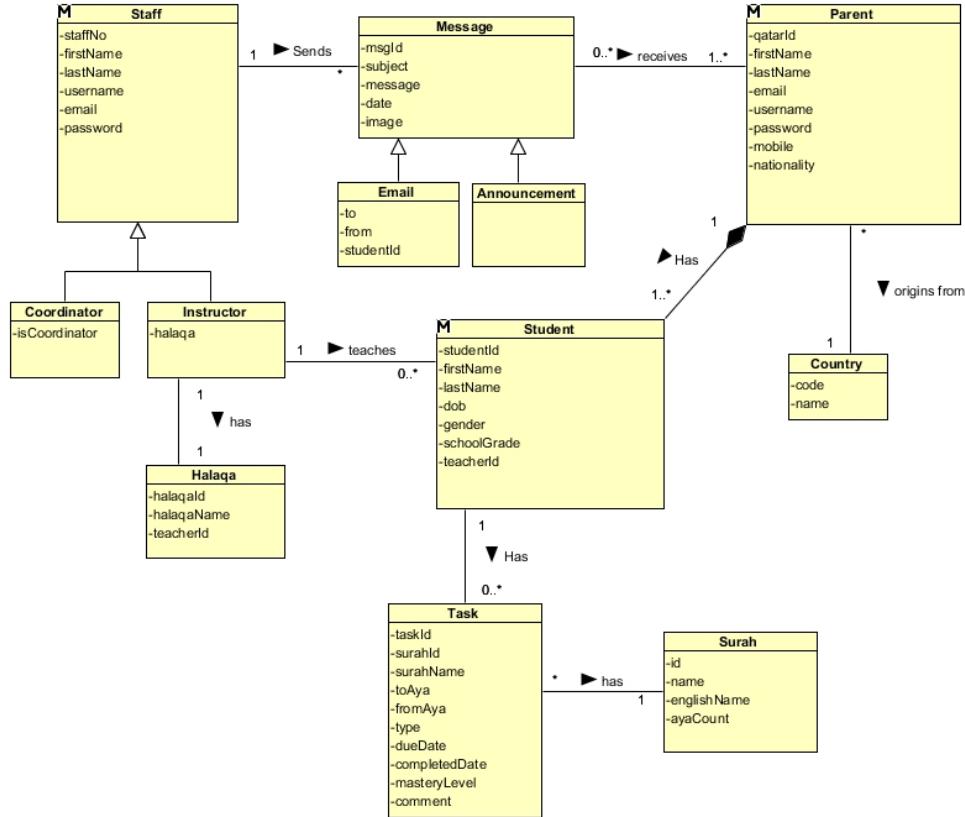


2.2. Class Diagrams: Entities, Repositories and Services and Controllers

Entity Class Diagram

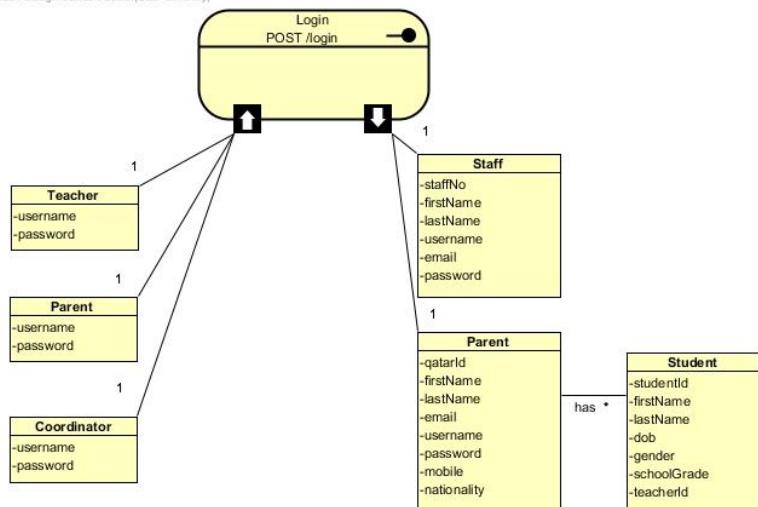
Visual Paradigm Standard Edition(Qatar University)



Commented [AE2]: Very good work.
Data type of attributes should be specified

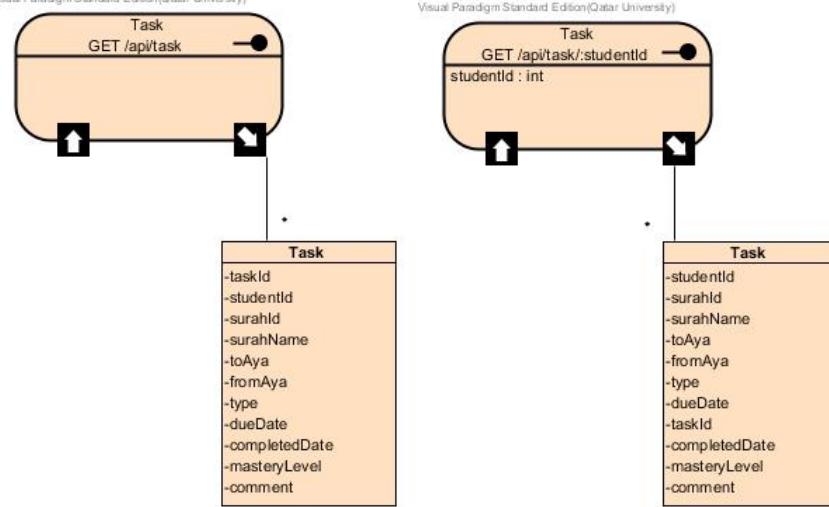
REST Service Class diagram

Visual Paradigm Standard Edition(Qatar University)

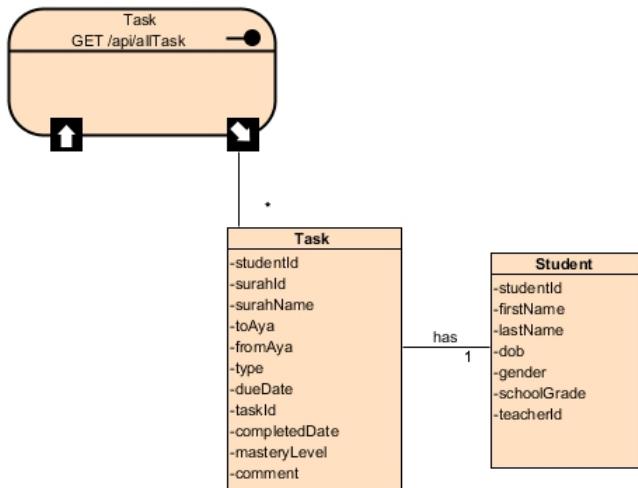


Commented [AE4]: You should make input as Credentials and output as User instead of many input and output classes.

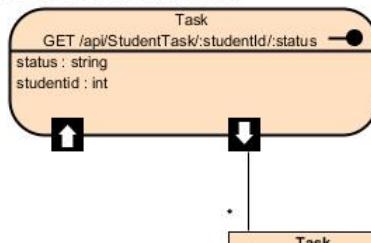
Visual Paradigm Standard Edition(Qatar University)



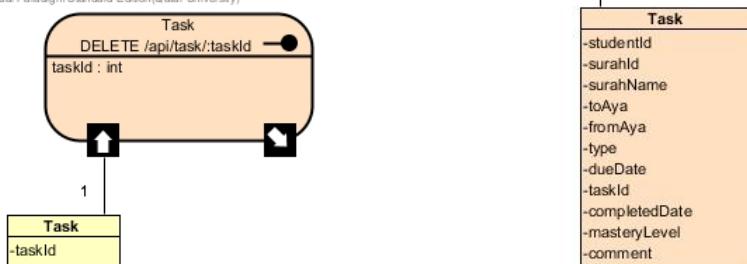
Visual Paradigm Standard Edition(Qatar University)



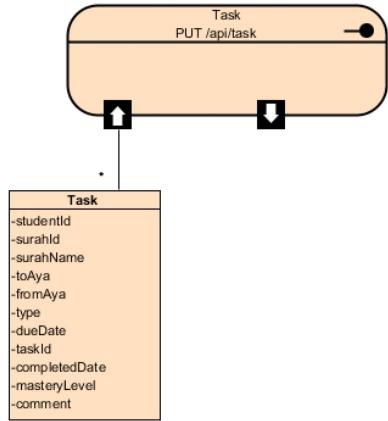
Visual Paradigm Standard Edition(Qatar University)



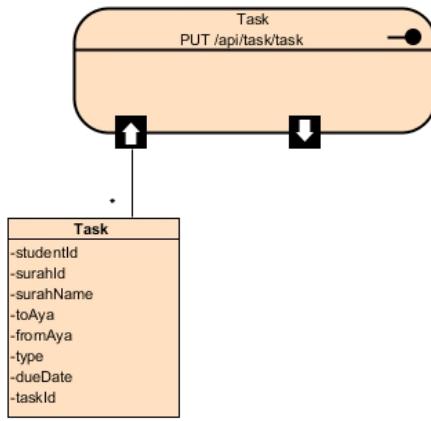
Visual Paradigm Standard Edition(Qatar University)



Visual Paradigm Standard Edition(Qatar University)

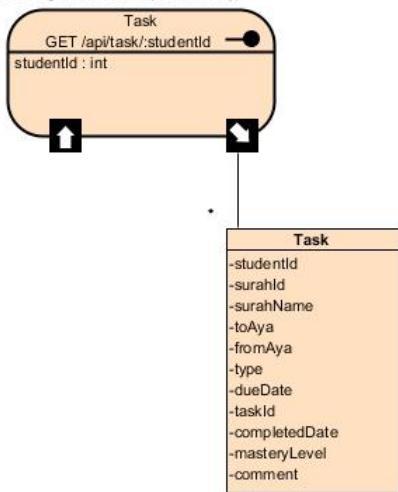


Visual Paradigm Standard Edition(Qatar University)

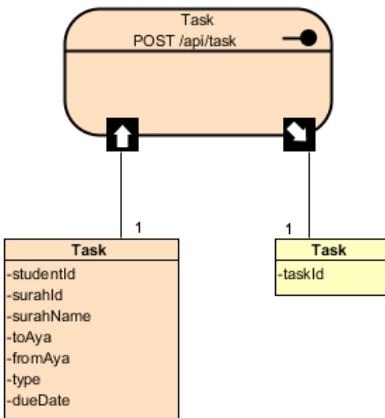


Commented [AE5]: Not clear why do you need both?!

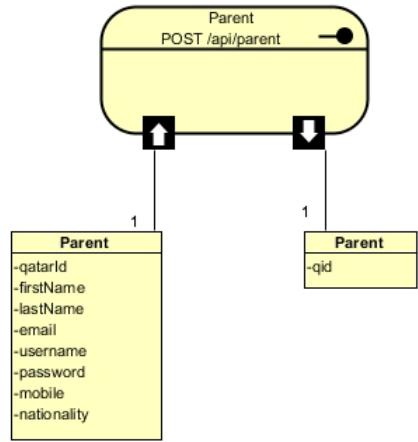
Visual Paradigm Standard Edition(Qatar University)



Visual Paradigm Standard Edition(Qatar University)

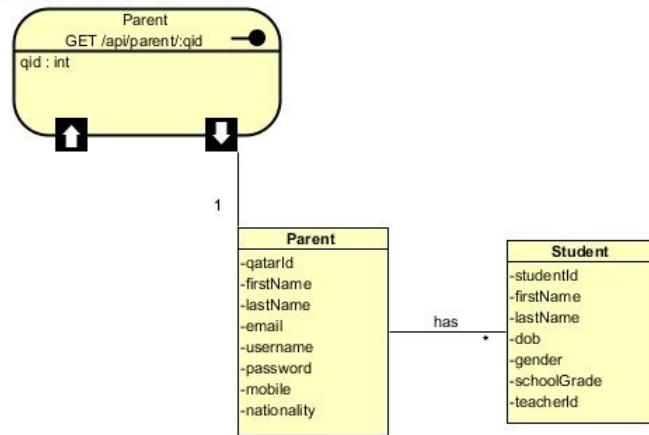


Visual Paradigm Standard Edition(Qatar University)

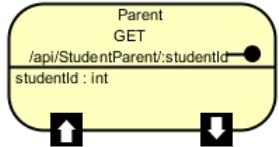


Commented [AE6]: No need for output. The Id of the new resource could be returned in the Location header.

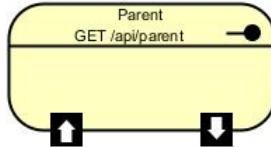
Visual Paradigm Standard Edition(Qatar University)



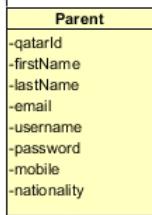
Visual Paradigm Standard Edition(Qatar University)



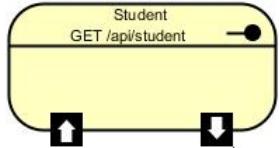
Visual Paradigm Standard Edition(Qatar University)



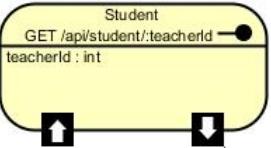
1



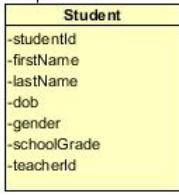
Visual Paradigm Standard Edition(Qatar University)



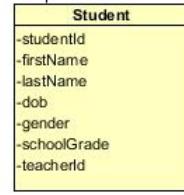
Visual Paradigm Standard Edition(Qatar University)



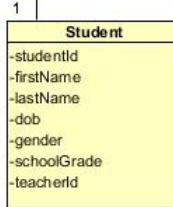
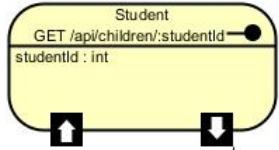
*



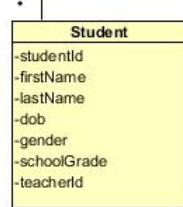
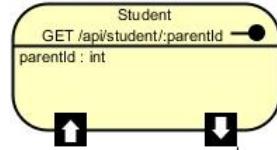
*



Visual Paradigm Standard Edition(Qatar University)

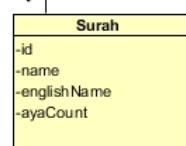
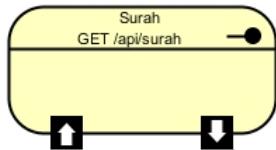


Visual Paradigm Standard Edition(Qatar University)

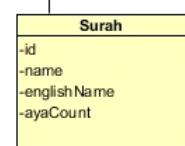
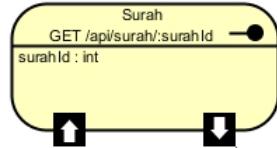


Commented [AE7]: Unnecessary repetition of functionality already provided by services documented in earlier diagrams.

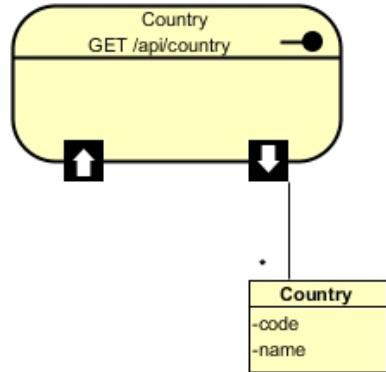
Visual Paradigm Standard Edition(Qatar University)



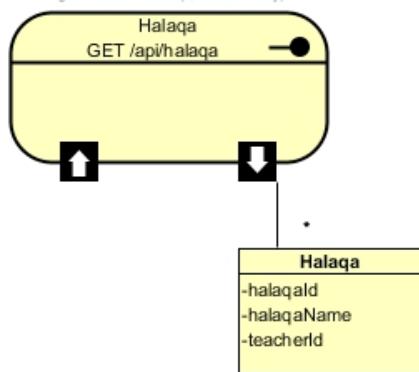
Visual Paradigm Standard Edition(Qatar University)



Visual Paradigm Standard Edition(Qatar University)

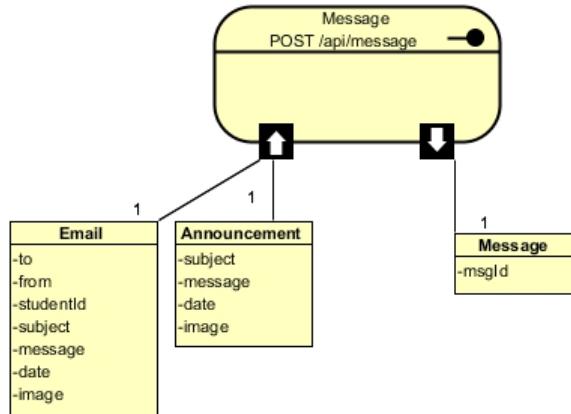


Visual Paradigm Standard Edition(Qatar University)

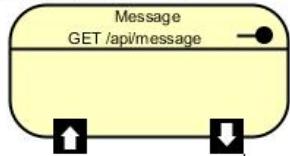


Commented [AE8]: Message API could take as API a Message object. No need for an output as the Id could be communicated using the Location header.

Visual Paradigm Standard Edition(Qatar University)

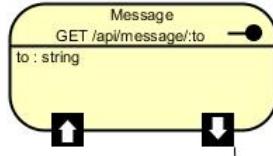


Visual Paradigm Standard Edition(Qatar University)



Email
-to
-from
-studentId
-subject
-message
-date
-image

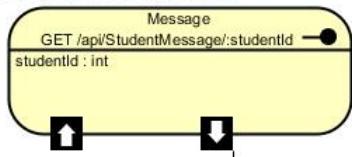
Visual Paradigm Standard Edition(Qatar University)



Message
-msgId
-subject
-message
-date
-image
-to
-from
-studentId

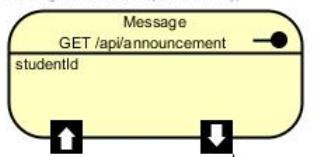
Commented [AE9]: Message should be used as output rather than Email.

Visual Paradigm Standard Edition(Qatar University)



Message
-msgId
-subject
-message
-date
-image
-to
-from
-studentId

Visual Paradigm Standard Edition(Qatar University)



Announcement
-subject
-message
-date
-image

2.4. Discussion of design rationale of key design decisions

- We used MVC design pattern to organise our code into appropriate categories without mixing them up. This makes it easier to understand the architecture of the system, also makes it more adaptable to changes which is very important when it comes to web applications as changes are constantly made to enhance the user experience. Using MVC means that parts of the code can be modified without causing a havoc in the existing codes. We placed all the model data in a folder called 'data'. Then we placed all the views in a different directory. And lastly separated the controllers.
- We used 2 repositories, LoginRepository and HMRepository. The reason we chose to do this is because the login required completely different functionalities, validation and authentication compared to the rest of the system. We decided to keep it separate from the rest of the system functionalities. The idea behind keeping the rest of the functionalities in one repository was to avoid duplication of functions, as different parts of the application sometimes required the same functionality but for different purpose. So to avoid code repetition we grouped it all into one repository. This meant that we also had 2 controllers as it made sense to have one controller for each repository.
- We decided to limit the number of html pages to one per each major use case to improve user experience, which means reduce the number of clicks and need to go back and forth in pages. We split the register student use case into two html pages because there were two parts to this use case; register parent and register student. It seemed more logical to separate the two, so we had register parent along with 1 child in one html page, and another html page to register another child later one. For the manage tasks use case we created 2 html pages. The reason for this was because we wanted the manage tasks html page to display the tasks for each student according to the status, and update task, complete task, and delete task were appending/deleting pending tasks, so for this it was logical to have a button along with popup box which allows this, so the user doesn't have to change pages in order to perform this task. However, add task was creating a new task so we created a separate html page for that. This gave us a total of 9 html pages for 10 use cases.
- We separated the css from the HTML to make it more flexible to design change. By doing this it makes it easier and more convenient to modify the visual appearances of our html pages, in other words the look of the user interfaces. In the future if the color scheme or fonts/styles need to be changed without changing the layout of the webpage, it can easily be done by simply modifying the stylesheet used and not touching the html pages.
- Apart from our own stylesheet we also use ready-made components such as dialog box from jquery-ui to reduce our development time. Also we used bootstrap to style our UI and provide consistent look and feel. We also thought that since it is open source and available it is wise to utilize it instead of building everything from scratch. We do not use this heavily, in fact only one page which is the manageTask.html that uses it to make the dialog form appeared readable and elegant. Another library we use in our project is moment.js. The reason for this is because the date stored in our task.json was in the format **dd-mm-yyyy** and by default javascript stored date as **MM-dd-yyyy** therefore we use moment.js library in order to make our date stored in a consistent manner.
- We used responsive page designs for the html pages to enrich the user experience. This was done so that no matter how big or small the screen of the device the user is using, the user interface of our system will always remain user friendly, adjusting the layout of the webpages to continue looking professional and at the same time make navigation for the user easier. The menu was made to appear in row form on a big screen, and to collapsed menu when the user is using a small screen device. The

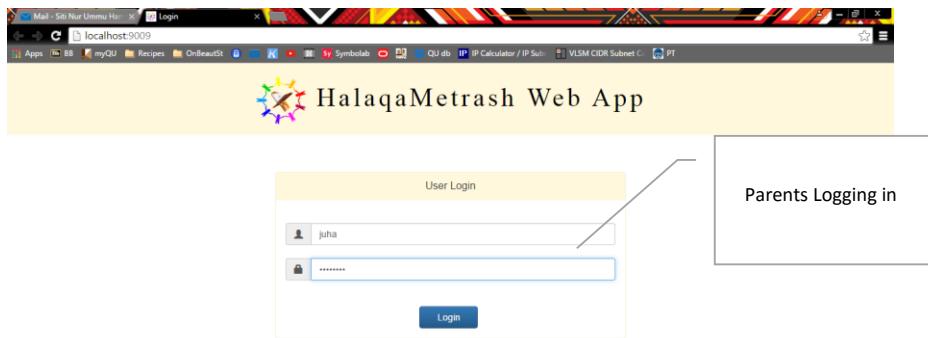
Commented [AE10]: Excellent. Detailed and very well written.

Commented [AE11]: HMRepository Controller is bloated and had many unrelated/duplicated functionalities.

Commented [AE12]: Same use cases can share the same UI and logic such as Add/Update tasks, Add Message/Announcement, Parent/Coordinator follow-up.
See model solution for further details.

3. User Interface Testing

2.15. Login



Parent homepage

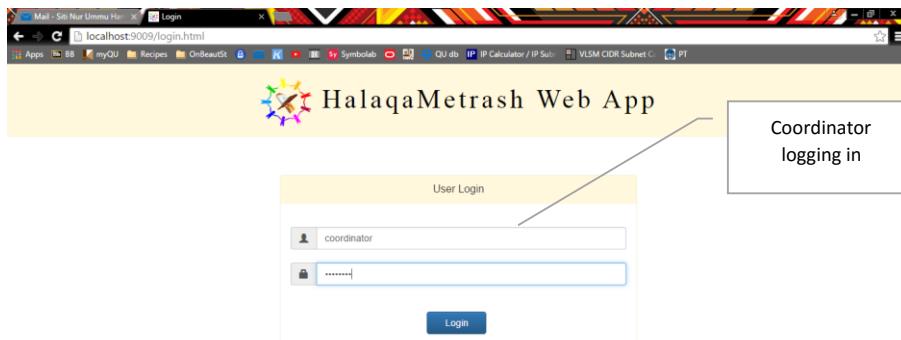
Parent's name

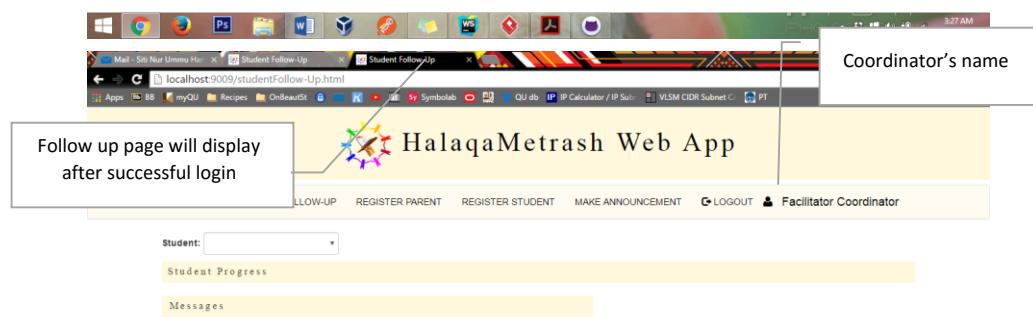
Mail from teacher shown here

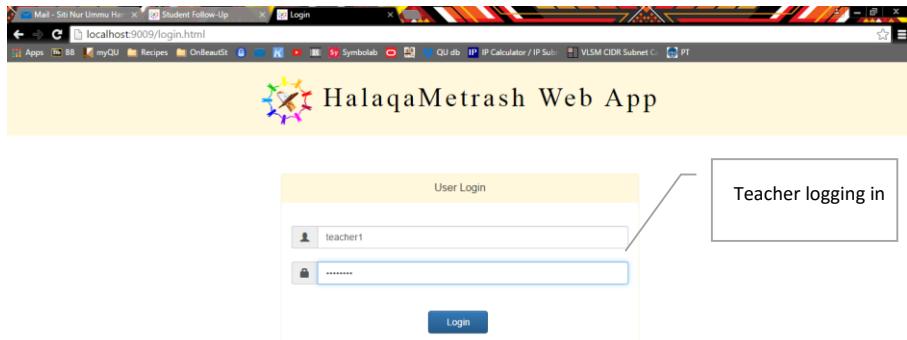
Announcement bar on the right hand side

Date	From	Subject	Message
15/03/2016	teacher2@halqa.org	Very Good	I'm really pleased with her performance
29/04/2016	teacher1@halqa.org	Need practice	Please help your child with practising the tasks

Date	Announcement
24/03/2016	There will be no classes next week. Classes will continue as normal from next week.
29/04/2016	We invite you to come along with your child on Tuesday to get more information about their progress







2.16. Student Registration

HalaqaMetrash Web App

STUDENT FOLLOW-UP REGISTER PARENT REGISTER STUDENT MAKE ANNOUNCEMENT LOGOUT Facilitator Coordinator

Student Information

1. Choose existing parent
2. Fill all the fields
3. Submit

Parent: ID[12] - Juha Dahak
Full Name: Bint Juha 2
DOB: 24/04/1999
Gender: Male
Grade: 4
Halaqa Name: حلة المحرى السفير - 2

Submit

Once submitted the JSON file is updated with the new record

```

20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
  "studentId": 1,
  "firstName": "Bint Juha",
  "lastName": "Dahak",
  "dob": "1/5/2011",
  "gender": "F",
  "schoolGrade": 2,
  "teacherId": 502,
  "studentId": 12
}
  "firstName": "Bint Juha 2",
  "lastName": "Dahak",
  "dob": "24/04/1999",
  "gender": "F",
  "schoolGrade": 4,
  "teacherId": 502,
  "studentId": 7
}
  }
}
  
```

Submitting an empty form or missing fields will result in this error

This field is required

First Name Last Name This field is required

dd/mm/yyyy This field is required

Male Female This radio is required

School This field is required

Halqa Name: This field is required

Submit

Another way to register student is when parent record does not exist in the system therefore, go to Register Parent page.

Parent Information

QID: asf Wrong input

Full Name: Ahmed Sayed

Mobile Number: 24256

Email Address: ahmed@test.com

Country: Bahrain

Username: ahmed

Password:

Child Info

Full Name: Bin Ahmed Sayed

DOB: 12/05/2000

Gender: Male Female

Grade: 1

Halaqa Name: ملة نور الرحمن

Submit

```

97 {
98   "qatariId": 1223,
99   "firstName": "Ahmed",
100  "lastName": "Sayed",
101  "mobile": "24256",
102  "email": "ahmed@test.com",
103  "nationality": "Bahrain",
104  "username": "ahmed",
105  "password": "password",
106  "students": [
107    {
108      "firstName": "Bin Ahmed",
109      "lastName": "Sayed",
110      "dob": "12/05/2000",
111      "gender": "M",
112      "schoolGrade": 1,
113      "teacherId": 503,
114      "studentId": 8
115    }
116  ]
117}
118

```

Result in JSON after successful registration.

2.17. List Tasks

teacher1 page

HalaqaMetrash Web App

ADD TASK SEND MESSAGE LOGOUT Fn1 Ln1

Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment
1	7	Al-Baqara	13	17	Memorization	3/04/2016	Not Completed	-	

Tasks

1 - Ibn Juhu Dahak
3 - Ibn Abbas ibn Firnas
5 - Ibn Samira Saghir

Teacher1 can only view his students task.
First select student then status

4:09 AM 30/04/2016

Mail - Sit Nur Ummu H... Student Follow-Up Manage Tasks localhost:9009/manageTask.html

ADD TASK SEND MESSAGE LOGOUT Fn1 Ln1

Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment
1	1	Al-Baqara	8	12	Memorization	1/04/2016	2/04/2016	Excellent	Excellent work
1	7	Al-Baqara	13	17	Memorization	3/04/2016	Not Completed	-	

Tasks

1 - Ibn Juhu Dahak Task Status: All

2.18. Complete task

Student: 1 - Ibn Juhu Dahak Task Status: All

Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment
1	1	Al-Baqara	8	12	Memorization	1/04/2016	2/04/2016	Excellent	Excellent work
1	7	Al-Baqara	13	17	Memorization	3/04/2016	Not Completed	-	

Choose a task then click on the check mark

Only these 3 fields are editable for complete task

Student: 1 - Ibn Juhu Dahak

Tasks

Student ID: 1 Task ID: Surah Name: Al-Baqara From Aya: 13 To Aya: 17 Task Type: Memorization Due Date: 3/04/2016

Completed Date: 30/04/2016 Mastery Level: Comment: Enter comment

By default, completed date will set to today's date

HalaqaMetrash Web App

Complete Task

Student:	1
Surah Id:	2
Surah Name:	Al-Baqara
From Aya:	13
To Aya:	17
Task Type:	Memorization
Due Date:	3/04/2016
Completed Date:	30/04/2016 This field is required
Mastery Level:	Poor This field is required
Comment:	Enter comment This field is required

Logout Fn1 Ln1

Missing field will result in this error.

HalaqaMetrash Web App

Complete Task

Student:	1
Surah Id:	2
Surah Name:	Al-Baqara
From Aya:	13
To Aya:	17
Task Type:	Memorization
Due Date:	3/04/2016
Completed Date:	01/04/2016 Date complete must be >= due Date
Mastery Level:	Poor
Comment:	Try hard next time

Logout Fn1 Ln1

Completed date must be greater or equal to due date.

HalaqaMetra Web App

Tasks

Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment
1	1	Al-Baqara	8	12	Memorization	1/04/2016	2/04/2016	Excellent	Excellent work
1	7	Al-Baqara	13	17	Memorization	3/04/2016	7/04/2016	Poor	Try hard next time

2.19. Delete task

HalaqaMetra Web App

Tasks

Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment
3	9	An-Nisa	15	19	Memorization	3/04/2016	Not Completed	-	-
3	13	An-Nas	1	6	Memorization	1/05/2016	Not Completed	-	-

Choose a task, click on the trash button.

localhost:9009 says:
Confirm delete?

OK Cancel

Confirm dialog will pop up and click ok to delete

The screenshot shows a web browser window titled "HalaqaMetra Web App". The URL is "localhost:9009/manageTask.html". The page displays a table of tasks for student 3 - Ibn Abbas Ibn Firdaus. One task for Surah An-Nisa (From Aya 15, To Aya 19) is listed with the status "Not Completed". Below the table, a message box states: "The deleted task automatically disappears." A red arrow points from the text to the deleted row in the table.

2.20. Add Task

The screenshot shows a web browser window titled "Add Task" with the URL "localhost:9009/addTask.html". A modal dialog box displays the error message: "localhost:9009 says: To Aya must be greater than From Aya". The form below contains fields for Student (3 - Ibn Abbas Ibn Firdaus), Surah (2 - [286 Aya] Al-Baqara - البقرة), From Aya (75), To Aya (38), Due Date (01/05/2016), and Task Type (Memorization). A callout box on the right explains the validation rule: "Fill the form. This form will reject empty fields. If toAya is less than fromAya it will reject it and display warning".

Add New Task

Student:	3 - Ibn Abbas ibn Firnas
Surah:	2. [286 Aya] Al-Baqara - البقرة
From Aya:	75
To Aya:	112
Due Date:	01/05/2016
Task Type:	<input checked="" type="radio"/> Memorization <input type="radio"/> Revision
<input type="button" value="Submit"/>	

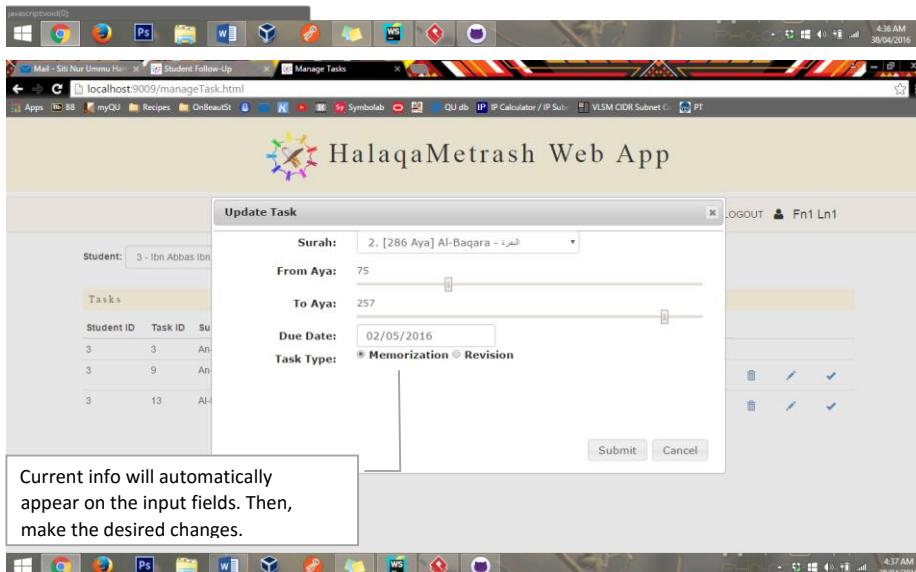
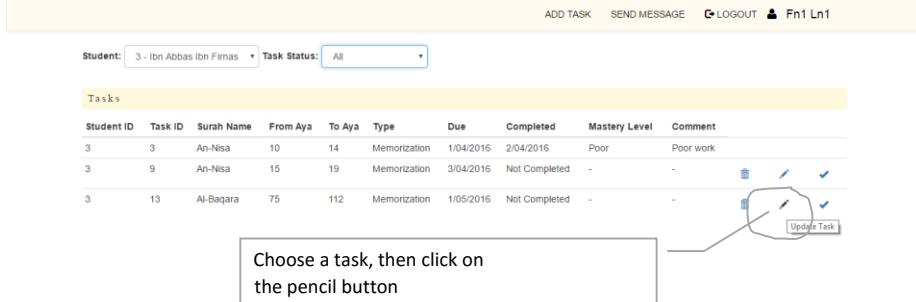
Go to manage task to see the newly added task:

HalaqaMetrash Web App

Tasks									
Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment
3	3	An-Nisa	10	14	Memorization	1/04/2016	2/04/2016	Poor	Poor work
3	9	An-Nisa	15	19	Memorization	3/04/2016	Not Completed	-	
3	13	Al-Baqara	75	112	Memorization	1/05/2016	Not Completed	-	



2.21. Update task



HalaqaMetra Web App

ADD TASK SEND MESSAGE LOGOUT Fn1 Ln1

Student: 3 - Ibn Abbas ibn Firas Task Status: Pending Tasks

Tasks											
Student ID	Task ID	Surah Name	From Aya	To Aya	Type	Due	Completed	Mastery Level	Comment		
3	9	An-Nisa	15	19	Memorization	3/04/2016	Not Completed	-			
3	13	Al-Baqara	75	257	Memorization	2/05/2016	Not Completed	-			

HalaqaMetra Web App

MANAGE TASK SEND MESSAGE LOGOUT Fn1 Ln1

Send Message

juha@test.com

Choose one of his student.
The parent email will automatically filled

Message

Image Link Attach Picture Submit

1 - Ibn Juha Dahak
1 - Ibn Juha Dahak
3 - Ibn Abbas ibn Firas
5 - Ibn Samira Saghir

Mail - Siti Nur Ummu H... X Student Follow-Up X Instructor Homepage X

localhost:9009/sendMessage.html

HalaqaMetrash Web App

MANAGE TASK SEND MESSAGE LOGOUT Fn1 Ln1

Send Message

1 - Ibn Juha Dahak juha@test.com

Reminder

Please bring a bigger Quran with color coded tajweed

Image Link Attach Picture

Submit

Picture uploading is not implemented

Mail - Siti Nur Ummu H... X Student Follow-Up X Parent Homepage X

localhost:9009/parent.html

HalaqaMetrash Web App

MESSAGES STUDENT FOLLOW-UP LOGOUT Juha Dahak

E-mail Inbox

Date	From	Subject	Message
15/03/2016	teacher2@halaga.org	Very Good	I'm really pleased with her performance
29/04/2016	teacher1@halaga.org	Need practice	Please help your child with practising the tasks
30/04/2016	teacher1@halaga.org	Reminder	Please bring a bigger Quran with color coded tajweed

Announcements

Date	Announcement
24/03/2016	There will be no classes next week. Classes will continue as normal from next week.
29/04/2016	We invite you to come along with your child on Tuesday to get more information about their progress.

The email has been sent successfully and can be viewed in the parent's page

```

from
  "to": "abbastest.com",
  "studentId": 4,
  "subject": "Well Done",
  "message": "Your child did well today classes",
  "date": "4/05/2015",
  "msgId": 9
},
{
  "from": "teacher1@halaga.org",
  "to": "juha@test.com",
  "studentId": 1,
  "subject": "Reminder",
  "message": "Please bring a bigger Quran with color coded tajweed",
  "date": "30/04/2016",
  "msgId": 10
}
]

```

2.23. Announcements

Make Announcement

Ramadhan Kareem

Image Link

Attach Picture

Ramadhan Kareem everyone!

Picture uploading is not implemented

Submit

E-mail Inbox

Date	From	Subject	Message
29/03/2016	teacher1@halaqa.org	Behaviour	Please talk to your child regarding his behaviour
30/04/2015	teacher2@halaqa.org	Absent	Your child has missed a lot of classes
4/05/2015	teacher2@halaqa.org	Well Done	Your child did well today classes

```

84
85
86
87
88
89
90
91
92
93
94
  "message": "Please bring a bigger Quran with color coded
  "date": "30/04/2016",
  "msgId": 10
}
{
  "subject": "Ramadhan Kareem",
  "message": "Ramadhan Kareem everyone!",
  "date": "30/04/2016",
  "msgId": 11
}

```

Announcements

Date	Announcement
24/03/2016	There will be no classes next week. Classes will continue as normal from next week
29/04/2016	We invite you to come along with your child on Tuesday to get more information about their progress
30/04/2016	Ramadhan Kareem everyone!

2.24. Parent Student Follow-up

This screenshot shows the 'Student Follow-up' section of the HalaqaMettrash Web App from a parent's perspective. The user is logged in as 'Juha Dahak'. A dropdown menu shows the selected student is '1 - Ibn Juha Dahak'. The main table displays two tasks: 'Memorization' assigned on 1/04/2016 with a due date of 2/04/2016, marked as 'Excellent' with a comment 'Excellent work'; and another 'Memorization' task assigned on 3/04/2016 with a due date of 7/04/2016, marked as 'Poor' with a comment 'Try hard next time'. To the right, there is a 'Announcements' section with two entries: one on 24/03/2016 stating 'There will be no classes next week. Classes will continue as normal from next week.' and another on 29/04/2016 inviting parents to come along with their child on Tuesday for more information about their progress.

Name	To Aya	Type	Due Date	Completed Date	Mastery Level	Comment	
Ibn Juha Dahak	8	12	Memorization	1/04/2016	2/04/2016	Excellent	Excellent work
Ibn Juha Dahak	13	17	Memorization	3/04/2016	7/04/2016	Poor	Try hard next time

Announcement on the right hand side

Date	Announcement
24/03/2016	There will be no classes next week. Classes will continue as normal from next week.
29/04/2016	We invite you to come along with your child on Tuesday to get more information about their progress.

2.25. Coordinator Student Follow-up

This screenshot shows the 'Student Follow-up' section of the HalaqaMettrash Web App from a coordinator's perspective. The user is logged in as 'Facilitator Coordinator'. A dropdown menu shows the selected student is '2 - Bint Juha Dahak'. The main table displays three tasks: 'Revision' assigned on 1/04/2016 with a due date of 2/04/2016, marked as 'Ok' with a comment 'Ok work'; and two other 'Revision' tasks assigned on 3/04/2016 with a due date of 14/04/2016, marked as '13' and '18' respectively. Below the table, a 'Messages' section shows a single message from 'teacher2@halqa.org' dated 15/03/2016, stating 'Very Good I'm really pleased with her performance'.

Name	To Aya	Type	Due Date	Completed Date	Mastery Level	Comment
Bint Juha Dahak	13	Revision	1/04/2016	2/04/2016	Ok	Ok work
Bint Juha Dahak	18	Revision	3/04/2016			

Coordinator can view any student progress...

...as well as their message.

Date	From	Subject	Message
15/03/2016	teacher2@halqa.org	Very Good	I'm really pleased with her performance