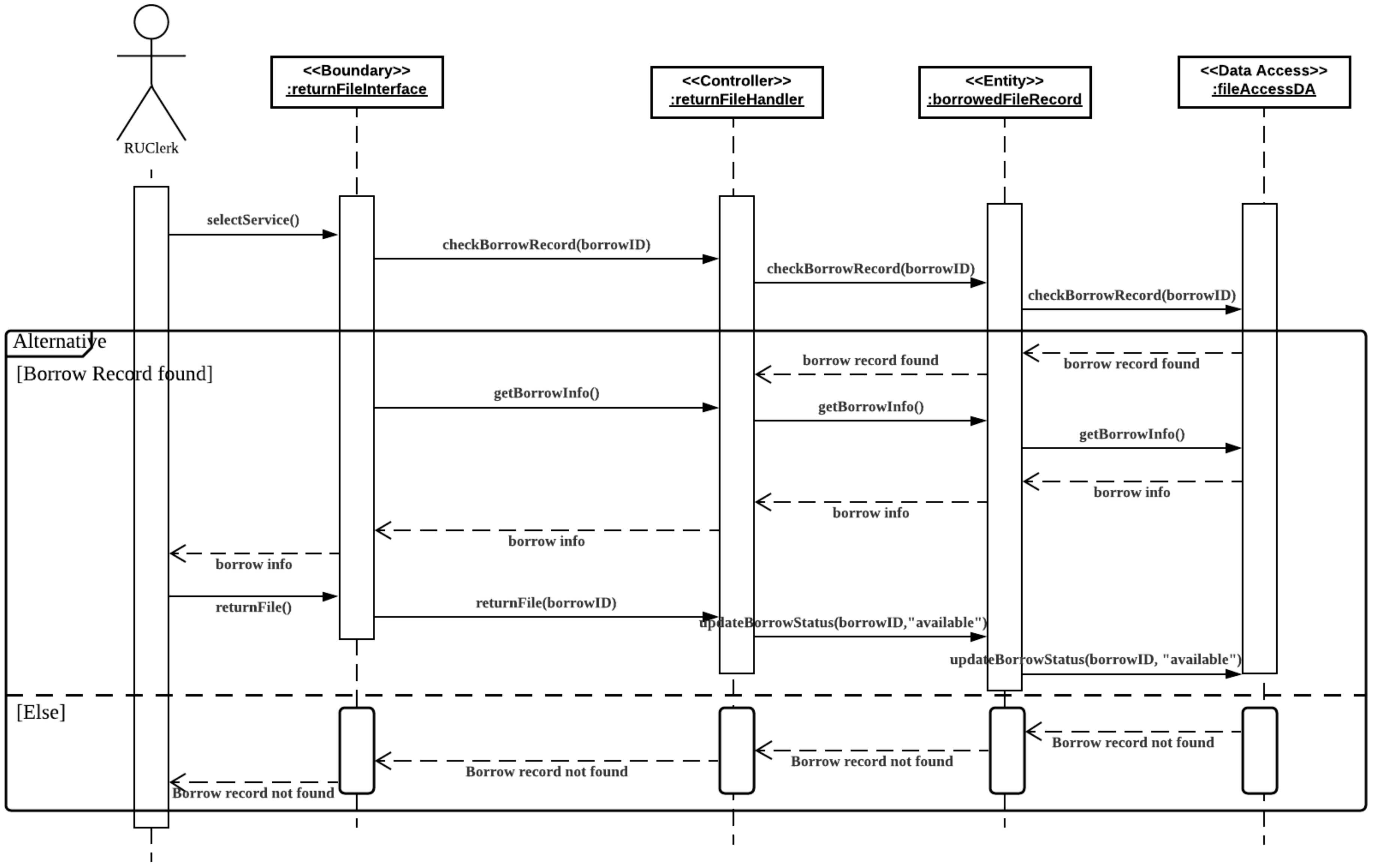


Figure 2.9.1: Sequence Diagram for UC009 <Return file>

3. Data Perspective: UML Domain Class Diagram (DCD)

For UML Domain Class Diagram, there are several entities that need to be created in the system which are Staff, File, borrowedFileRecord, file DisposedRecord and Letter. They are also two entity that will inherit the staff attributes which are the SAOfficer and RUClerk which is a more specific position that have their own unique attributes. For relationship, one staff may borrow and return one or many Files. At the same time, one Staff Administrator Officer (SAOfficer) may examine and monitor one or many borrowedFileRecord and fileDisposedRecord. Other than that, one Clerks of the record unit also can open and close one and many Files. File has a composition relationship with Letter which means that the Letter cannot exist if there are no File. One or many Files may contain one Letter. File also has an aggregation relationship with borrowedFileRecord therefore one or many Files will have one or many borrowedFileRecord. Meanwhile, fileDisposedRecord has an aggregation relationship with file so one or many fileDisposedRecord will has and list out one or many Files. The aggregation relationship means that the borrowedFileRecord belongs to File while File belongs to fileDisposedRecord.

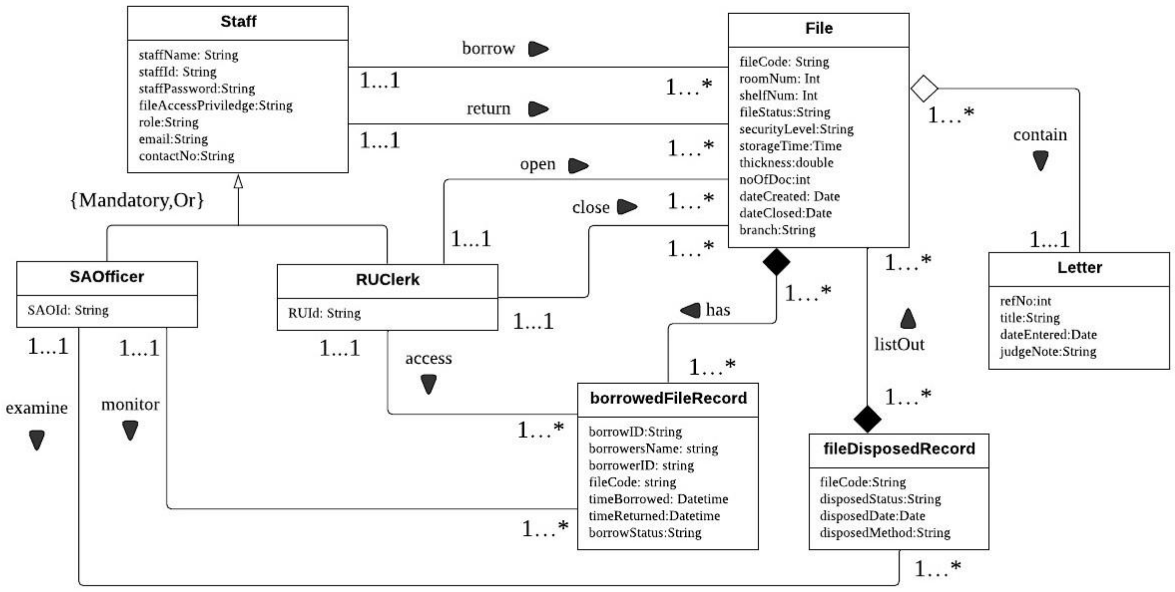
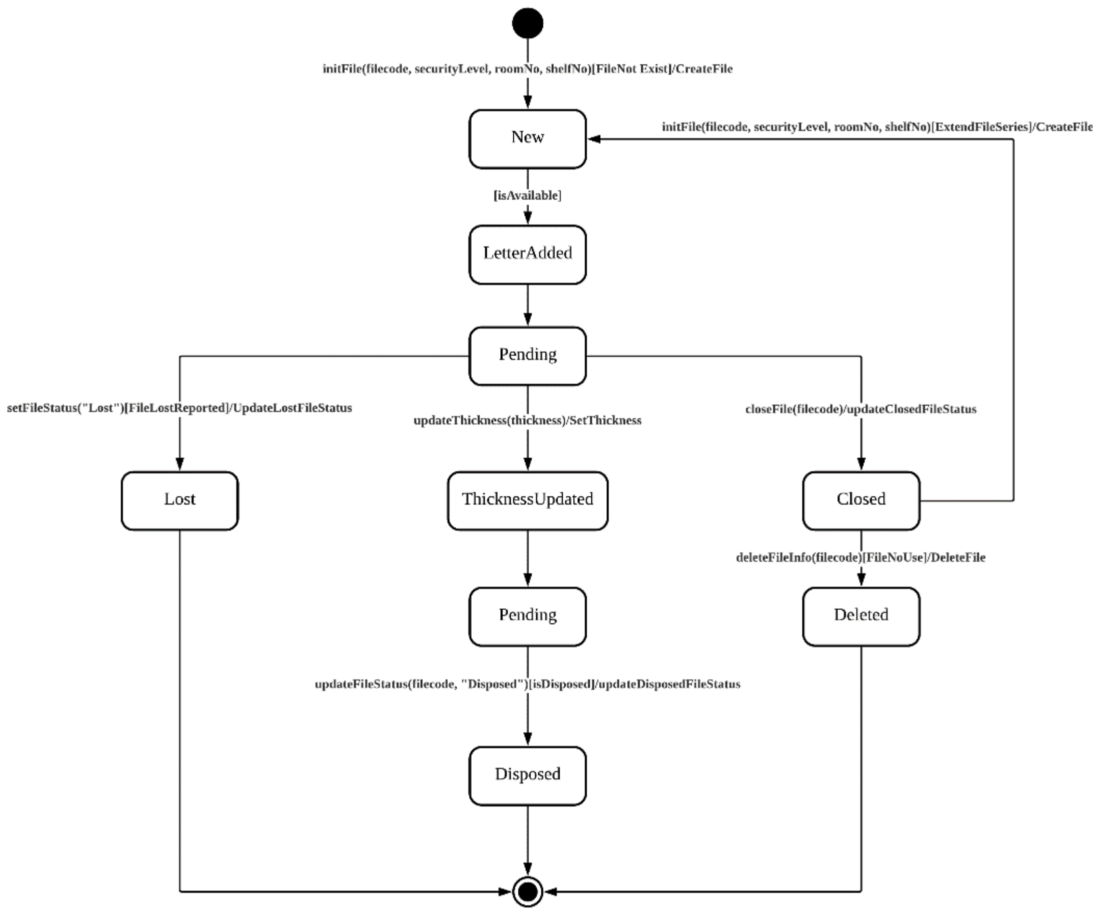


Figure 3.0: Domain Class Diagram for Mipanzu Online File Management System

4. Behavioral Perspective: UML State-Transition Diagram (STD)

For UML State-Transition Diagram, there are several entities class that is created for state-transition diagram which are File, borrowedFileRecord, file DisposedRecord. Not only that, there are two controller class that have been created as well which is disposeFileHandler and borrowFileHandler. These classes are chosen because each of these entities have their own states and will change between states when they are triggered.



initFile(filecode, securityLevel, roomNo, shelfNo)[FileNot Exist]/CreateFile
New
initFile(filecode, securityLevel, roomNo, shelfNo)[ExtendFileSeries]/CreateFile
[isAvailable]
LetterAdded
Pending
setFileStatus("Lost")[FileLostReported]/UpdateLostFileStatus
updateThickness(thickness)/SetThickness
closeFile(filecode)/updateClosedFileStatus
Lost
ThicknessUpdated
Closed
deleteFileInfo(filecode)[FileNoUse]/DeleteFile
Pending
Deleted
updateFileStatus(filecode, "Disposed")[isDisposed]/updateDisposedFileStatus
Disposed

Figure 4.1: State-Transition Diagram for <File Class>

Figure 4.1 shows the state transition diagram for file class. A new file will be created first in the system. Then, the new state will change into letter added state as every file need to include a letter. Then, the file class will change the state into pending as they will be three different state that can happen to the file class based on the arguments and condition. The first condition is when the file status is lost. This will make the file class to change into lost and the state transition will end there. The second condition is when the file need to be disposed. First, the file state will change into thickness updated as we need to update the thickness of the file. Then, the file will change it state into pending as file class need to make sure that the file fulfills the condition to be disposed. Lastly, the file class will change its state into disposed and the state transition end there. The third condition made the file class to change its current state into closed. Then, the state will change either to a new file or deleted. The state change into a new file as the file that is closed will be used to attach to a new file created. For deleted, the file will be in the deleted state and the state transition end here.

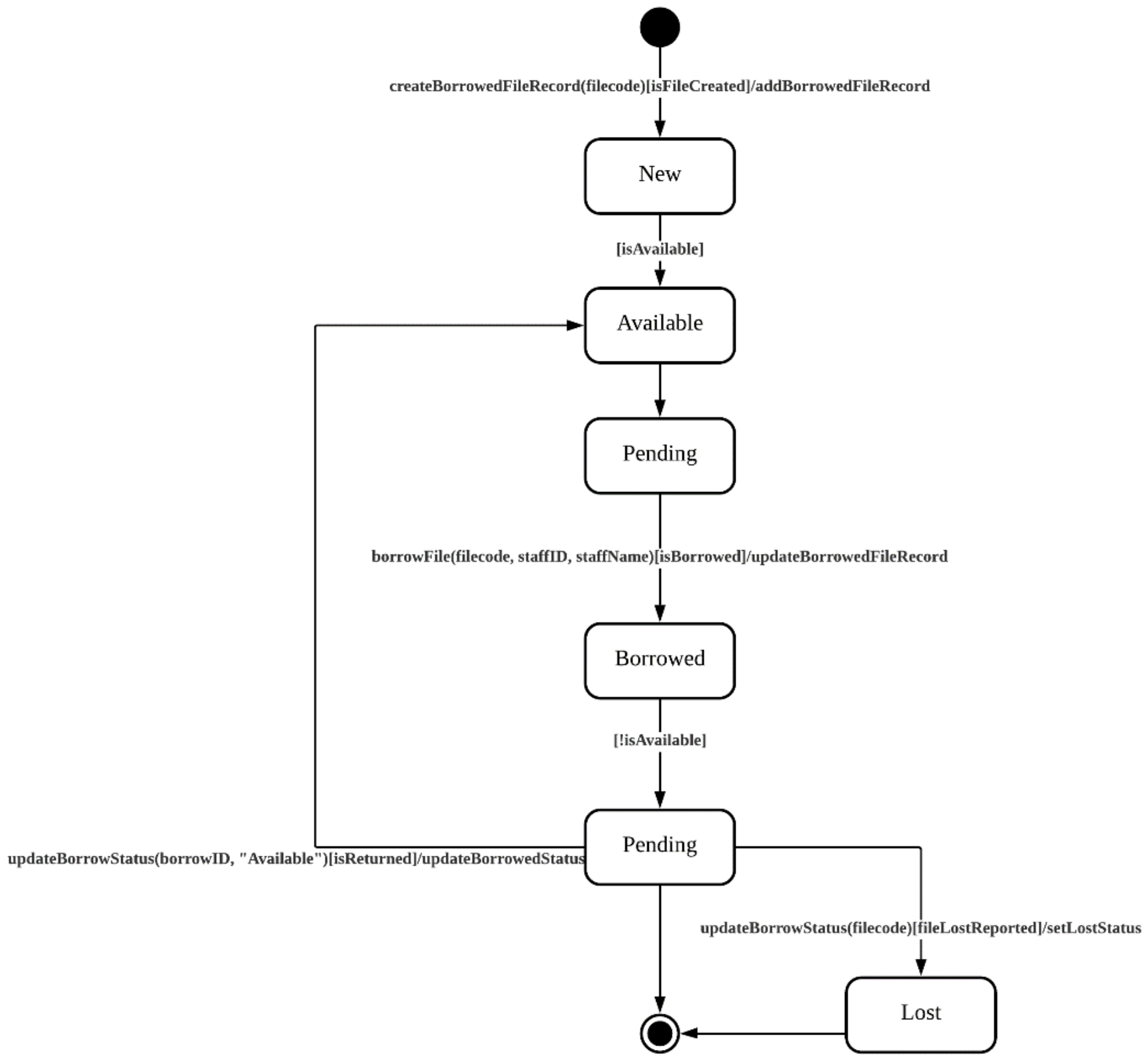

createBorrowedFileRecord(filecode)[isFileCreated]/addBorrowedFileRecord
New
[isAvailable]
Available
Pending
borrowFile(filecode, staffID, staffName)[isBorrowed]/updateBorrowedFileRecord
Borrowed
[!isAvailable]
Pending
updateBorrowStatus(borrowID, "Available")[isReturned]/updateBorrowedStatus
updateBorrowStatus(filecode)[fileLostReported]/setLostStatus
Lost

Figure 4.2: State-Transition Diagram for <BorrowedFileRecord Class>

Figure 4.2 shows the state-transition diagram for BorrowedFileRecord class. A new record will be created first in the system. Then, the new state will change into available state. It will be in pending state before it will be borrowed. After that, the state will change to borrowed state once it is borrowed. The state will be pending again when it is borrowed before returning it. If the borrow file is lost, the state will change to lost state and the state-transition diagram ends here.

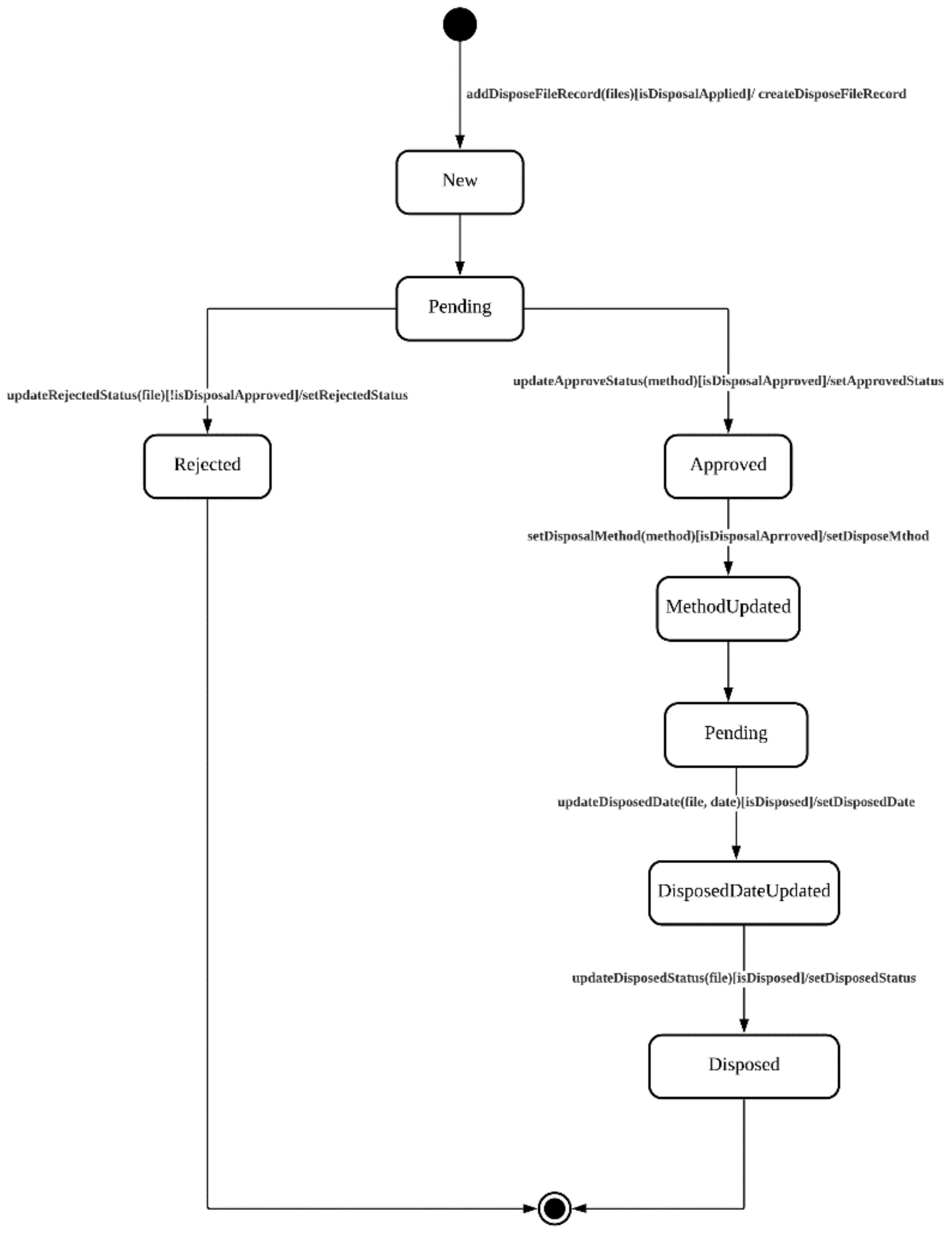

addDisposeFileRecord(files)[isDisposalApplied]/ createDisposeFileRecord
New
Pending
updateRejectedStatus(file)[!isDisposalApproved]/setRejectedStatus
updateApproveStatus(method)[isDisposalApproved]/setApprovedStatus
Rejected
Approved
setDisposalMethod(method)[isDisposalAprroved]/setDisposeMthod
MethodUpdated
Pending
updateDisposedDate(file, date)[isDisposed]/setDisposedDate
DisposedDateUpdated
updateDisposedStatus(file)[isDisposed]/setDisposedStatus
Disposed

Figure 4.3: State-Transition Diagram for <FileDisposedRecord Class>

For Figure 4.3, a new FileDisposedRecord Class will be created when we add the dispose file record in the system. This made the state of the class to change into new. Then, the state will be change into pending as the FileDisposedRecord Class need to make sure that it can be disposed. After that, the FileDisposedRecord Class will be in two different state which is rejected that means the disposed file is rejected and approved that means the file is approved to be disposed. For rejected, the state transition end there meanwhile for approved the state then will change into methodUpdated. It will update the method and the state will change into pending to make sure the file can be disposed. Next, the state will change into DisposalDateUpdated to set the date of the file to be disposed and display the disposed date. Lastly, the state will change into disposed by update the disposed status and the state transition end here.

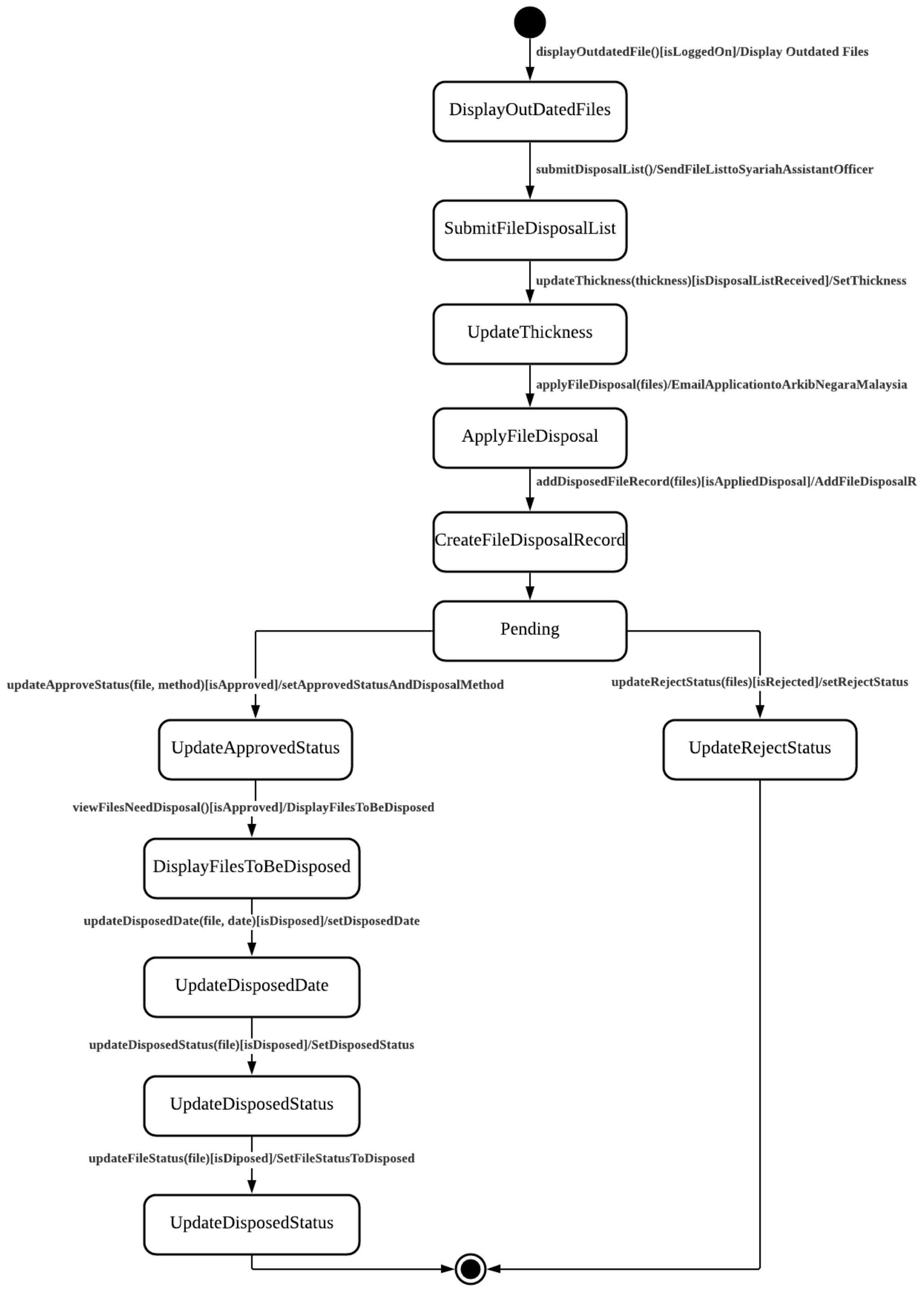

displayOutdatedFile()[isLoggedOn]/Display Outdated Files
DisplayOutDatedFiles
submitDisposalList()/SendFileListtoSyariahAssistantOfficer
SubmitFileDisposalList
updateThickness(thickness)[isDisposalListReceived]/SetThickness
UpdateThickness
applyFileDisposal(files)/EmailApplicationtoArkibNegaraMalaysia
ApplyFileDisposal
addDisposedFileRecord(files)[isAppliedDisposal]/AddFileDisposalR
CreateFileDisposalRecord
Pending
updateApproveStatus(file, method)[isApproved]/setApprovedStatusAndDisposalMethod
updateRejectStatus(files)[isRejected]/setRejectStatus
UpdateApprovedStatus
UpdateRejectStatus
viewFilesNeedDisposal()[isApproved]/DisplayFilesToBeDisposed
DisplayFilesToBeDisposed
updateDisposedDate(file, date)[isDisposed]/setDisposedDate
UpdateDisposedDate
updateDisposedStatus(file)[isDisposed]/SetDisposedStatus
UpdateDisposedStatus
updateFileStatus(file)[isDiposed]/SetFileStatusToDisposed
UpdateDisposedStatus

Figure 4.4: State-Transition Diagram for <disposedFileHandler Controller>

For Figure 4.4, the state of the disposedFileHandler Controller will change into DisplayOutDatedFiles. Then, it will change to SubmitFileDisposalList once the user submits it. After that, it will change to UpdateThickness, then ApplyFileDisposal state is triggered. Once apply, it goes to CreateFileDisposalRecord state and change to pending after that. If the request is rejected, it will change to UpdateRejectStatus state and end the transition. On the other hand, it will change to UpdateApprovedStatus state, then UpdateDisposedDate is triggered after the DisplayFilesToBeDisposed is triggered. Then the UpdateDisposedStatus is triggered finally, and the state transition ends here.

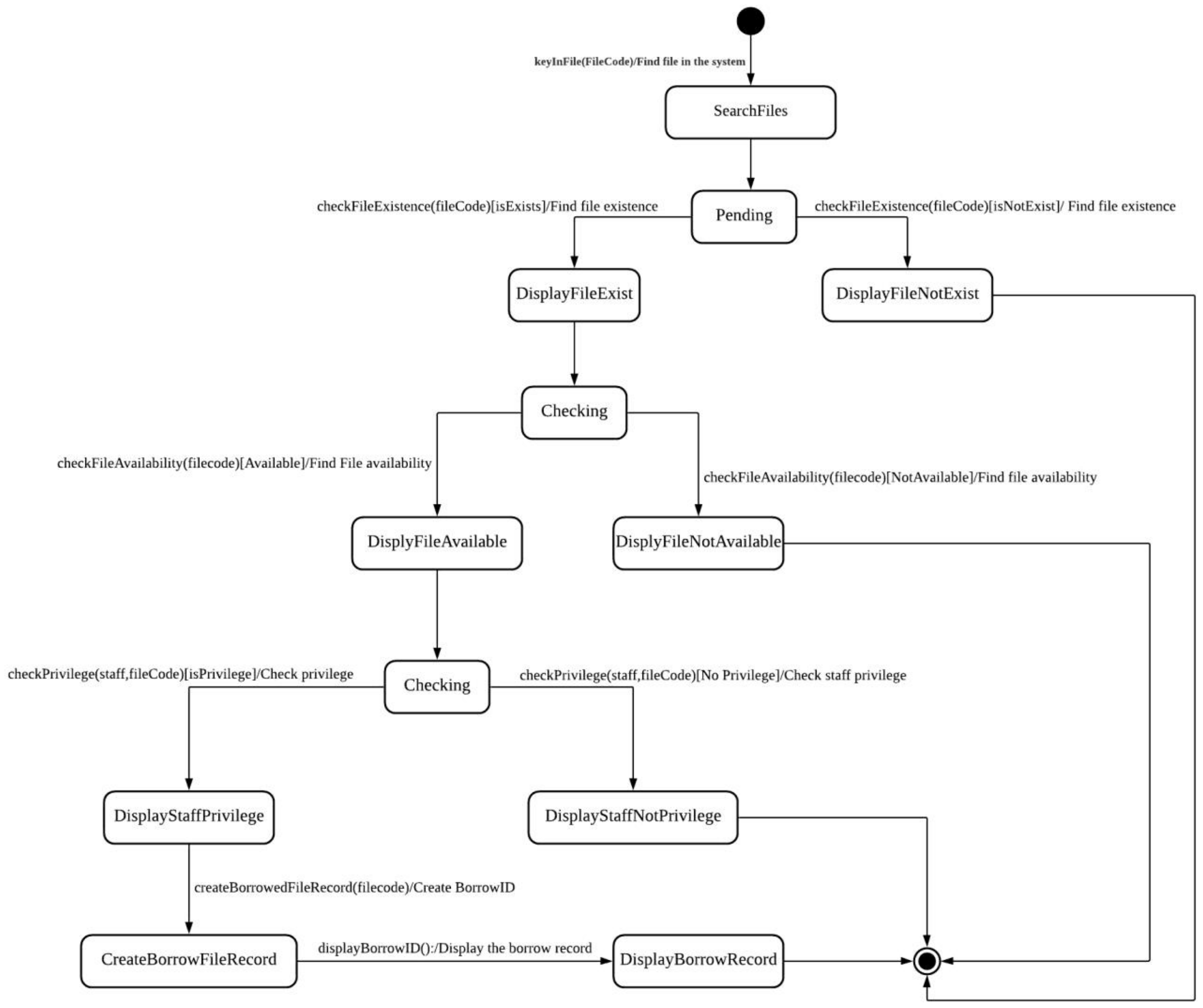

keyInFile(FileCode)/Find file in the system
SearchFiles
Pending
checkFileExistence(fileCode)[isExists]/Find file existence
checkFileExistence(fileCode)[isNotExist]/ Find file existence
DisplayFileExist
DisplayFileNotExist
Checking
checkFileAvailability(filecode)[Available]/Find File availability
checkFileAvailability(filecode)[NotAvailable]/Find file availability
DisplyFileAvailable
DisplyFileNotAvailable
Checking
checkPrivilege(staff,fileCode)[isPrivilege]/Check privilege
checkPrivilege(staff,fileCode)[No Privilege]/Check staff privilege
DisplayStaffPrivilege
DisplayStaffNotPrivilege
createBorrowedFileRecord(filecode)/Create BorrowID
CreateBorrowFileRecord
displayBorrowID():/Display the borrow record
DisplayBorrowRecord

Figure 4.5: State-Transition Diagram for <borrowFileHandler Controller>

For Figure 4.5, the state of the borrowFileHandler Controller will change into SearchFile when the file code is fill in the system. Then, the state change into pending to check either the file exists or not. They will be two different states after pending which are DisplayFileNotExist to show that the file is not exist on the system and DisplayFileExist to show the file exist in the system. For DisplayFileNotExist, the state transition will end after that meanwhile for DisplayFileExist the state change into checking to check either the file is available or not. They will be two different states after checking which are DisplayFileNotAvailable to show that the file is not available right now and DisplayFileAvailable to show the file is available. For DisplayFileNotAvailable, the state transition will end after that meanwhile for DisplayFileAvailable the state change into checking to check either the staff has privilege or not to borrow the file. They will be two different states after checking which are DisplayStaffNotPrivilege to show that the staff has no privilege and DisplayStaffPrivelege to show the staff has privilege. For DisplayStaffNotPrivilege, the state transition will end after that meanwhile for DisplayStaffPrivelege the state change into CreateBorrowFileRecord to create a new borrowID. Lastly, the state will change into DisplayBorrowRecord to show the borrow record of the user and then the state transition end.

5. Conclusion

Based on Phase 2 report, there are many things that we have learned by doing this project. Firstly, we have learned on how to create a use case diagram. Other than that, we also learn on how to describe the use case, activity diagram and create a sequence diagram based on every use case. We also create a domain modal to describe all the entities included in the system. We also create a state diagram to show all the state and argument that made the state of the entity to change in the system. Take note that not all the entities have a different state therefore we only included all the entities that may have any change of state.

By doing phase 2 report, our group has learned many new things as we need to create many new diagrams. By creating this diagram, it helps us to organize and understand more about the information needed to be included in our system. This is because all the detailed information will be displayed in the diagram. Other than that, we also learn on teamworking skills. This is because they are many works needed to do in phase 2 so if they are only one person that do the work, we cannot finish this phase in time. Therefore, we need to divide the work equally. Other than that, besides doing the work that we need to do, we also always help each other when they are any team members that has any problem to do their works. We learn that communication is a key when doing the project with other people.

So, to conclude the Phase 2 report, they are many things that we have learned by doing this project and we are glad to learn all the lesson by doing all the works given in phase 2.

6. References

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