

## Software Engineering - Assessed Exercise 2020

### Team: You Git What You Give

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## User Stories<sup>1</sup>

Estimated cost is in ideal hours.

The screenshot shows a Trello board with four user stories:

- User Story 1:** On start-up program should give the user the option to select their user role (Administrator, PTT Director, Class Director) in list Product Backlog. Labels: Should have. Description: Priority: 6, Est. Cost: 2. Tests: Option to select 'Administrator' role using standard system in, Option to select 'PTT Director' role using standard system in, Option to select 'Class Director' role using standard system in.
- User Story 2:** The selection process could also be password protected only allowing access to authorised personal in list Product Backlog. Labels: Could have. Description: Priority: 2, Est. Cost: 4. Tests: Upon selection of role user will be prompted to enter a password to gain further access, Password will be entered using standard system in.
- User Story 3:** As a Class Director I must be able to enter teaching requirements to be filled in list Product Backlog. Labels: Must have. Description: Priority: 8, Est. Cost: 4. Tests: System asks user to input class title using a standard system in, System asks user to input no. classes per week using a standard system in, System saves these requirements to be passed to the administrator.
- User Story 4:** As a Class Director I would like to be able view my submitted teaching requirements in list Product Backlog. Labels: Would like to have. Description: Priority: 2, Est. Cost: 2. Tests: The program gives the user the option to view submitted teaching requirements from the class director menu, When selected all added teaching requirements are printed using standard print out.

<sup>1</sup> Trello. [online] Available at: <https://trello.com/>.

**As a Class Director I should be able to view how teaching requirements have filled once they have been approved by the PTT Director**

in list [Product Backlog](#)

LABELS

Should have +

Description Edit

Priority: 6

Est. Cost: 4

Tests

Delete

0%

- Once teaching requirements have been approved by PTT Director they are written to a text file
- All users have access to the text file

**As the Administrator I must be able to view the teaching requirements**

in list [Product Backlog](#)

LABELS

Must have +

Description Edit

Priority: 6

Est. Cost: 2

Tests

Delete

0%

- Teaching requirements will be displayed to the Administrator using a standard system out

**As the Administrator I should be able to view details of staff training**

in list [Product Backlog](#)

LABELS

Should have +

Description Edit

Priority: 6

Est. Cost: 4

Tests

Delete

0%

- Program allows the user to search staff by their field of training (subject)
- Program only allows user to assign staff with the required training to classes

**As the Administrator I must be able to assign staff to the teaching requirements**

in list [Product Backlog](#)

LABELS

Must have +

Description Edit

Priority: 8

Est. Cost: 4

Tests

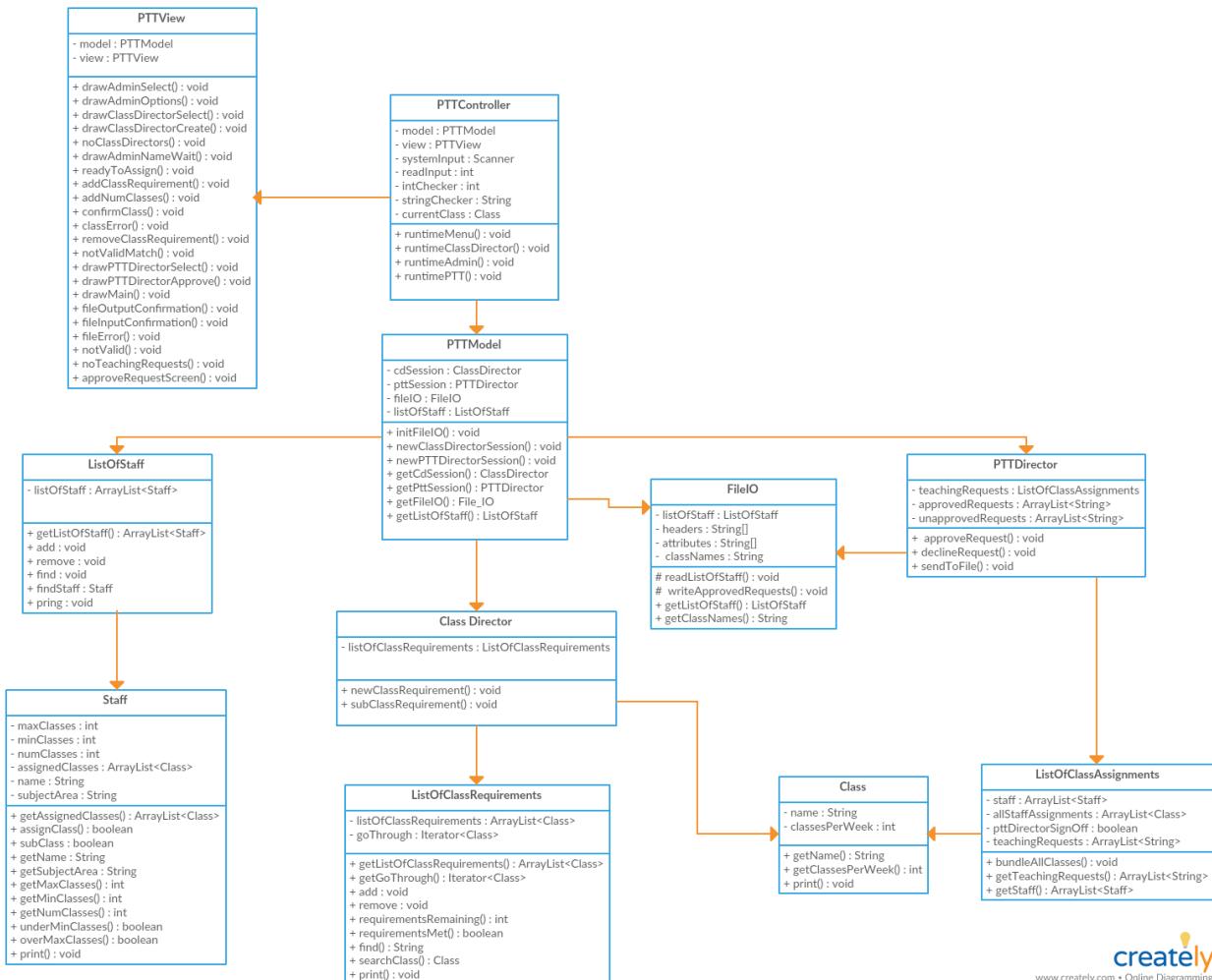
Delete

0%

- As administrator user is able to search staff by subject area or teaching time left using standard system in
- System prints out available staff matching the searched description using standard system out
- As administrator user is able to select a chosen member of staff and assign them to the particular teaching requirement using standard system in

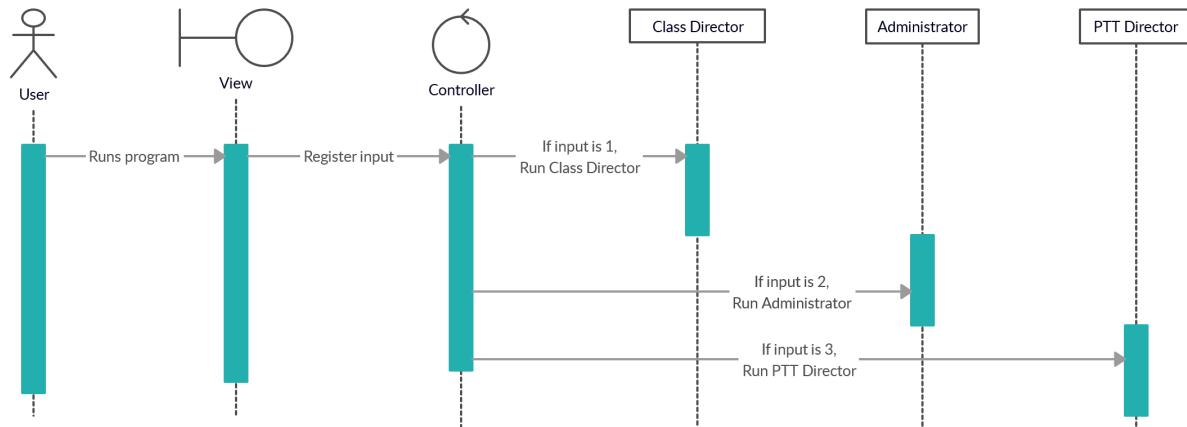
<p><input checked="" type="checkbox"/> As the Administrator I should be able to view the teaching assignments that have been approved by PTT Director</p> <p>in list <a href="#">Product Backlog</a></p> <p>LABELS</p> <p><span style="background-color: #ff9999; border: 1px solid black; padding: 2px;">Should have</span> +</p> <p><b>Description</b> <span style="border: 1px solid #ccc; padding: 2px;">Edit</span></p> <p>Priority: 6 Est. Cost: 4</p> <p><b>Tests</b> <span style="border: 1px solid #ccc; padding: 2px;">Delete</span></p> <p>0%</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Once teaching requirements have been approved by PTT Director they are written to a text file</li> <li><input type="checkbox"/> All users have access to the text file</li> </ul>	<p><input checked="" type="checkbox"/> As the PTT Director (and only as the PTT Director) I must be able to approve teaching requests</p> <p>in list <a href="#">Product Backlog</a></p> <p>LABELS</p> <p><span style="background-color: #ff9999; border: 1px solid black; padding: 2px;">Must have</span> +</p> <p><b>Description</b> <span style="border: 1px solid #ccc; padding: 2px;">Edit</span></p> <p>Priority: 8 Est. Cost: 4</p> <p><b>Tests</b> <span style="border: 1px solid #ccc; padding: 2px;">Delete</span></p> <p>0%</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> When the user is PTT Director program displays teaching assignments via standard system out</li> <li><input type="checkbox"/> Program gives PTT Director the option to either 'Approve' or 'Decline' each assignment</li> </ul>
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# UML Class Structure Diagram

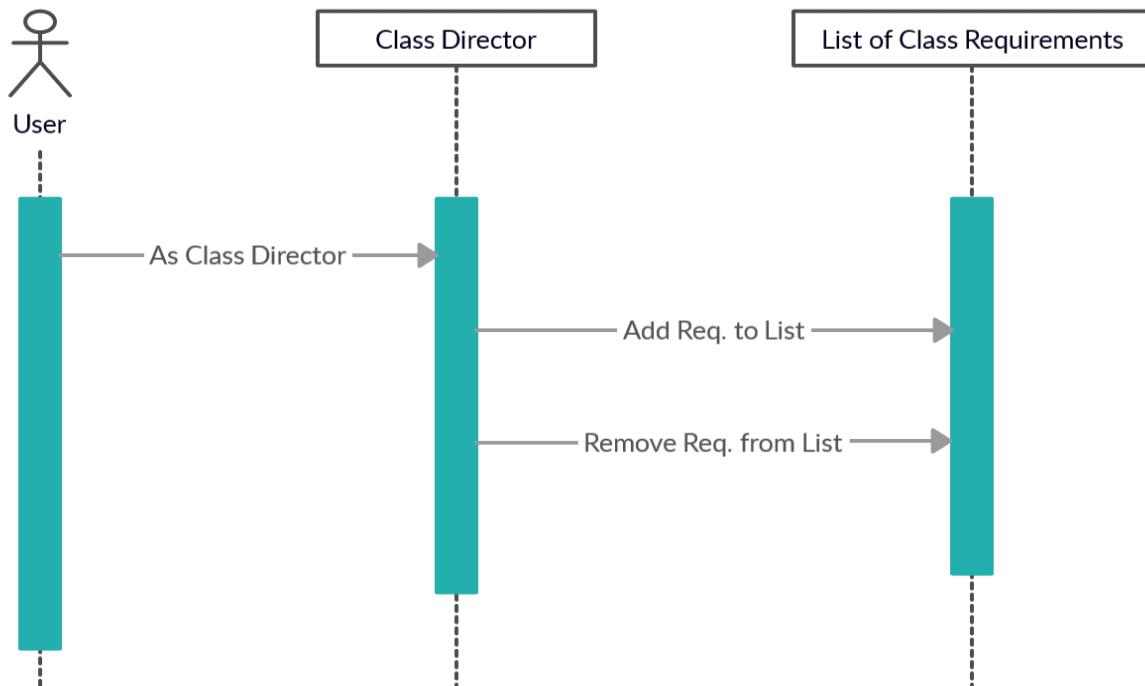


## Sequence Diagrams

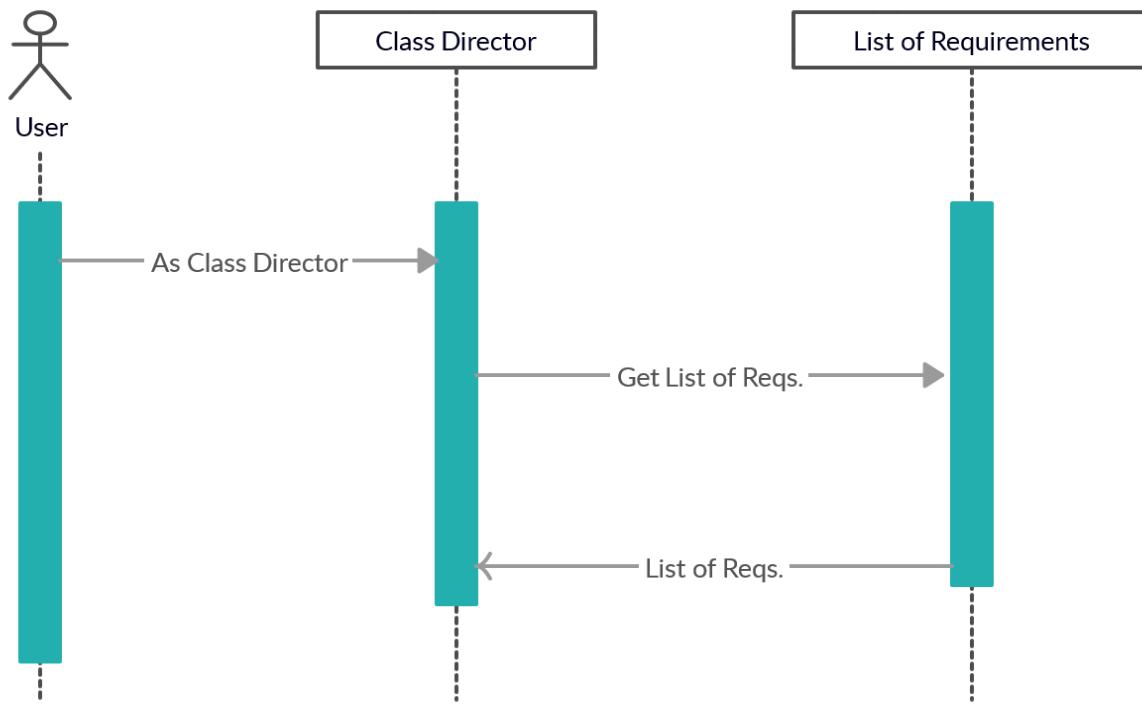
1. On start-up program should give the user the option to select their user role (Administrator, PTT Director, Class Director):



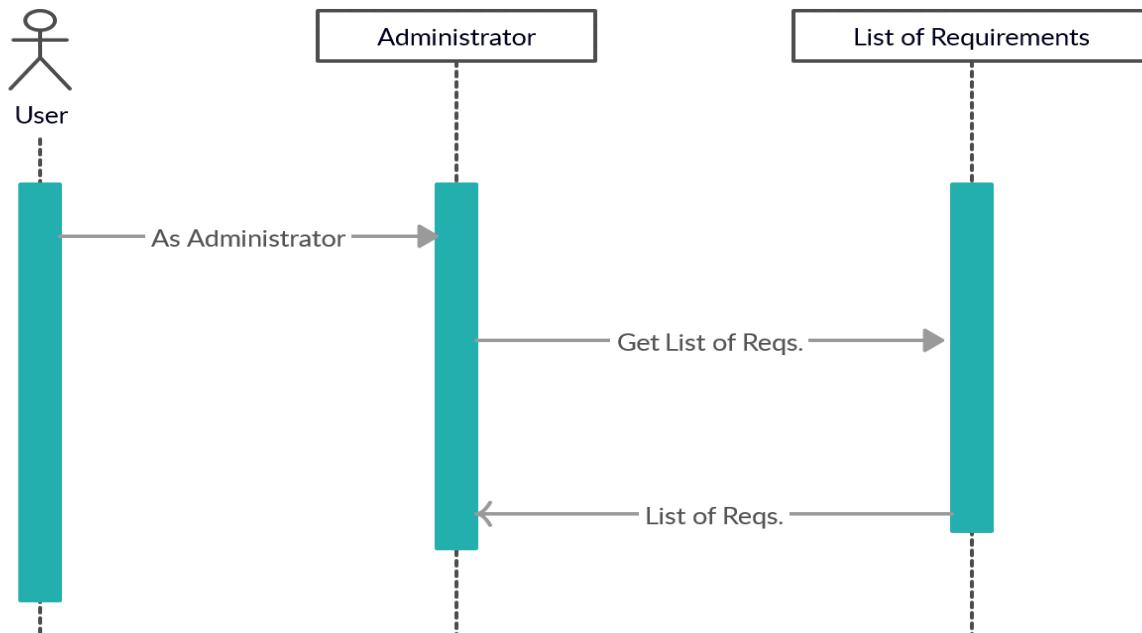
2. As a Class Director I must be able to enter teaching requirements to be filled:



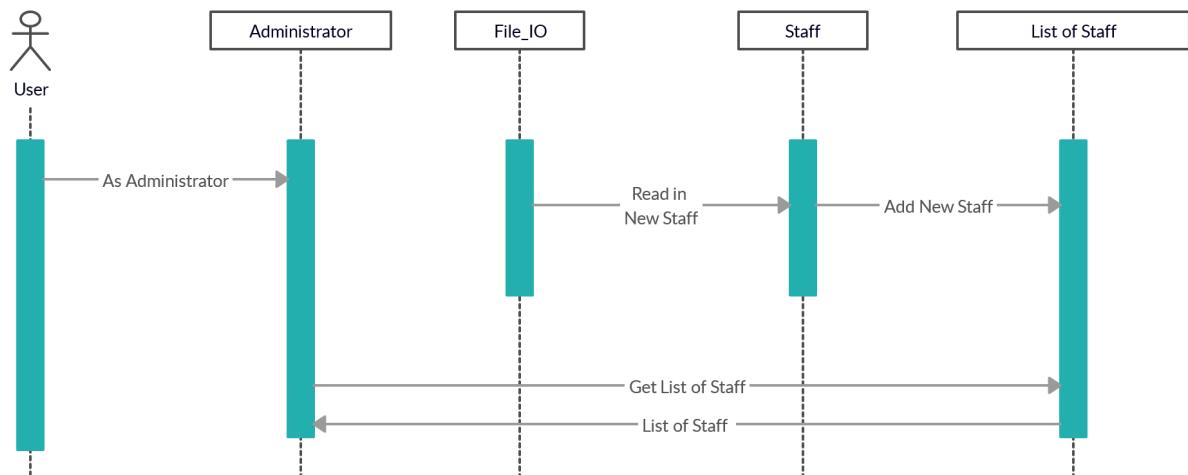
3. As a Class Director I would like to be able view my submitted teaching requirements:



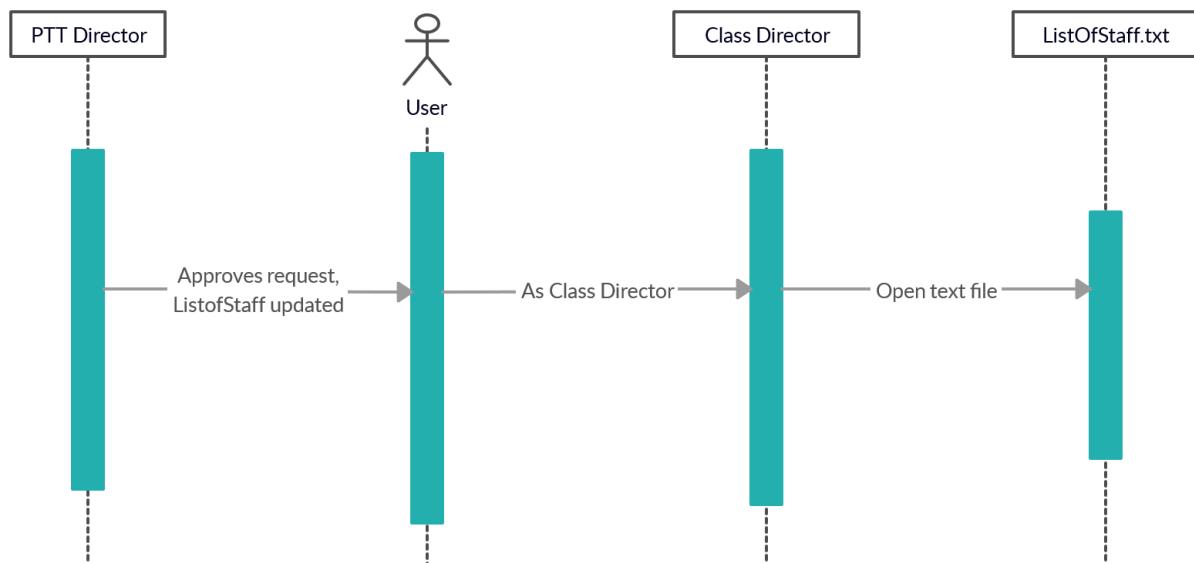
4. As the Administrator I must be able to view the teaching requirements:



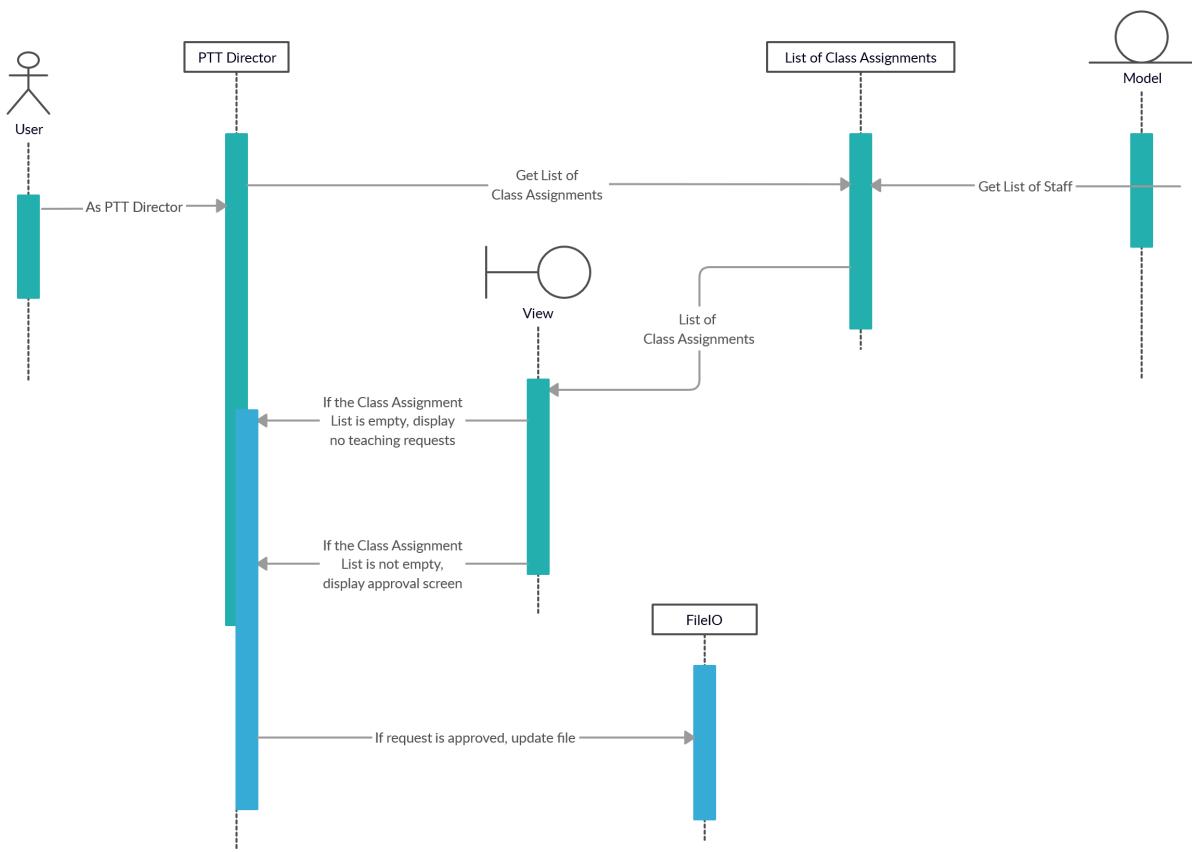
5. As the Administrator I should be able to view details of staff training:



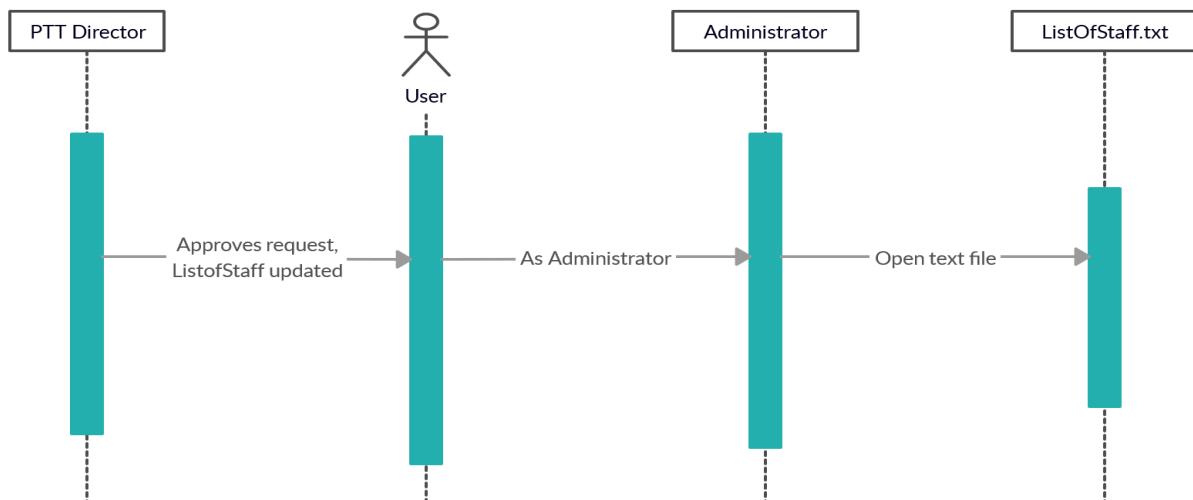
6. As a Class Director I should be able to view how teaching requirements have filled once they have been approved by the PTT Director:



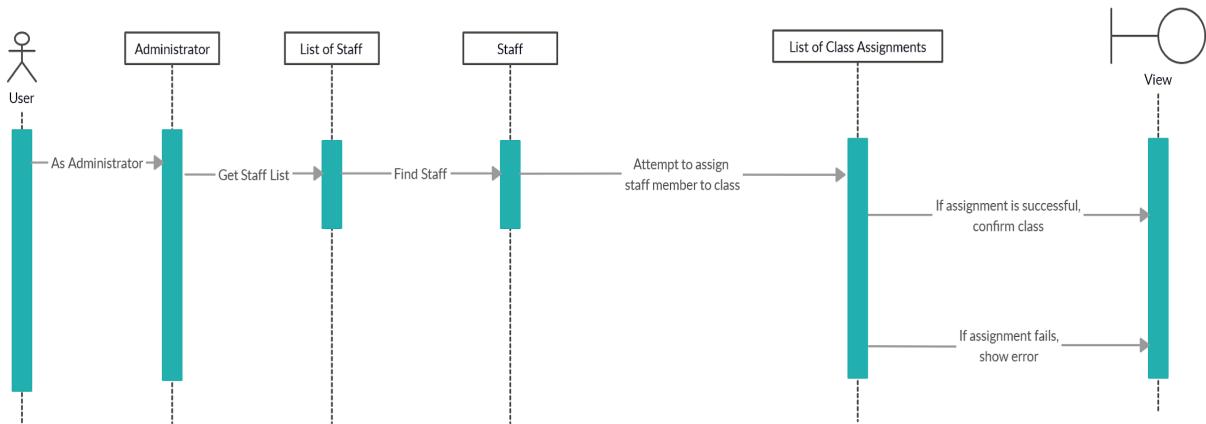
7. As the Administrator I must be able to assign staff to the teaching requirements:



8. As the Administrator I should be able to view the teaching assignments that have been approved by PTT Director:



9. As the PTT Director (and only as the PTT Director) I must be able to approve teaching requests:



## Actual Cost of User Stories

**Product Backlog**

- Could have**: The selection process could also be password protected only allowing access to authorised personal. (0/2)
- + Add another card

**Sprint 1**

- Would like to have**: As a Class Director I would like to be able view my submitted teaching requirements. (2/2)
- Must have**: As the Administrator I must be able to view the teaching requirements. (1/1)
- Should have**: As the Administrator I should be able to view details of staff training. (2/2)
- + Add another card

**Sprint 2**

- Should have**: As a Class Director I should be able to view how teaching requirements have filled once they have been approved by the PTT Director. (2/2)
- Must have**: As the Administrator I must be able to assign staff to the teaching requirements. (3/3)
- Should have**: As the Administrator I should be able to view the teaching assignments that have been approved by PTT Director. (2/2)
- + Add another card

**On start-up program should give the user the option to select their user role (Administrator, PTT Director, Class Director)**

in list [Sprint 1](#)

LABELS

- Should have
- +

**Description** Edit

Priority: 6  
Est. Cost: 2  
Act. Cost: 2

**Tests**

Hide completed items Delete

100%

- Option to select 'Administrator' role using standard system in
- Option to select 'PTT Director' role using standard system in
- Option to select 'Class Director' role using standard system in

**As a Class Director I must be able to enter teaching requirements to be filled**

in list [Sprint 1](#)

LABELS

- Must have
- +

**Description** Edit

Priority: 8  
Est. Cost: 4  
Act. Cost: 4

**Tests**

Hide completed items Delete

100%

- System asks user to input class title using a standard system in
- System asks user to input no. classes per week using a standard system in
- System saves these requirements to be passed to the administrator

**As a Class Director I would like to be able view my submitted teaching requirements**

in list [Sprint 1](#)

LABELS

Would like to have +

Description Edit

Priority: 2  
Est. Cost: 2  
Act. Cost: 2

Tests Hide completed items Delete

100%

- The program gives the user the option to view submitted teaching requirements from the class director menu
- When selected all added teaching requirements are printed using standard print out

**As the Administrator I must be able to view the teaching requirements**

in list [Sprint 1](#)

LABELS

Must have +

Description Edit

Priority: 6  
Est. Cost: 2  
Act. Cost: 4

Tests Hide completed items Delete

100%

- Teaching requirements will be displayed to the Administrator using a standard system out

**As the Administrator I should be able to view details of staff training**

in list [Sprint 1](#)

LABELS

Should have +

Description Edit

Priority: 6  
Est. Cost: 4  
Act. Cost: 2

Tests Hide completed items Delete

100%

- Program allows the user to search staff by their field of training (subject)
- Program only allows user to assign staff with the required training to classes

**As a Class Director I should be able to view how teaching requirements have filled once they have been approved by the PTT Director**

in list [Sprint 2](#)

LABELS

Should have +

Description Edit

Priority: 6  
Est. Cost: 4  
Act. Cost: 4

Tests Hide completed items Delete

100%

- Once teaching requirements have been approved by PTT Director they are written to a text file ...
- All users have access to the text file

**As the Administrator I must be able to assign staff to the teaching requirements**

in list [Sprint 2](#)

LABELS

Must have +

Description Edit

Priority: 8

Est. Cost: 4

Act. Cost 6

You have unsaved edits on this field. [View edits](#) - [Discard](#)

Tests

[Hide completed items](#)

[Delete](#)

100%

- As administrator user is able to search staff by subject area or teaching time left using standard system in
- System prints out available staff matching the searched description using standard system out
- As administrator user is able to select a chosen member of staff and assign them to the particular teaching requirement using standard system in

**As the PTT Director (and only as the PTT Director) I must be able to approve teaching requests**

in list [Sprint 2](#)

LABELS

Must have +

Description Edit

Priority: 8

Est. Cost: 4

Act. Cost: 4

Tests

[Hide completed items](#)

[Delete](#)

100%

- When the user is PTT Director program displays teaching assignments via standard system out
- Program gives PTT Director the option to either 'Approve' or 'Decline' each assignment

**As the Administrator I should be able to view the teaching assignments that have been approved by PTT Director**

in list [Sprint 2](#)

LABELS

Should have +

Description Edit

Priority: 6

Est. Cost: 4

Act. Cost: 4

Tests

[Hide completed items](#)

[Delete](#)

100%

- Once teaching requirements have been approved by PTT Director they are written to a text file
- All users have access to the text file

**The selection process could also be password protected only allowing access to authorised personal**

in list [Product Backlog](#)

LABELS

Could have +

Description Edit

Priority: 2

Est. Cost: 4

Act. Cost: 0

Tests

[Delete](#)

0%

- Upon selection of role user will be prompted to enter a password to gain further access
- Password will be entered using standard system in

## Program Code

Program Code is within the submission .zip file.

Screenshots of program running:

```
"/Applications/IntelliJ IDEA CE.app/Contents/jbr/Contents/Home/bin/java" "-javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=55949:/Applications/IntelliJ IDEA CE.app/Contents/bin" "-Dfile.encoding=UTF-8" AssExMain
File successfully read.
--- File Reading Finished ---

| PTT Schedule App, cli_ver. 1.0 |

Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit

Build completed successfully in 3 s 442 ms (moments ago)
```

```
"/Applications/IntelliJ IDEA CE.app/Contents/jbr/Contents/Home/bin/java" "-javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=55949:/Applications/IntelliJ IDEA CE.app/Contents/bin" "-Dfile.encoding=UTF-8" AssExMain
File successfully read.
--- File Reading Finished ---

| PTT Schedule App, cli_ver. 1.0 |

Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit

1

| Class Director Access Mode |

Select option...
1. Create/Edit list of class requirements
2. Return to main menu

Build completed successfully in 3 s 442 ms (moments ago)
```

```
PTT-Schedule | src | AssExMain
Project Run: AssExMain AssExMain.java
Run: AssExMain
File successfully read.
--- File Reading Finished ---

| PTT Schedule App, cli_ver. 1.0 |

Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit

1

| Class Director Access Mode |

Select option...
1. Create/Edit list of class requirements
2. Return to main menu

1

| List of Class Requirements |

Select option...
1. Add class requirement
2. Remove class requirement
3. View current class requirements
4. Return to CD Menu

1

Please input a new class title...
History

Please input number of classes per week...
0

Class amendment successful.

| Class Director Access Mode |

Select option...
1. Create/Edit list of class requirements
2. Return to main menu
```

```
PTT-Schedule / src / AssExMain
Run: AssExMain x
Select option...
 1. Create/Edit list of class requirements
 2. Return to main menu
| List of Class Requirements |
Select option...
 1. Add class requirement
 2. Remove class requirement
 3. View current class requirements
 4. Return to CD Menu
3
Class Subject: History | Classes per week: 8
Class Subject: Computing | Classes per week: 10
Class Subject: Computing | Classes per week: 8
Class Subject: Computing | Classes per week: 6
Class Subject: Art | Classes per week: 8
Class Subject: Art | Classes per week: 6
Class Subject: English | Classes per week: 10
Class Subject: Biology | Classes per week: 8

| Class Director Access Mode |
Select option...
 1. Create/Edit list of class requirements
 2. Return to main menu
| Build completed successfully in 3 s 442 ms (3 minutes ago)
PTT-Schedule / src / AssExMain
Run: AssExMain x
Select option...
 1. Create/Edit list of class requirements
 2. Return to main menu
| Class Director Access Mode |
Select option...
 1. Create/Edit list of class requirements
 2. Return to main menu
| PTT Schedule App, cli_ver. 1.0 |
Select user mode...
 1. Class Director
 2. Administrator
 3. PIT Director
 4. Quit
| Administrator Access Mode |
Select option...
 1. View and assign class requirements
 2. Return to main menu
| Build completed successfully in 3 s 442 ms (4 minutes ago)
```

```
| PTT Schedule App, cli_ver. 1.0 |
Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit

| Administrator Access Mode |
Select option...
1. View and assign class requirements
2. Return to main menu

I
Class Subject: History | Classes per week: 8

Start by searching for Staff,
by Subject Area or class slots available...

History
Name: Adam | Subject: History | Current classes: 0

To proceed making a class assignment enter Y...
Else enter a new search query...

Build completed successfully in 3 s 442 ms (4 minutes ago) 308:1 LF UTF-8 Tab* Git: PTTDirector

| Administrator Access Mode |
Select option...
1. View and assign class requirements
2. Return to main menu

J
Class Subject: History | Classes per week: 8

Start by searching for Staff,
by Subject Area or class slots available...

History
Name: Adam | Subject: History | Current classes: 0

To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.
Adam

Class amendment successful.

Class Subject: Computing | Classes per week: 10

Start by searching for Staff,
by Subject Area or class slots available...
```

```

PTT-Schedule src AssExMain
Project Run: AssExMain AssExMain.java

Run: AssExMain
Start by searching for Staff,
by Subject Area or class slots available...
History
Name: Adam | Subject: History | Current classes: 0
To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.
Adam

Class amendment successful.

Class Subject: Computing | Classes per week: 10

Start by searching for Staff,
by Subject Area or class slots available...
Computing
Name: Zara | Subject: Computing | Current classes: 0
Name: James | Subject: Computing | Current classes: 0
Name: Jess | Subject: Computing | Current classes: 0
Name: Wesley | Subject: Computing | Current classes: 0
To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.

Build completed successfully in 3 s 442 ms (4 minutes ago)
332:1 LF UTF-8 Tab* Git: PTTDirector

PTT-Schedule src AssExMain
Project Run: AssExMain AssExMain.java

Run: AssExMain
Start by searching for Staff,
by Subject Area or class slots available...
Computing
Name: Zara | Subject: Computing | Current classes: 0
Name: James | Subject: Computing | Current classes: 0
Name: Jess | Subject: Computing | Current classes: 0
Name: Wesley | Subject: Computing | Current classes: 0
To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.
Jess

Class amendment successful.

Class Subject: Computing | Classes per week: 8

Start by searching for Staff,
by Subject Area or class slots available...
Computing
Name: Zara | Subject: Computing | Current classes: 0
Name: James | Subject: Computing | Current classes: 0
Name: Jess | Subject: Computing | Current classes: 10
Name: Wesley | Subject: Computing | Current classes: 0
To proceed making a class assignment enter Y...
Else enter a new search query...
|
```

Build completed successfully in 3 s 442 ms (5 minutes ago)

350:1 LF UTF-8 Tab\* Git: PTTDirector

```

PTT-Schedule | src > AssExMain
Project Run: AssExMain AssExMain.java
Run: AssExMain x
Name: Jess | Subject: Computing | Current classes: 10
Name: Wesley | Subject: Computing | Current classes: 0

To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.
Zero

Class amendment successful.

Class Subject: Computing | Classes per week: 6

Start by searching for Staff,
by Subject Area or class slots available...

Art
Name: Jack | Subject: Art | Current classes: 0
Name: Anna | Subject: Art | Current classes: 0

To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.
Anna
This staff member is not part of the Computing trained staff.
Error on class amendment, please try again...

To assign a member of staff to this role, type their EXACT name and hit return.

Build completed successfully in 3 s 442 ms (6 minutes ago)

```

---

```

PTT-Schedule | src > AssExMain
Project Run: AssExMain AssExMain.java
Run: AssExMain x
Name

Class amendment successful.

Class Subject: Biology | Classes per week: 8

Start by searching for Staff,
by Subject Area or class slots available...

Biology
Name: Sara | Subject: Biology | Current classes: 0

To proceed making a class assignment enter Y...
Else enter a new search query...
Y

To assign a member of staff to this role, type their EXACT name and hit return.
Sara

Class amendment successful.
End of required classes, please contact PTT Director

| PTT Schedule App, cli_ver. 1.0 |

Select user mode...
  1. Class Director
  2. Administrator
  3. PTT Director
  4. Quit

Build completed successfully in 3 s 442 ms (7 minutes ago)

```

```

PTT-Schedule src AssExMain
Project Run: AssExMain AssExMain.java

Run: AssExMain
Biology
Name: Sara | Subject: Biology | Current classes: 0
To proceed making a class assignment enter Y...
Else enter a new search query...
Y
To assign a member of staff to this role, type their EXACT name and hit return.
Sara

Class amendment successful.
End of required classes, please contact PTT Director

| PTT Schedule App, cli_ver. 1.0 |

Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit

3

| PTT Director Access Mode |

Select option...
1. View and approve class assignments
2. Return to main menu

Build completed successfully in 3 s 442 ms (7 minutes ago)
474:1 LF UTF-8 Tab* Git: PTTDirector

PTT-Schedule src AssExMain
Project Run: AssExMain AssExMain.java

Run: AssExMain
1. Class Director
2. Administrator
3. PTT Director
4. Quit

3

| PTT Director Access Mode |

Select option...
1. View and approve class assignments
2. Return to main menu

1

Please review the following teaching request.
Press 1 to APPROVE or press 2 to DECLINE.

STAFF MEMBER:

NAME: Marc || SUBJECT: English
MIN CLASS: 7 || MAX CLASS: 12

APPROVED CLASSES:

CLASS: English || CLASSES/W: 10

Build completed successfully in 3 s 442 ms (7 minutes ago)
492:1 LF UTF-8 Tab* Git: PTTDirector

```

The image shows two terminal windows within a Java IDE interface, both running the `AssExMain` application.

**Terminal Window 1:**

```
PTT-Schedule | src | AssExMain
Project  Run: AssExMain | AssExMain.java | Git: PTTDirector
Run: AssExMain
=====
Please review the following teaching request.
Press 1 to APPROVE or press 2 to DECLINE.
=====
STAFF MEMBER:
=====
NAME: Sara || SUBJECT: Biology
MIN CLASS: 6 || MAX CLASS: 15
=====
APPROVED CLASSES:
=====
CLASS: Biology || CLASSES/W: 8
=====

j
All available teaching requests have been reviewed...
Writing to File...
Successfully wrote to file.
--- File Writing Finished ---

| PTT Schedule App, cli_ver. 1.0 |
Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit
```

**Terminal Window 2:**

```
PTT-Schedule | src | AssExMain
Project  Run: AssExMain | AssExMain.java | Git: PTTDirector
Run: AssExMain
=====
Press 1 to APPROVE or press 2 to DECLINE.
=====
STAFF MEMBER:
=====
NAME: Sara || SUBJECT: Biology
MIN CLASS: 6 || MAX CLASS: 15
=====
APPROVED CLASSES:
=====
CLASS: Biology || CLASSES/W: 8
=====

j
All available teaching requests have been reviewed...
Writing to File...
Successfully wrote to file.
--- File Writing Finished ---

| PTT Schedule App, cli_ver. 1.0 |
Select user mode...
1. Class Director
2. Administrator
3. PTT Director
4. Quit
```

Both terminals show the application's main menu and a confirmation message indicating that all teaching requests have been reviewed and written to a file. The second terminal also shows the process has completed successfully with an exit code of 0.

## **Retrospective**

The main strengths of the project's implementation was our team's over-arching software design and cohesion. User stories were defined early in the project's timeline and the program's class design went smoothly due to this. Regular meetings were held to ensure our team's understanding and cooperation was strong, tasks were split between members smoothly although defining each member's class ownership was a more strenuous task due to the program's size. To amend this in future projects our team would focus on nailing down our software design in terms of methods and variables earlier on in the process as this would decrease the amount of code overlap/rewrite during implementation.

The ambiguity of project specification created several challenges for us in terms of how to construct certain parts of the project (e.g. lists of teaching/training requirements) and slowed down our Sprint's velocity. Again, spending more time focusing on planning the exact details of classes before embarking on the first sprint would lessen this issue in future.

The PTT\_Schedule's second release would include better implementation using a database, the code was designed in a way that minimum changes would have to be made to implement this. One User Story was also left out from the final code, this story was to include a password protected element to the initial selection process, this would stop unauthorised access to each of the program's functionalities (e.g. only the Administrator with correct password would be able to access the Administrator menu and assign classes and therefore would be the only user able to assign classes). Improvements on class protections would also be made in future iterations of the program.

A template from Atlassian was used to conduct the retrospective.<sup>2</sup>

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<sup>2</sup> Atlassian. (n.d.). *How to Run an Agile Retrospective Meeting with Examples*. [online] Available at: <https://www.atlassian.com/team-playbook/plays/retrospective> [Accessed 4 Mar. 2020].