

## Penghargaan

Saya ingin merakamkan rasa terima kasih kepada semua pihak yang telah membantu saya untuk menjayakan kajian ini.

Pertama sekali saya ingin mengucapkan ribuan terima kasih kepada Pengetua Sekolah Menengah Kebangsaan Kuching High iaitu Encik Tan Kiang Tuang, kerana beliau telah memberi kebenaran kepada saya untuk menjalankan kerja kursus sains komputer ini. Selain itu, kepada guru mata pelajaran sains komputer saya Puan Sim Pei Sin. Saya juga ingin mengucapkan ribuan terima kasih kepada beliau telah banyak memberi tunjuk ajar dan bimbingan kepada kami sepanjang kajian ini dijalankan.

Ucapan terima kasih juga saya tunjukan kepada ibu saya Lina Lu Ching Fung dan bapa saya Patrick Ting Ek Chai, mereka telah banyak memberi sokongan dan dorongan kepada saya demi memastikan kajian ini dapat dilaksanakan dengan sempurna. Seterusnya, saya ingin mengucapkan ribuan terima kasih juga kepada empat orang rakan, iaitu Beatrice Kiu, Jonathan Chai, Deron Foo dan Lai Jun Hong yang telah banyak membantu saya dalam mengumpul dan merekod maklumat kajian ini.

Akhir sekali, saya ingin mengucapkan terima kasih kepada 3 orang responden saya telah sanggup memberi kerjasama yang baik terhadap saya semasa kajian ini dijalankan.

Sesungguhnya dengan bantuan daripada semua pihak sama ada secara langsung atau tidak langsung maka kerja kursus ini dapat disiapkan dengan jayanya.

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## Fasa 1 : Menganalisis Masalah

### 1.1 Penyataan Masalah

Pandemik Covid-19 telah memaksa KPM meminta semua murid meneruskan pembelajaran dan guru untuk menilai prestasi pembelajaran murid secara atas talian pada masa Perintah Kawalan Pergerakan Malaysia (PKPM). Proses penilaian tersebut menyukarkan ramai guru kerana biasanya penilaian dilakukan secara manual iaitu mencatatkan semua penilaian prestasi pelajar di dalam buku kemajuan. Ketidadaan sistem berkomputer bagi menguruskan hal-hal tersebut menyukarkan semua pihak sekolah terutama guru dan pelajar. Salah satu masalahnya ialah guru bersilap dalam penyemakan atau penandaan dan bersilap dalam pengiraan markah dan gred. Selain itu, pentadbiran kuiz dan penandaan memerlukan masa yang lama dan tidak produktif untuk diselesaikan dan murid mudah bosan semasa menjalankan kuiz. Hal ini demikian, bagi mengatasi masalah ini, satu aplikasi dalam bentuk kuiz atau permainan berasaskan web dicadangkan untuk dibangunkan bagi tujuan mengurus koleksi soalan secara efisien, cepat, boleh diulangkan banyak dan mudah diterbitkan oleh guru sekiranya mempunyai kesalahan dalam soalan. Di samping itu, aplikasi ini memantau prestasi murid mengikut subjek atau topik yang dipilih melalui penilaian dengan secara automatik, tepat dan kemas. Selanjutnya, aplikasi ini juga dapat menyeronokkan dan meningkatkan motivasi murid- murid dalam melakukan kuiz

### 1.2 Objektif

Menghasilkan satu aplikasi dalam bentuk kuiz atau permainan berdasarkan konsep e-pembelajaran yang boleh:

1. Merekod, menambah, menyunting, mengurus serta menyimpan data-data koleksi soalan berkaitan subjek atau topik yang dipilih.
2. Menilai dan mengira pencapaian atau prestasi murid dalam melaksanakan soalan-soalan melalui penilaian secara automatik dan tepat.
3. Memaparkan laporan pencapaian atau prestasi murid pada skrin
4. Menyenangkan dan menyesuaikan pembelajaran serta pendidikan murid melalui e-pembelajaran pada situasi Covid-19 masa kini.

### 1.3 Skop

1. Aplikasi ini hanya mengimplikasikan soalan-soalan berdasarkan subjek KSSM Chemistry Form 5 Chapter 1 Redox Reaction sahaja.
2. Aplikasi ini hanya mengira dan memaparkan peratus markah pencapaian murid sahaja.
3. Aplikasi ini hanya berfokus kepada soalan objektif, soalan isi tempat kosong dan soalan benar/palsu sahaja.

### 1.4 Kumpulan Sasaran

1. Murid tingkatan 5 dalam aliran sains yang mengambil subjek kimia
2. Guru yang mengajar subjek kimia

### 1.5 Menilai Sistem yang sedia ada

#### Fungsi sistem sedia ada:

- Persediaan soalan yang dicatatkan di buku
- Perekodan serta penilaian murid menggunakan buku dan fail secara manual.

#### Kekuatan:

- Sistem sedia ada tidak memerlukan kemahiran tertentu untuk menyediakan koleksi soalan dalam sistem
- Sistem sedia ada tidak memerlukan kemahiran tertentu untuk menyimpan rekod pencapaian atau prestasi murid
- Sistem sedia ada dapat membuat soalan dengan senang dan cepat

#### Kelemahan:

- Memerlukan ruang yang luas untuk menyimpan koleksi soalan dan perekodan pencapaian atau prestasi murid.
- Masa diambil untuk mentadbir kuiz dan penandaan lama dan tidak efisien
- Kesilapan dalam penandaan dan pengiraan markah serta gred
- Murid mudah bosan semasa membuat soalan

### Justifikasi sistem baharu

- Aplikasi kuiz online ini dapat diakses kepada semua murid di seluruh dunia sekiranya mempunyai internet.
- Aplikasi kuiz online ini dapat merekod pencapaian atau prestasi murid dengan mudah, cepat, kemas dan tepat
- Aplikasi kuiz online ini dapat mengurus koleksi soalan secara efisien, cepat, boleh diulangkan banyak dan mudah diterbitkan oleh guru sekiranya mempunyai kesalahan dalam soalan
- Aplikasi kuiz online ini dapat meningkatkan motivasi dan menyeronokkan murid semasa membuat kuiz

### Nama sistem baharu:

Application Quiz Online KSSM Chemistry F5 C1

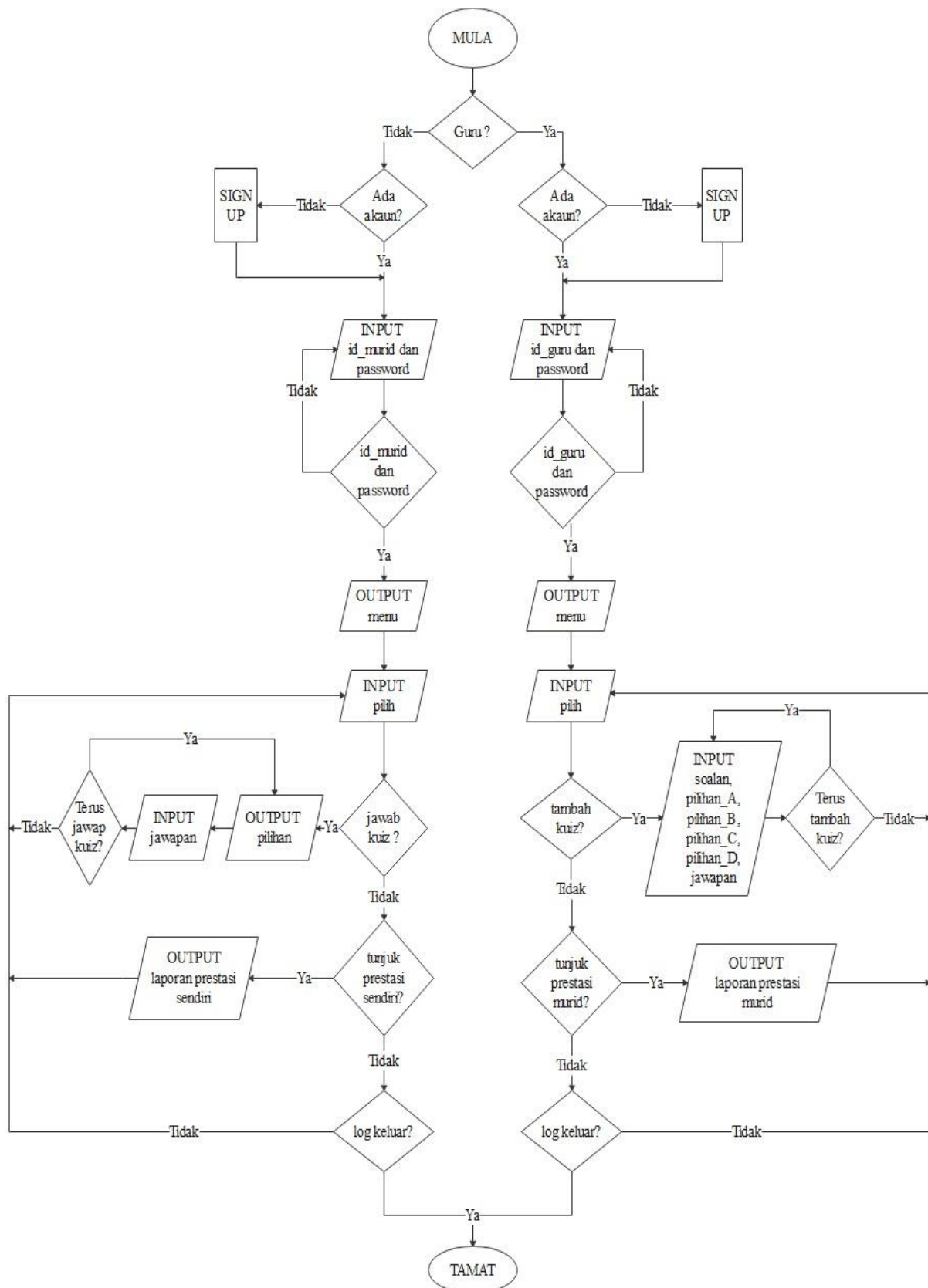
## 1.6 Tempoh Projek

JADUAL PELAKSANAAN PROJEK SAINS KOMPUTER (3770/2)									
TINGKATAN 4 (TAHUN 2020)									
		BULAN							
		SEPTEMBER				OKTOBER			
MINGGU / PERKARA		1	2	3	4	1	2	3	4
1. Taklimat guru kepada pelajar									
FASA 1 Menganalisis Maklumat	1.1 Penyataan Masalah								
	1.2 Objektif								
	1.3 Skop								
	1.4 Kumpulan Sasaran								
	1.5 Menilai sistem ada								
	1.6 Tempoh kerja projek								
FASA 2 Mereka Bentuk Penyelesaian	2.1 Algoritma								
	2.2 Gambar rajah perhubungan entity								
	2.3 Penormalan								
	2.4 Antara muka input dan output								
3. Menghantar Fasa 1 dan Fasa 2 Tingkatan 4									

JADUAL PELAKSANAAN PROJEK SAINS KOMPUTER (3770/2)																													
TINGKATAN 5 (TAHUN 2021)																													
		BULAN																											
		JAN				FEB				MAC				APRIL				MEI				JUN				JULAI			
	MINGGU / PERKARA	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FASA 3 Melaksanakan Penyelesaian	3.1 Jadual																												
	3.2 Borang																												
	3.3 Query																												
	3.4 Laporan																												
	3.5 Mengekod																												
FASA 4 Menguji dan Menyah Ralat	4.1 Ralat Sintaks																												
	4.2 Ralat Logik																												
	4.3 Ralat Masa Larian																												
FASA 5 Mendokumentasi	5.1 Laporan Setiap Fasa																												
	5.2 Sumber Rujukan																												
	5.3 Penghargaan																												
FASA 6 Nilai	6.1 Keaslian dan Nilai Komersial Produk																												
	6.2 Kreativit Antara Muka																												
	6.3 Kebolehpakaian Produk																												
	6.4 Manual Pengguna																												
	6.5 Mempamerkan Nilai-Nilai Murni																												

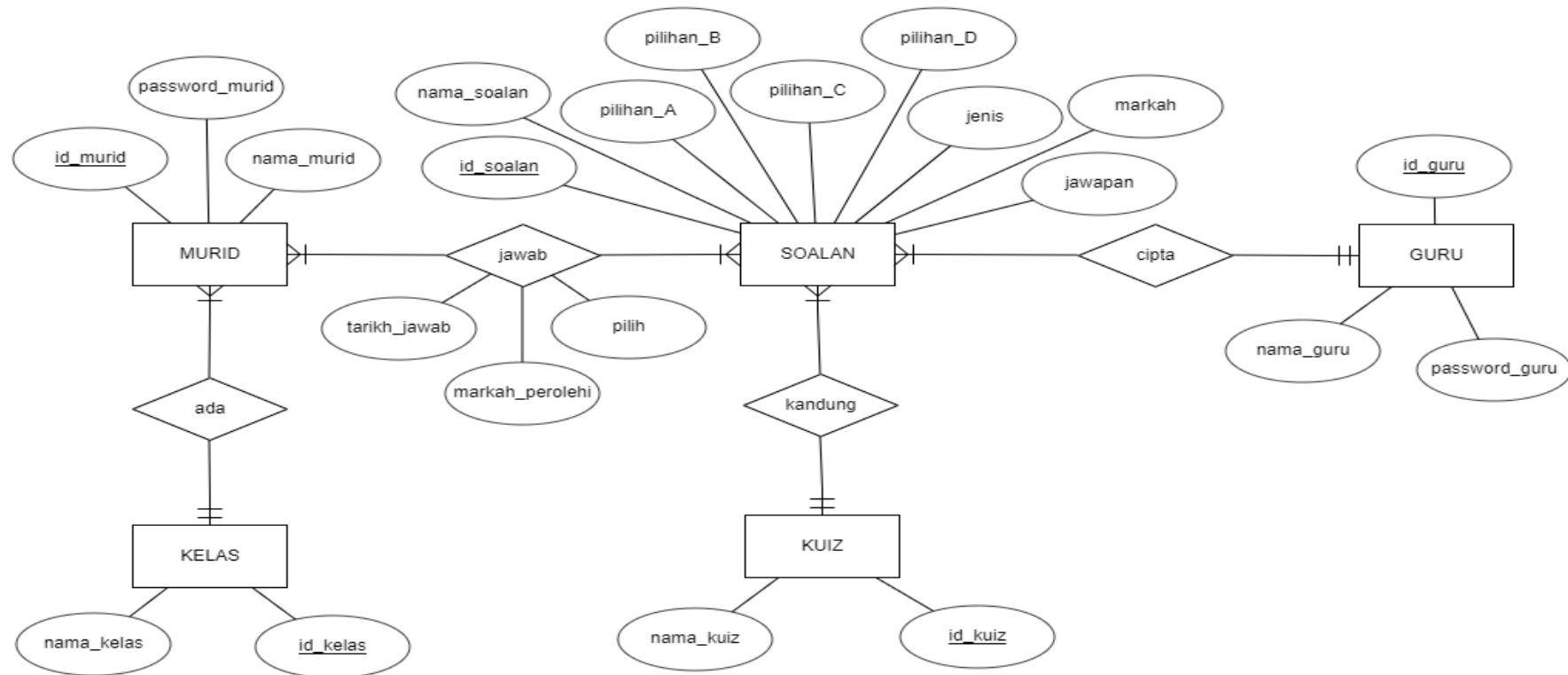
## Fasa 2 : Mereka bentuk Penyelesaian

### 2.1 Algoritma





## 2.2 Gambar Rajah Perhubungan Entiti (ERD)



## 2.3 Penormalan

Sila merujuk kepada file di Lampiran 1 pada muka surat \_\_\_\_

## 2.4 Antara Muka Input/Output

### 1. Halaman log masuk (Login Page)

CHEMISTRY  
QUIZ

SIGN IN

ID

Password

Login

Sign Up

### 2. Halaman pendaftaran pengguna baharu (Sign Up Page)

CHEMISTRY  
QUIZ

SIGN IN

ID

Name

Class

Password

Register

Back

### 3. Halaman menu utama untuk murid (Mode Murid)

Let's Learn Chemistry !!!	
<div>Main</div> <div>Menu</div> <div>Nama pengguna</div> <div>Home</div> <div>Quiz</div> <div>Log Out</div>	<div>WELCOME !!!</div> <div>CHEMISTRY</div> <div>QUIZ</div> <div>Marks will be recorded in the report after you have done answering</div>

### 4. Halaman menu utama untuk guru (Mode Guru)

Let's Learn Chemistry !!!	
<div>Main</div> <div>Menu</div> <div>Nama pengguna</div> <div>Home</div> <div>Question</div> <div>Teacher</div> <div>Student</div> <div>Report</div> <div>Report</div> <div>Log Out</div>	<div>WELCOME !!!</div> <div>CHEMISTRY</div> <div>QUIZ</div> <div>Marks will be recorded in the report after you have done answering</div>

5. Halaman menjawab soaln daripada kuiz topic yang dipilih (Mode Murid)

Let's Learn Chemistry !!!									
<div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">Main Menu</div> <p>Nama pengguna</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 5px;">Home</div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 5px;">Quiz</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Log Out</div>	<div style="text-align: center; font-weight: bold; margin-bottom: 10px;">ONLINE QUIZ QUESTIONS</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">No.</th> <th>Questions</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>                     (Question)                      A (Answer)                      B (Answer)                      C (Answer)                      D (Answer)                 </td> </tr> <tr> <td style="text-align: center;">2</td> <td>                     (Question)                      TRUE                      FALSE                 </td> </tr> <tr> <td style="text-align: center;">3</td> <td>                     (Question)  <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div> </td> </tr> </tbody> </table> <div style="text-align: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px 20px; display: inline-block;">Submit</div> </div>	No.	Questions	1	(Question) A (Answer) B (Answer) C (Answer) D (Answer)	2	(Question) TRUE FALSE	3	(Question) <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div>
No.	Questions								
1	(Question) A (Answer) B (Answer) C (Answer) D (Answer)								
2	(Question) TRUE FALSE								
3	(Question) <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div>								

6. Halaman laoran prestasi murid dan skema jawapan kuiz topik tertentu (Mode Murid)

Let's Learn Chemistry !!!																								
<div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">Main Menu</div> <p>Nama pengguna</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 5px;">Home</div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 5px;">Quiz</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Log Out</div>	<div style="text-align: center; font-weight: bold; margin-bottom: 10px;">Answer Scheme</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">No.</th> <th>Questions</th> <th>Answer Scheme</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>                     (Question)                      A (Answer)                      B (Answer)                      C (Answer)                      D (Answer)                 </td> <td>                     Answer Scheme:                      Your Answer:                 </td> </tr> <tr> <td style="text-align: center;">2</td> <td>                     (Question)                      TRUE                      FALSE                 </td> <td>                     Answer Scheme:                      Your Answer:                 </td> </tr> <tr> <td style="text-align: center;">3</td> <td>                     (Question)  <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div> </td> <td>                     Answer Scheme:                      Your Answer:                 </td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 50%;">Quiz Topic</th> <th>Quiz Chemistry 1.1</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Correct</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Incorrect</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Total Question</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">Result</td> <td style="text-align: center;">50 %</td> </tr> </tbody> </table>		No.	Questions	Answer Scheme	1	(Question) A (Answer) B (Answer) C (Answer) D (Answer)	Answer Scheme: Your Answer:	2	(Question) TRUE FALSE	Answer Scheme: Your Answer:	3	(Question) <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div>	Answer Scheme: Your Answer:	Quiz Topic	Quiz Chemistry 1.1	Correct	1	Incorrect	1	Total Question	2	Result	50 %
No.	Questions	Answer Scheme																						
1	(Question) A (Answer) B (Answer) C (Answer) D (Answer)	Answer Scheme: Your Answer:																						
2	(Question) TRUE FALSE	Answer Scheme: Your Answer:																						
3	(Question) <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div>	Answer Scheme: Your Answer:																						
Quiz Topic	Quiz Chemistry 1.1																							
Correct	1																							
Incorrect	1																							
Total Question	2																							
Result	50 %																							

7. Halaman laporan prestasi murid mengikut kelas (Mode guru)

Let's Learn Chemistry !!!

Main

Menu

Nama pengguna

Home

Question

Teacher

Student

Report

Report

Log Out

Overall Achievement

No	Name	Class	Date	Quiz	Marks Obtained
1	Heng Ho Hong	5A	21/20/2021	Quiz Chemistry (1.1)	50
2	Adam Thian	5B	24/20/2021	Quiz Chemistry (1.2)	100
3	Esther Chai	5C	27/20/2021	Quiz Chemistry (1.3)	100

Print

8. Halaman menambah, menyunting, memadam soalan (Mode Guru)

Let's Learn Chemistry !!!

Main

Menu

Nama pengguna

Home

Question

Teacher

Student

Report

Report

Log Out

Add New Question

Question ID

Question

Option A

Option B

Option C

Option D

Answer

Marks

Created By

Quiz Topic

Type of Qs

Add

## Fasa 3 : Melaksanakan Penyelesaian

### 3.1 Jadual

#### Jadual MURID

##### **murid**

Column	Type	Null	Default	Links to	Comments	Media type
id_murid ( <i>Primary</i> )	varchar(4)	No				
nama_murid	varchar(50)	No				
id_kelas	varchar(4)	No		kelas -> id_kelas		
password_murid	varchar(20)	No				

##### **Indexes**

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	id_murid	1	A	No	
id_kelas	BTREE	No	No	id_kelas	1	A	No	

MURID (id\_murid <KP>, nama\_murid, password\_murid, id\_kelas <KP><KA>)

#### Jadual KELAS

##### **kelas**

Column	Type	Null	Default	Links to	Comments	Media type
id_kelas ( <i>Primary</i> )	varchar(4)	No				
nama_kelas	varchar(10)	No				

##### **Indexes**

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	id_kelas	2	A	No	

KELAS (id\_kelas <KP>, nama\_kelas)

#### Jadual GURU

##### **guru**

Column	Type	Null	Default	Links to	Comments	Media type
id_guru ( <i>Primary</i> )	varchar(4)	No				
nama_guru	varchar(50)	No				
password_guru	varchar(20)	No				

##### **Indexes**

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	id_guru	0	A	No	

GURU (id\_guru <KP>, nama\_guru, password\_guru)

## Jadual KUIZ

### **kuiz**

Column	Type	Null	Default	Links to	Comments	Media type
id_kuiz ( <i>Primary</i> )	varchar(4)	No				
nama_kuiz	varchar(50)	No				

### **Indexes**

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	id_kuiz	3	A	No	

KUIZ (id\_kuiz <KP>, nama\_kuiz)

## Jadual SOALAN

### **soalan**

Column	Type	Null	Default	Links to	Comments	Media type
id_soalan ( <i>Primary</i> )	varchar(4)	No				
nama_soalan	varchar(1000)	No				
pilihan_A	varchar(1000)	No				
pilihan_B	varchar(1000)	No				
pilihan_C	varchar(1000)	No				
pilihan_D	varchar(1000)	No				
jawapan	varchar(1)	No				
markah	int(2)	No				
id_guru	varchar(4)	No		guru -> id_guru		
id_kuiz	varchar(4)	No		kuiz -> id_kuiz		
jenis	int(1)	No				

### **Indexes**

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	id_soalan	3	A	No	
id_guru	BTREE	No	No	id_guru	3	A	No	
				id_kuiz	3	A	No	
soalan_kuiz	BTREE	No	No	id_kuiz	3	A	No	

SOALAN (id\_soalan <KP>, nama\_soalan, pilihan\_A, pilihan\_B, pilihan\_C, pilihan\_D, jawapan, markah, jenis, id\_guru <KP><KA>, id\_kuiz <KP><KA>)

## Jadual PELAKSANAAN KUIZ

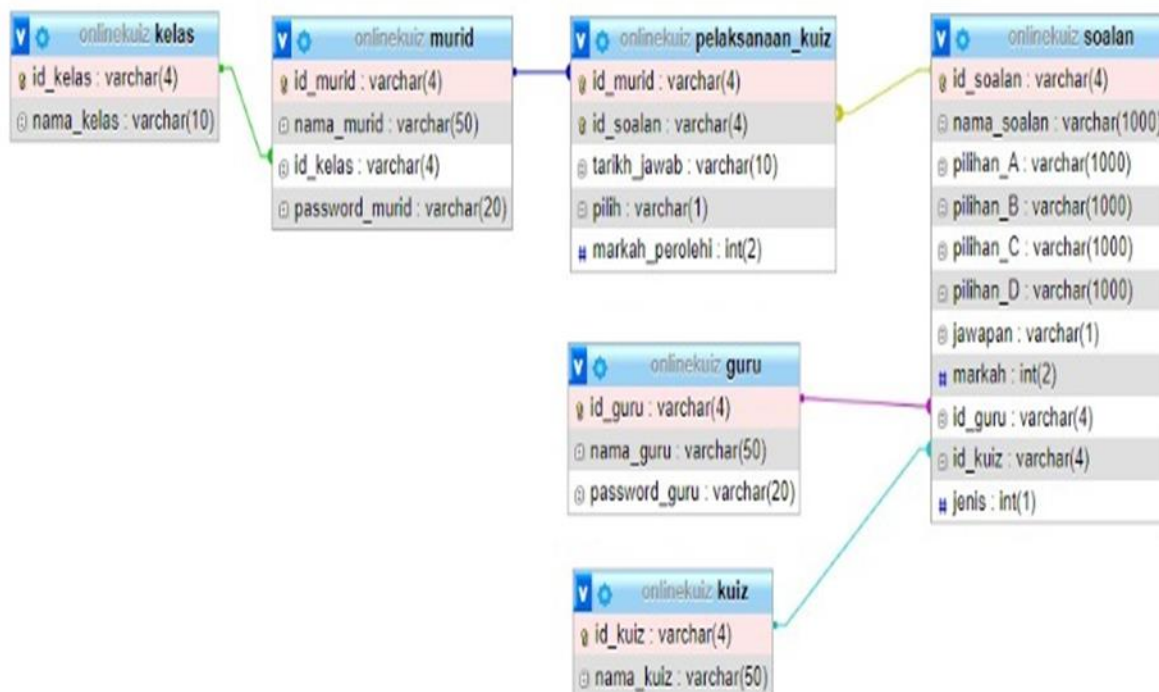
### pelaksanaan\_kuiz

Column	Type	Null	Default	Links to	Comments	Media type
id_murid ( <i>Primary</i> )	varchar(4)	No		murid -> id_murid		
id_soalan ( <i>Primary</i> )	varchar(4)	No		soalan -> id_soalan		
tarikh_jawab	varchar(10)	No				
pilih	varchar(1)	No				
markah_perolehi	int(2)	No				

### Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	id_murid	2	A	No	
				id_soalan	2	A	No	
pelaksanaankuiz_soalan	BTREE	No	No	id_soalan	2	A	No	

PELAKSANAAN KUIZ (id\_soalan <KP>KA>, id\_murid <KP><KA>, tarikh\_jawab, pilih, markah\_perolehi





## 3.2 Borang

a) Borang log masuk ke aplikasi (Sign In)



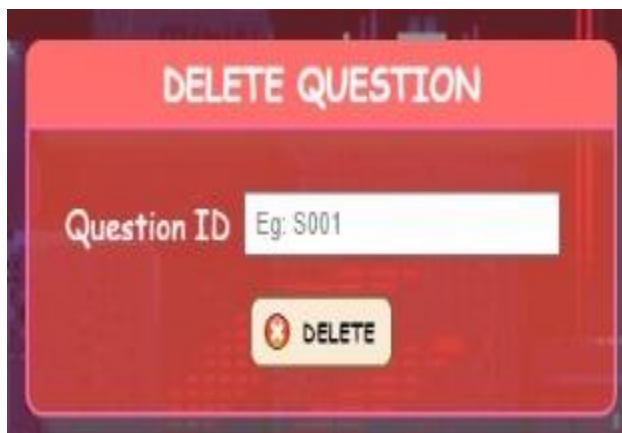
A screenshot of a 'SIGN IN' form. It has a red header with the title 'SIGN IN'. Below the header, there are two input fields: 'ID' with a placeholder 'Eg: M001' and 'Password' with a placeholder 'password'. At the bottom, there are two buttons: 'Login' and 'Sign Up', both with a green circular icon containing a white arrow.

b) Borang pendaftaran akaun (Sign Up)



A screenshot of a 'SIGN UP' form. It has a red header with the title 'SIGN UP'. Below the header, there are four input fields: 'ID' with a placeholder 'Eg: M001', 'Name', 'Class' with a dropdown menu showing '5A', and 'Password'. At the bottom, there are two buttons: 'Register' and 'Back', both with a green circular icon containing a white arrow.

e) Borang Padam Soalan



A screenshot of a 'DELETE QUESTION' form. It has a red header with the title 'DELETE QUESTION'. Below the header, there is one input field: 'Question ID' with a placeholder 'Eg: S001'. At the bottom, there is a button labeled 'DELETE' with a red circular icon containing a white arrow.

f) Borang Menunjukkan Prestasi



A screenshot of a 'TYPE OF REPORTS' form. It has a red header with the title 'TYPE OF REPORTS'. Below the header, there is one dropdown menu showing 'All Class and Result'. At the bottom, there is a button labeled 'SHOW' with a blue circular icon containing a white arrow.

g) Borang Import Data



A screenshot of an 'IMPORT DATA' form. It has a red header with the title 'IMPORT DATA'. Below the header, there are two input fields: 'Type of Data' with a dropdown menu showing 'Students' and 'File Name' with a placeholder 'Choose File' and 'No file chosen'. At the bottom, there is a button labeled 'IMPORT' with a green circular icon containing a white arrow.

h) Borang Pilih Quiz Topic



A screenshot of a 'PLEASE CHOOSE A QUIZ TOPIC' form. It has a red header with the title 'PLEASE CHOOSE A QUIZ TOPIC'. Below the header, there is one dropdown menu showing 'Plus and Minus'. At the bottom, there is a button labeled 'START' with a green circular icon containing a white arrow.

c) Borang Tambah Soalan Baharu

**ADD NEW QUESTION**

Question ID

Question

Option A

Option B

Option C

Option D

Answer

Marks

Created By

Quiz Topic

Type of Question

d) Borang Kemas Kini Soalan

**CHOOSE QUESTION**

Question

**UPDATE QUESTION**

Question ID

Question

Option A

Option B

Option C

Option D

Answer

Marks

Created By

Quiz Topic

Type of Question

i) Borang Menjawab Kuiz

No	Question
1	$8+2 =$ <input type="radio"/> A. 10 <input type="radio"/> B. 5 <input type="radio"/> C. 6 <input type="radio"/> D. 7
2	$5-2 =$ <input type="radio"/> A. 1 <input type="radio"/> B. 2 <input type="radio"/> C. 3 <input type="radio"/> D. 4
3	$8+3 =$ <input type="radio"/> A. 10 <input type="radio"/> B. 5 <input type="radio"/> C. 6 <input type="radio"/> D. 11

### 3.3 Query

a) Paparan query menyenaraikan semua soalan

Antara Muka

LIST OF QUESTIONS										
Question ID	Question	Option A	Option B	Option C	Option D	Answer	Marks	Created By	Quiz Topic	Type of Question
S101	What is oxidation number of Cr in $\text{Cr}_2\text{O}_7^{2-}$ ?	-2	+2	+6	+12	C	1	6001	Q001	1
S102	What is an electrolytic cell?	a cell that converts chemical energy into electrical energy	a cell that converts electrical energy into electrical energy	a cell that converts electrical energy into chemical energy	A cell that converts kinetic energy into potential energy.	C	1	6001	Q001	1
S201	$\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^-$ is an example of reduction reaction					TRUE	1	6001	Q002	2
S202	"The equation below shows the reaction between sodium and water to form sodium hydroxide and hydrogen. $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$ In this reaction, Na undergoes _____"					oxidation	1	6002	Q002	3
S301	Potassium iodide solution is an oxidising agent?					FALSE	1	6002	Q003	2

### Coding

```
// List out all the questions
<?php
include('sambungan.php');

$sql = 'select id_soalan, nama_soalan, pilihan_A, pilihan_B, pilihan_C, pilihan_D, jawapan, markah, id_guru, id_kuiz, jenis
from soalan';

$result = mysqli_query($sambungan,$sql);
while($row=mysqli_fetch_array($result)) {
    echo '<tr>
        <td>'.$row["id_soalan"].'</td>
        <td>'.$row["nama_soalan"].'</td>
        <td>'.$row["pilihan_A"].'</td>
        <td>'.$row["pilihan_B"].'</td>
        <td>'.$row["pilihan_C"].'</td>
        <td>'.$row["pilihan_D"].'</td>
        <td>'.$row["jawapan"].'</td>
        <td>'.$row["markah"].'</td>
        <td>'.$row["id_guru"].'</td>
        <td>'.$row["id_kuiz"].'</td>
        <td>'.$row["jenis"].'</td>
    </tr>';
}
?>
```

b) Paparan query menyenaraikan semua murid

Antara Muka



Student ID	Student Name	Student Class
M001	Adam Thian	K001
M002	Heng Ho Hong	K002
M003	Esther Chai	K003

Coding

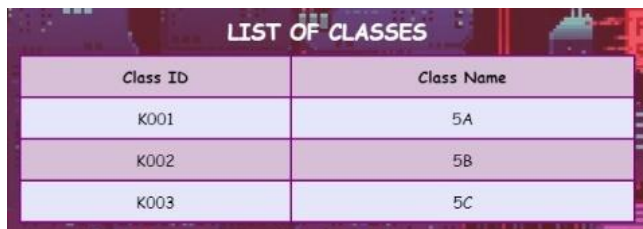
```
//List out all the students
<?php
    include('sambungan.php');

    $sql = 'select id_murid, nama_murid, id_kelas from murid';

    $result = mysqli_query($sambungan,$sql);
    while($row=mysqli_fetch_array($result)) {
        echo '<tr>
            <td>'.$row["id_murid"].'</td>
            <td>'.$row["nama_murid"].'</td>
            <td>'.$row["id_kelas"].'</td>
        </tr>';
    }
?>
```

c) Paparan query menyenaraikan semua kelas

Antara Muka



Class ID	Class Name
K001	5A
K002	5B
K003	5C

Coding

```
//List out all the classes
<?php
    include('sambungan.php');

    $sql = 'select id_kelas, nama_kelas from kelas';

    $result = mysqli_query($sambungan,$sql);
    while($row=mysqli_fetch_array($result)) {
        echo '<tr>
            <td>'.$row["id_kelas"].'</td>
            <td>'.$row["nama_kelas"].'</td>
        </tr>';
    }
?>
```

d) Paparan query menyenaraikan semua guru

Antara Muka



Teacher ID	Teacher Name
G001	Pn Hu Sing Min
G002	Mr Ali Muhammad

Coding

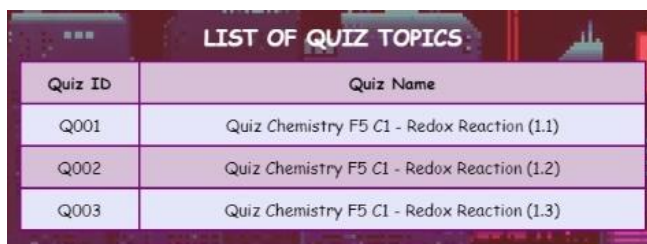
```
//List out all the teachers
<?php
    include('sambungan.php');

    $sql = 'select id_guru, nama_guru from guru';

    $result = mysqli_query($sambungan,$sql);
    while($row=mysqli_fetch_array($result)) {
        echo '<tr>
            <td>'.$row["id_guru"].'</td>
            <td>'.$row["nama_guru"].'</td>
        </tr>';
    }
?>
```

e) Paparan query menyenaraikan semua kuiz topik

Antara Muka



Quiz ID	Quiz Name
Q001	Quiz Chemistry F5 C1 - Redox Reaction (1.1)
Q002	Quiz Chemistry F5 C1 - Redox Reaction (1.2)
Q003	Quiz Chemistry F5 C1 - Redox Reaction (1.3)

Coding

```
//List out all the Quiz Topics
<?php
    include('sambungan.php');

    $sql = 'select id_kuiz, nama_kuiz from kuiz';

    $result = mysqli_query($sambungan,$sql);
    while($row=mysqli_fetch_array($result)) {
        echo '<tr>
            <td>'.$row["id_kuiz"].'</td>
            <td>'.$row["nama_kuiz"].'</td>
        </tr>';
    }
?>
```



f) Paparan query mencari soalan yang perlu dikemas kini

Coding

```
<?php
//Find the question that need to be updated
if (isset($_POST['id_soalan'])) {
    $id_soalan = $_POST["id_soalan"];
    $sql = "SELECT * FROM soalan WHERE id_soalan = '$id_soalan'";
    $result = mysqli_query($sambungan, $sql);
    $soalan = mysqli_fetch_array($result);

    $id_soalan = $soalan["id_soalan"];
    $nama_soalan = $soalan["nama_soalan"];
    $pilihan_A = $soalan["pilihan_A"];
    $pilihan_B = $soalan["pilihan_B"];
    $pilihan_C = $soalan["pilihan_C"];
    $pilihan_D = $soalan["pilihan_D"];
    $jawapan = $soalan["jawapan"];
    $markah = $soalan["markah"];
    $id_guru = $soalan["id_guru"];
    $id_kuiz = $soalan["id_kuiz"];
    $jenis = $soalan["jenis"];
}
else {
    $id_soalan = "";
    $nama_soalan = "";
    $pilihan_A = "";
    $pilihan_B = "";
    $pilihan_C = "";
    $pilihan_D = "";
    $jawapan = "";
    $markah = "";
    $id_guru = "";
    $id_kuiz = "";
    $jenis = 0;
}
}>
```

Antara Muka

The image shows two overlapping form windows on a dark background. The top window is titled "CHOOSE QUESTION" and contains a "Question" dropdown menu with the text "8+2 =" and a "FIND" button. The bottom window is titled "UPDATE QUESTION" and contains five input fields labeled "Question ID", "Question", "Option A", "Option B", and "Option C".

This image shows the continuation of the "UPDATE QUESTION" form. It includes input fields for "Option D", "Answer", and "Marks". Below these are three dropdown menus: "Created By" (showing "Alif Moony"), "Quiz Topic" (showing "Plus and Minus"), and "Type of Question" (showing "Objective Qs"). An "Update" button is at the bottom.

### 3.4 Laporan

a) Laporan prestasi murid berdasarkan semua kelas dan murid (Mode Guru)

OVERALL ACHIEVEMENT					
No	Name	Class	Date	Quiz	Marks Obtained
1	Adam Thian	5A	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.1)	50
2	Heng Ho Hong	5B	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.1)	0
3	Heng Ho Hong	5B	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.2)	100
4	Heng Ho Hong	5B	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.3)	100
5	Esther Chai	5C	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.1)	100
6	Esther Chai	5C	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.2)	0
7	Esther Chai	5C	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.3)	0

b) Laporan prestasi murid secara individu mengikuti kuiz topik tertentu (Mode Murid)

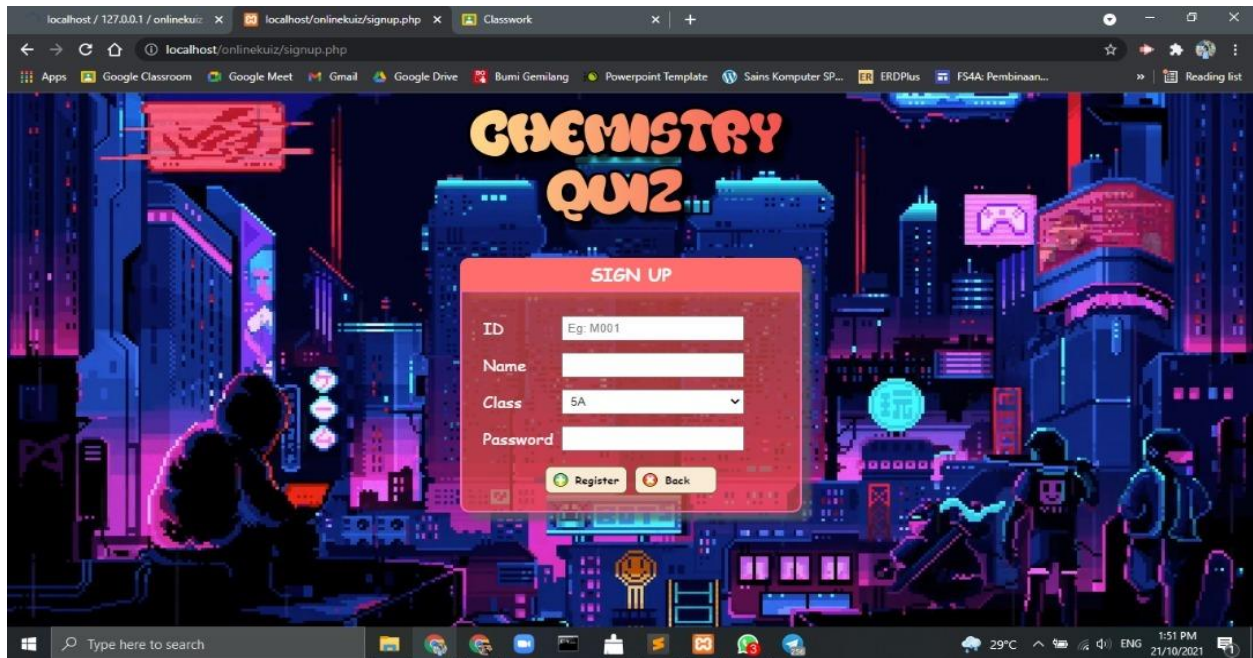
ANSWER SCHEME		
No	Question	Answer Scheme
1	What is oxidation number of Cr in $\text{Cr}_2\text{O}_7^{2-}$ ? <input type="radio"/> A. -2 <input type="radio"/> B. +2 <input type="radio"/> C. +6 <input type="radio"/> D. +12	Answer Scheme: C Your Answer: C ✓
2	What is an electrolytic cell? <input type="radio"/> A. a cell that converts chemical energy into electrical energy <input type="radio"/> B. a cell that converts electrical energy into electrical energy <input type="radio"/> C. a cell that converts electrical energy into chemical energy <input type="radio"/> D. A cell that converts kinetic energy into potential energy.	Answer Scheme: C Your Answer: C ✓

STUDENT ACHIEVEMENT	
Quiz Topic	Quiz Chemistry F5 C1 - Redox Reaction (1.1)
Correct	2
Incorrect	0
Total Question	2
Result	100 %

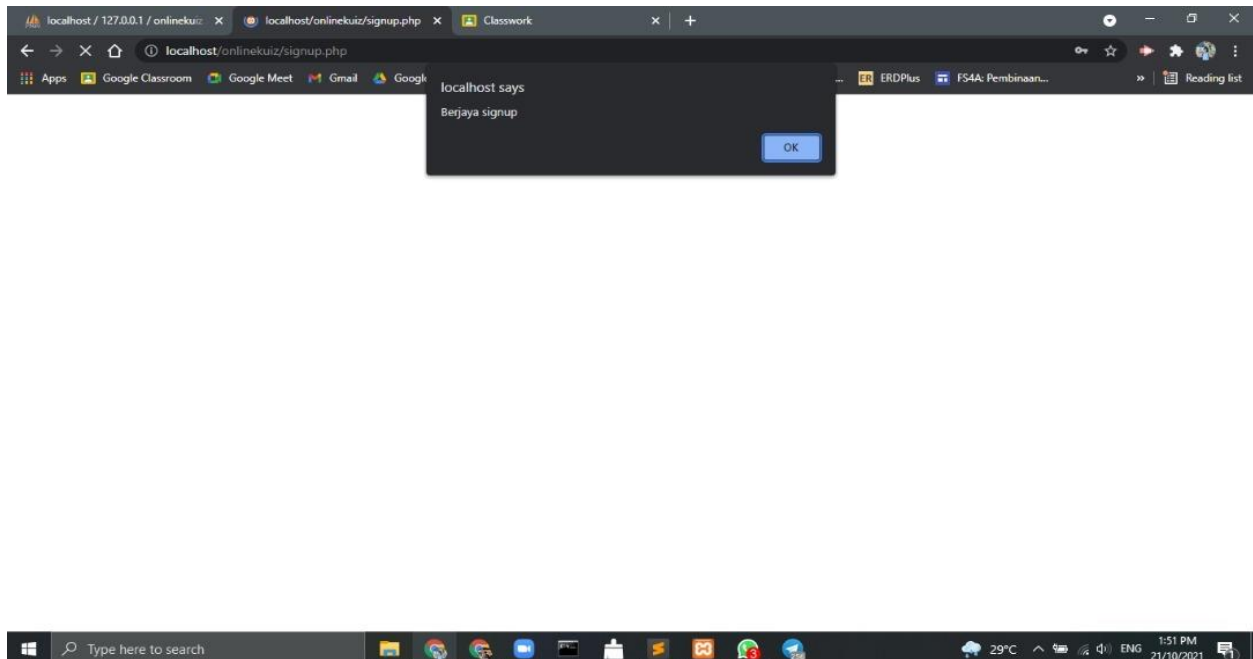
### 3.5 Mengekod

#### A) Daftar Pengguna Baru (sign up)

System ini bersedia menerima pendaftaran pengguna baru dengan mengisi maklumat-maklumat yang diperlukan



Jika pendaftaran berjaya dibuat, pop up mesej akan dipaparkan seperti di rajah di bawah





## Coding

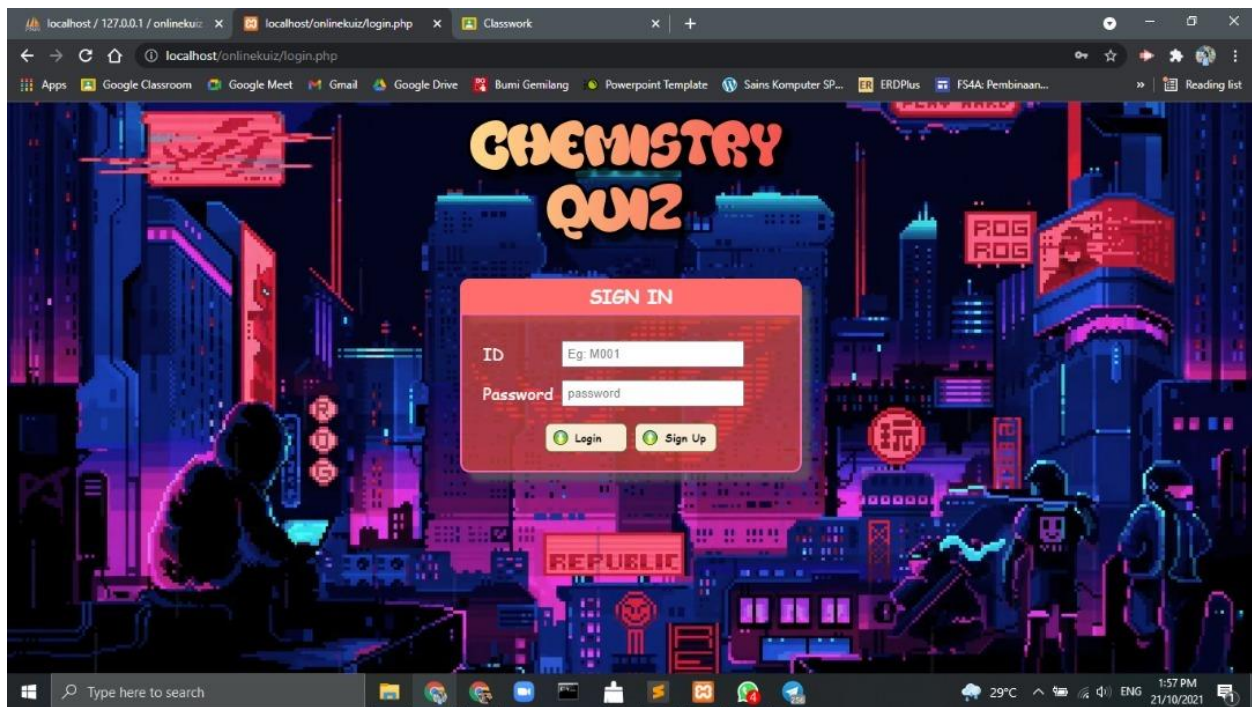
```
2 <?php
3     include('sambungan.php');
4     if(isset($_POST['id_murid'])) {
5         $id_murid = $_POST["id_murid"];
6         $nama_murid = $_POST["nama_murid"];
7         $id_kelas = $_POST["id_kelas"];
8         $password_murid = $_POST["password_murid"];
9         $sql = "insert into murid values('$id_murid', '$nama_murid', '$id_kelas', '$password_murid')";
10        $result = mysqli_query($sambungan, $sql);
11        if ($result)
12            echo "<script>alert('Berjaya signup')</script>";
13        else
14            echo "<script>alert('Tidak berjaya signup')</script>";
15        echo "<script>>window.location='login.php'</script>";
16    }
17 }
18 >>
19
20 <link rel="stylesheet" href="borang.css">
21 <link rel="stylesheet" href="button.css">
22 <link rel="stylesheet" href="menu.css">
23
24 <video id="background-video" src="mainbg.mp4" autoplay loop playsinline muted></video>
25
26 <body>
27     <center>
28         <img src='tajuk.png'>
29     </centre>
30
```

```
31 <h3>SIGN UP</h3>
32 <form action="signup.php" method="post">
33     <table>
34         <tr>
35             <td>ID</td>
36             <td><input type="text" name="id_murid" placeholder="Eg: M001" pattern="[A-Z0-9]{4}" oninvalid="this.setCustomValidity('Please put 4 character')" oninput="this.setCustomValidity('')" required></td>
37         </tr>
38         <tr>
39             <td>Name</td>
40             <td><input type="text" name="nama_murid" oninvalid="this.setCustomValidity('Please put a name')" oninput="this.setCustomValidity('')" required></td>
41         </tr>
42         <tr>
43             <td>Class</td>
44             <td>
45                 <select name="id_kelas">
46                     <?php
47                         $sql = "select * from kelas";
48                         $data = mysqli_query($sambungan, $sql);
49                         while ($kelas = mysqli_fetch_array($data)) {
50                             echo "<option value='$kelas[id_kelas]'>$kelas[nama_kelas]</option>";
51                         }
52                     >>
53                 </select>
54             </td>
55         </tr>
56         <tr>
57             <td>Password</td>
58             <td><input type="password" name="password_murid" oninvalid="this.setCustomValidity('Please put a password')" oninput="this.setCustomValidity('')" required></td>
59         </tr>
60     </table>
61
```

```
62
63 <button class="tambah" type="submit">Register</button>
64 <button class="padam" type="button" onclick="window.location='login.php'">Back</button>
65 </form>
66 </body>
67
68
```

## B) Log Masuk Sistem (login)

Apabila pengguna telah berjaya mendaftarkan diri di dalam system, pengguna boleh log masuk ke dalam sistem dan terus menggunakan system ini.



Jika berjaya log masuk, paparan skrin utama akan terpapar



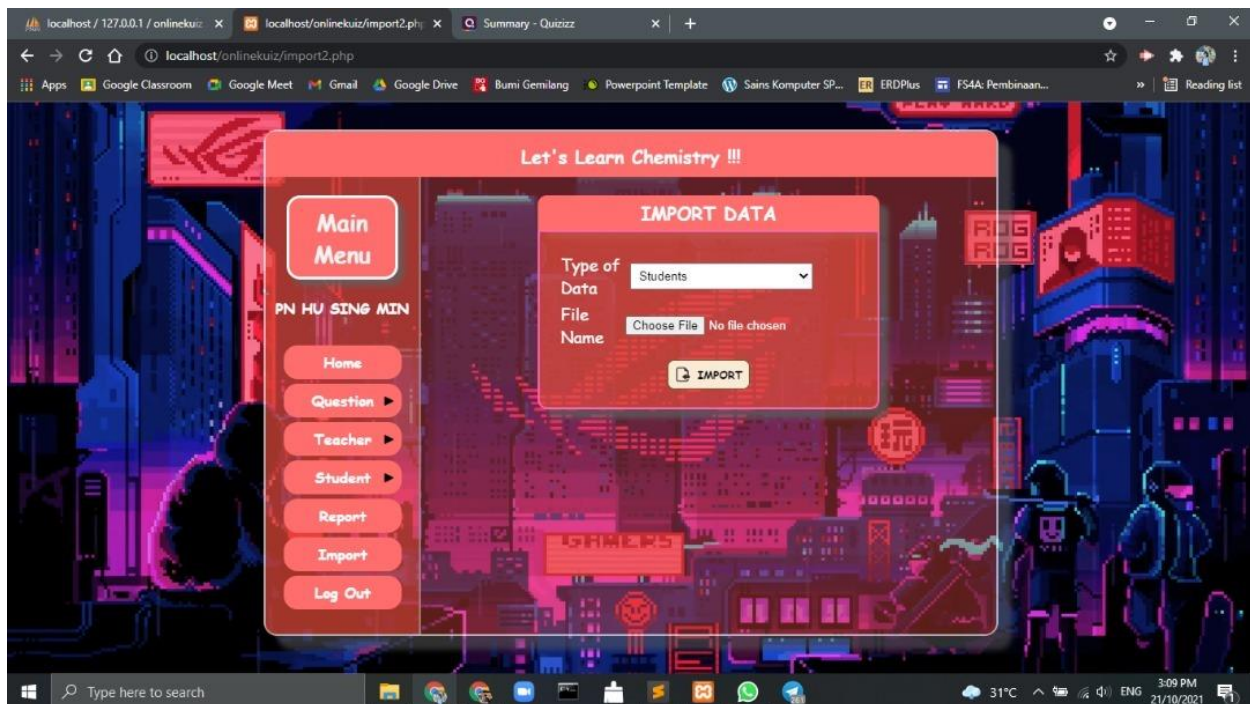
## Coding

```
1 <?php
2 include ('sambungan.php');
3 session_start();
4
5 if (isset($_POST['userid'])) {
6     $userid= $_POST['userid'];
7     $password = $_POST['password'];
8
9     $sql="select * from murid";
10    $result = mysqli_query($sambungan, $sql);
11    $jumpa = FALSE;
12    while($murid = mysqli_fetch_array($result)) {
13        if($murid['id_murid'] == $userid && $murid['password_murid'] == $password) {
14            $jumpa = TRUE;
15            $_SESSION['username'] = $murid['id_murid'];
16            $_SESSION['nama'] = $murid['nama_murid'];
17            $_SESSION['status'] = 'murid';
18            break;
19        }
20    }
21
22    if ($jumpa == FALSE) {
23        $sql = "select * from guru";
24        $result = mysqli_query($sambungan, $sql);
25        while($guru = mysqli_fetch_array($result)) {
26            if ($guru['id_guru'] == $userid && $guru['password_guru'] == $password) {
27                $jumpa = TRUE;
28                $_SESSION['username'] = $guru['id_guru'];
29                $_SESSION['nama'] = $guru['nama_guru'];
30                $_SESSION['status'] = 'guru';
31                break;
32            }
33        }
34    }
35
36    if($jumpa == TRUE) {
37        if($_SESSION['status']=='murid')
38            header('Location: home_murid.php');
39        else
40            header('Location: home_guru.php');
41    }
42    else
43        echo " <script>alert('Wrong IC number or password');
44        window.location='login.php'</script> ";
45    }
46    ?>
47
48    <html>
49    <link rel="stylesheet" href="borang.css">
50    <link rel="stylesheet" href="button.css">
51    <link rel="stylesheet" href="menu.css">
52    <video id="background-video" src="mainbg.mp4" autoplay loop playsinline muted></video>
53    <body>
54        <center>
55        <img src='tajuk.png'>
56        <h3>SIGN IN</h3>
57        <form action=login.php method=post>
58            <table>
59                <tr>
60                    <td>ID</td>
61                    <td>
62                        <input type="text" name="userid" placeholder="Eg: M001">
63                    </td>
64                </tr>
65                <tr>
66                    <td>Password</td>
67                    <td>
68                        <input type="password" name="password" placeholder="password">
69                    </td>
70                </tr>
71            </table>
72            <button class="login" type="submit">login</button>
73            <button class="signup" type="button" onclick="window.location = 'signup.php'">Sign Up</button>
74        </form>
75    </center>
76    </body>
77    </html>
78
```



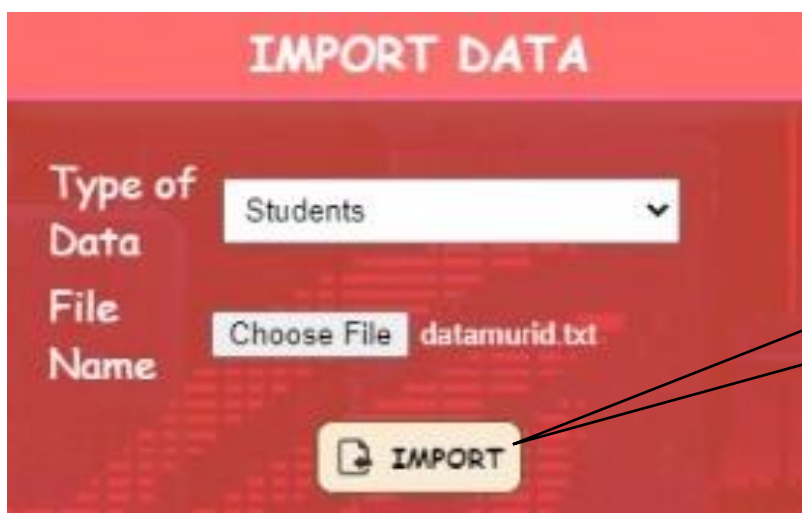
### C) Kemudahan import fail data yang berfungsi

Kemudahan ini digunakan oleh guru untuk mengimport pengguna secara pukal. Kemudahan ini terdapat dalam mod guru sahaja



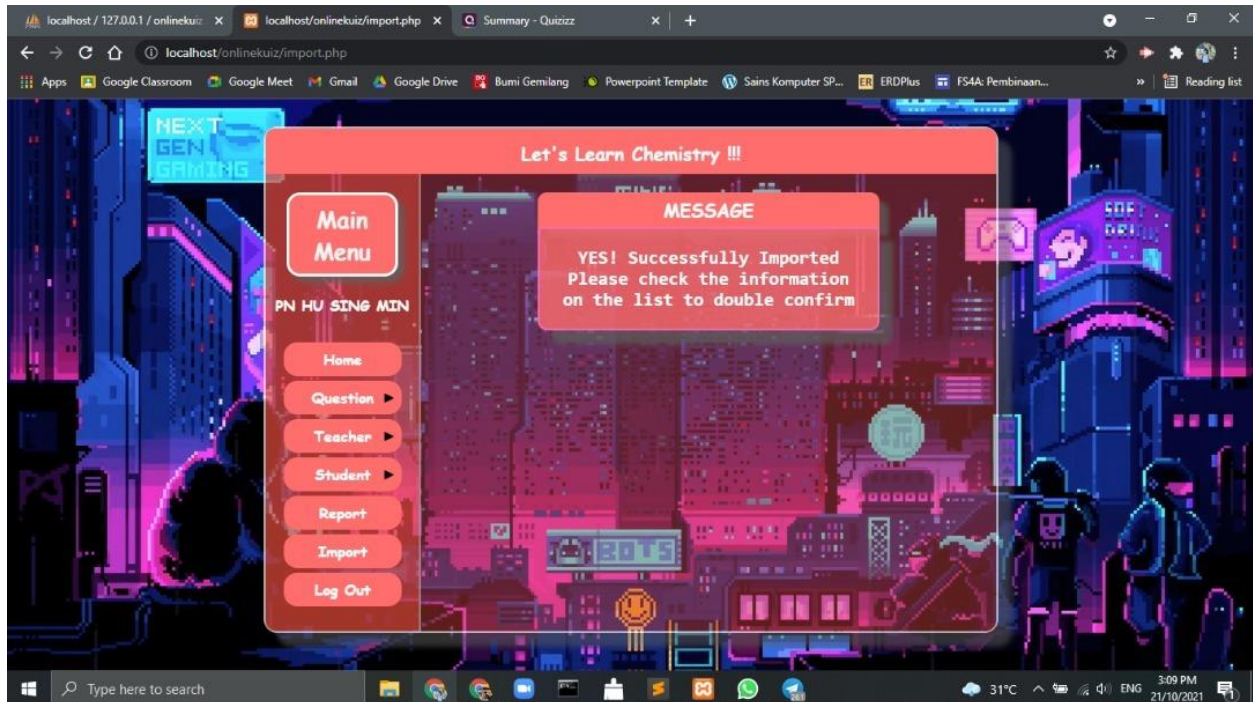
Sediakan satu fail berformat txt dengan mempunyai beberapa senarai nama:

```
1 M034,Chai Feng Feng,K001,Chai123
2 M035,Law Eng Yeo,K002,Law123
3 M036,Jeremy Ting,K003,Jeremy123
```

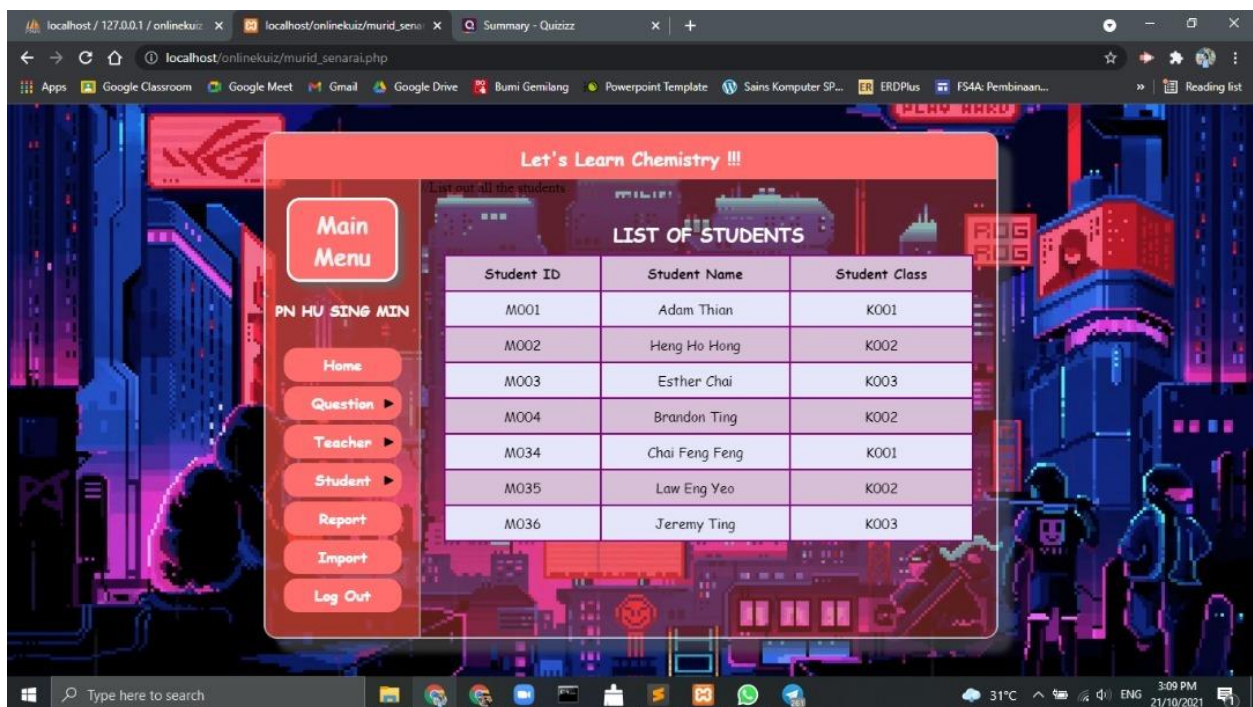


Pilih fail yang dicipta dan tekan import

Kotak pop up akan memaparkan mesej



Berikut adalah senarai nama yang telah berjaya di import



## Coding

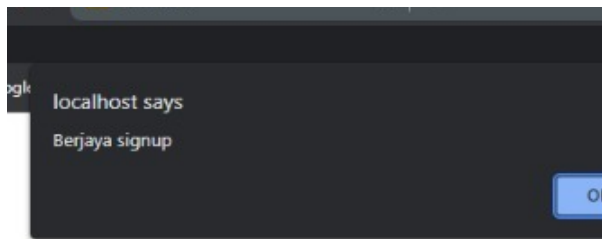
```
1  <?php
2      include('keselamatan.php');
3      include('header.php');
4      include('menu_guru.php');
5      include('sambungan.php');
6
7      $namajadual = $_POST['namatable'];
8      $namafail = $_FILES['namafail']['name'];
9
10     $fail = fopen($namafail, "r");
11     while (!feof($fail)){
12         $medan = explode(",",fgets($fail));
13         if($namajadual === "Students"){
14             $id_murid = $medan[0];
15             $nama_murid = $medan[1];
16             $id_kelas = $medan[2];
17             $password_murid = $medan[3];
18             $sql = "insert into murid values('$id_murid','$nama_murid','$id_kelas','$password_murid')";
19             $result = mysqli_query($sambungan, $sql);
20         }
21         if($namajadual === "Questions"){
22             $id_soalan = $medan[0];
23             $nama_soalan = $medan[1];
24             $pilihan_A = $medan[2];
25             $pilihan_B = $medan[3];
26             $pilihan_C = $medan[4];
27             $pilihan_D = $medan[5];
28             $jawapan = $medan[6];
29             $markah = $medan[7];
30             $id_guru = $medan[8];
31             $id_kuiz = $medan[9];
32             $jenis = $medan[10];
33             $sql = "insert into soalan values('$id_soalan','$nama_soalan','$pilihan_A','$pilihan_B','$pilihan_C', '$pilihan_D', '$markah', '$id_guru','$id_kuiz', '$jenis')";
34             $result = mysqli_query($sambungan, $sql);
```

```
35     }
36 }
37 >>
38 <link rel="stylesheet" href="borang.css">
39
40 <div class="kandungan">
41     <div id="berjaya" style="display: none;">
42         <h3>MESSAGE</h3>
43         <h2 class="mesej">YES! Successfully Imported<br>Please check the information on the list to double confirm</h2>
44     </div>
45
46     <div id="tidak" style="display: none;">
47         <h3>MESSAGE</h3>
48         <h2 class="mesej">Owhh NO! Failed to be Imported</h2>
49     </div>
50 </div>
51
52 <?php
53 if ($result == true)
54     echo "<script>document.getElementById('berjaya').style.display='block';</script>";
55 else
56     echo "<script>document.getElementById('tidak').style.display='block'; </script>";
57 >>
```

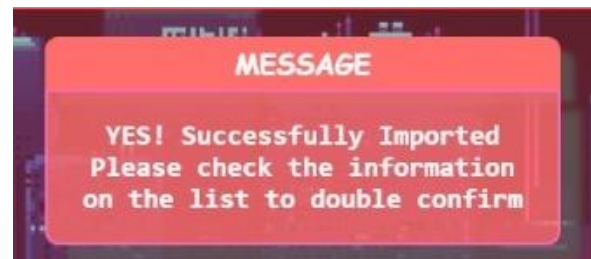


## D) Kotak pop-up (sign up) dan (import data)

Sign Up



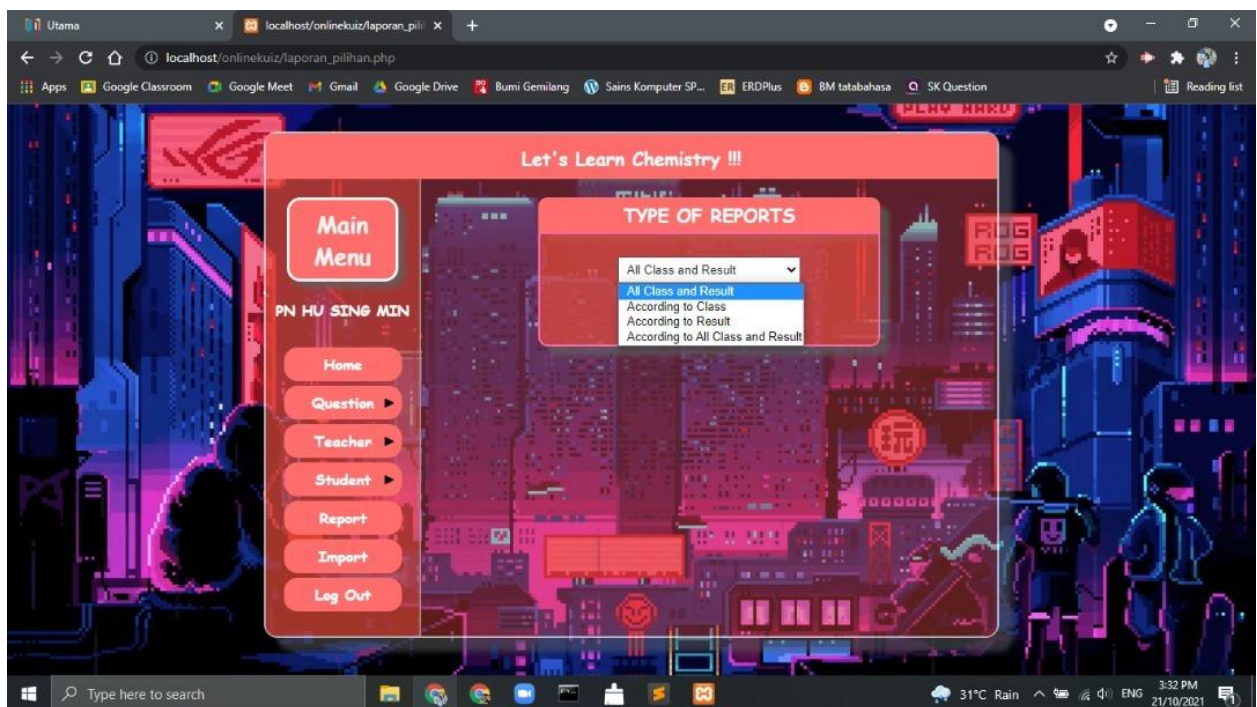
Import Data



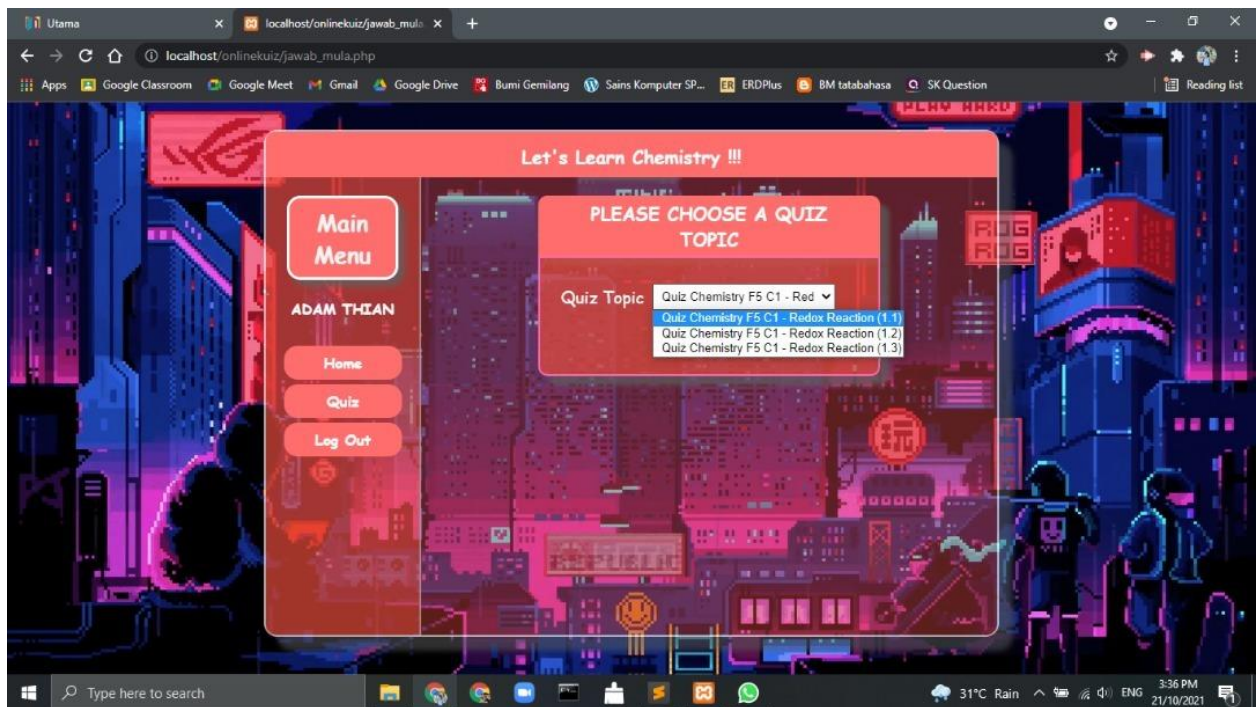
## E) Capaian untuk melaksanakan Query

- merujuk kepada 3.3 Query

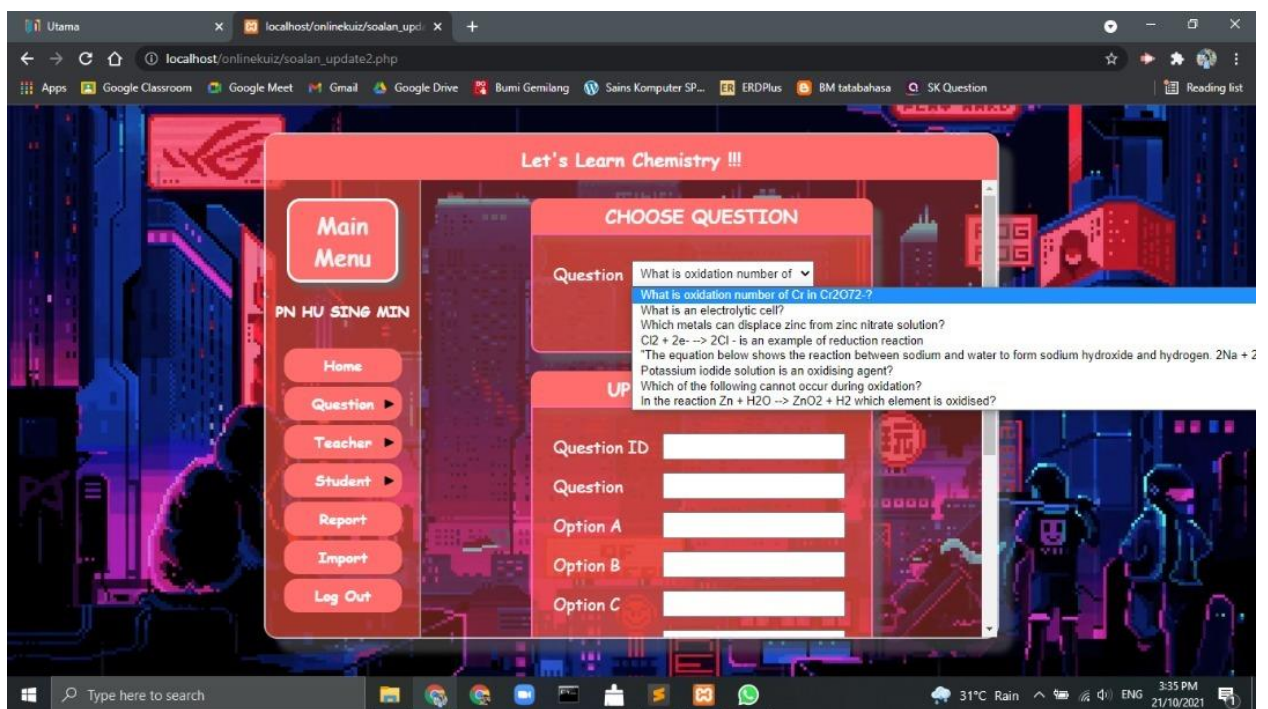
Contoh membuat carian jenis laporan yang ingin dipaparkan



Contoh membuat carian quiz topic dan soalan yang ingin dijawab



Contoh membuat carian soalan sedia ada untuk dikemas kini





## F) Memaparkan/ Mencetak output dan input

Contoh memparkan dan mencetak prestasi murid

The screenshot shows a web browser window with the URL `localhost/onlinekuiz/laporan_cetak.php`. The application has a dark, futuristic background with a cityscape. On the left, there is a 'Main Menu' sidebar with buttons for Home, Question, Teacher, Student, Report, Import, and Log Out. The main content area displays a table titled 'Let's Learn Chemistry !!!' with the following data:

No	Nama	Kelas	Tgl	Ujian	Nilai
1	Adam Thian	5A	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.1)	50
2	Heng Ho Hong	5B	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.1)	0
3	Heng Ho Hong	5B	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.2)	100
4	Heng Ho Hong	5B	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.3)	100
5	Esther Chai	5C	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.1)	100
6	Esther Chai	5C	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.2)	0
7	Esther Chai	5C	21/10/2021	Quiz Chemistry F5 C1 - Redox Reaction (1.3)	0

Below the table is a 'PRINT' button. The browser's taskbar at the bottom shows the time as 3:32 PM on 21/10/2021.

This screenshot shows the same web application with a print dialog box open on the right side. The dialog box has the following settings:

- Print: 1 page
- Destination: Save as PDF
- Pages: All
- Layout: Landscape

At the bottom of the dialog box are 'Save' and 'Cancel' buttons. The background of the application is visible through the dialog box.

## Fasa 4: Meguji dan Menyah Ralat

### 4.1 Ralat Sintaks

Sistem telah diuji dan bebas daripada ralat sintaks

### 4.2 Ralat Logik

Sistem telah diuji dan bebas daripada ralat logik

Jenis data, had atas, had bawah

Nama Item	Nama Medan id_Murid	Sampel Data	Output
Jenis Data	varchar	"M001"	M001
Had bawah	Bilangan aksara 0	" "	Mesej pop-up "Please put 4 character"
Had atas	Bilangan aksara 4	"M00234"	Mesej pop-up "Please put 4 character"

Had bawah bila pengguna membiarkan  
kosong pada medan id\_murid



Had atas bila pengguna memasukkan  
terlebih bilangan aksara



Coding had atas dan had bawah

```
<tr>
  <td>ID</td>
  <td><input type="text" name="id_murid" placeholder="Eg: M001" pattern="[A-Z0-9]{4}" oninvalid="this.setCustomValidity('Please put 4 character')" oninput="this.setCustomValidity('')" required></td> //had atas dan had bawah
</tr>
<tr>
```

### 4.3 Ralat Masa Larian

Sistem telah diuji dan bebas daripada ralat masa larian

## Fasa 5 : Mendokumentasi

Penulisan dokumentasi dalaman (komen) menggunakan gaya penulisan yang betul

```
login.php index.php x
1 <?php
2 include ('sambungan.php');
3 session_start();
4
5 // SEKIRANYA MURID LOGIN
6 if (isset($_POST['userid'])) {
7     $userid = $_POST['userid'];
8     $password = $_POST['password'];
9
10    $sql="select * from murid";
11    $result = mysqli_query($sambungan, $sql);
12    $jumpa = FALSE;
13    while($murid = mysqli_fetch_array($result)) {
14        if($murid['id_murid'] == $userid && $murid['password_murid'] == $password) {
15            $jumpa = TRUE;
16            $_SESSION['username'] = $murid['id_murid'];
17            $_SESSION['nama'] = $murid['nama_murid'];
18            $_SESSION['status'] = 'murid';
19            break;
20        }
21    }
22
23 // SEKIRANYA GURU LOGIN
24 if ($jumpa == FALSE) {
25     $sql = "select * from guru";
26     $result = mysqli_query($sambungan, $sql);
27     while($guru = mysqli_fetch_array($result)) {
28         if ($guru['id_guru'] == $userid && $guru['password_guru'] == $password) {
29             $jumpa = TRUE;
30             $_SESSION['username'] = $guru['id_guru'];
31             $_SESSION['nama'] = $guru['nama_guru'];
32             $_SESSION['status'] = 'guru';
33             break;
34         }
35     }
36 }
```

Komen

```
37
38 // SEKIRANYA BERJAYA LOGIN, MASUK KE HOME PAGE
39 if($jumpa == TRUE) {
40     if($_SESSION['status']=='murid')
41         header('Location: home_murid.php');
42     else
43         header('Location: home_guru.php');
44 }
45 else
46     echo "<script>alert('Wrong IC number or password');
47     window.location='login.php'</script> ";
48 }
49 ?>
50
51 <!--MULA HTML-->
52 <html>
53 <link rel="stylesheet" href="borang.css">
54 <link rel="stylesheet" href="button.css">
55 <link rel="stylesheet" href="menu.css">
56 <video id="background-video" src="mainbg.mp4" autoplay loop playsinline muted></video>
57 <body>
58 <center>
59 <img src='tajuk.png'>
60 </center>
61 </body>
62 </html>
63
```

```
1 <?php
2 // MASUKKAN DATA PENGGUNA BAHARU
3 include('sambungan.php');
4 if(isset($_POST['id_murid'])) {
5     $id_murid = $_POST['id_murid'];
6     $nama_murid = $_POST['nama_murid'];
7     $id_kelas = $_POST['id_kelas'];
8     $password_murid = $_POST['password_murid'];
9     $sql = "insert into murid values('$id_murid', '$nama_murid', '$id_kelas', '$password_murid')";
10    $result = mysqli_query($sambungan, $sql);
11    if ($result)
12        echo "<script>alert('Berjaya signup')</script>";
13    else
14        echo "<script>alert('Tidak berjaya signup')</script>";
15    echo "<script>window.location='login.php'</script>";
16 }
17 ?>
18
19 <!--MULA HTML-->
20 <link rel="stylesheet" href="borang.css">
21 <link rel="stylesheet" href="button.css">
22 <link rel="stylesheet" href="menu.css">
23
24 <video id="background-video" src="mainbg.mp4" autoplay loop playsinline muted></video>
25
```

## Penghasilan Pelaporan

Pelaporan disediakan mengikut format yang sepatutnya

Bil	Kriteria	Dilampirkan		Catatan
		Ya	Tidak	
1.	Format Dokumen	√		Selesai
2.	Pelaporan mengikut format dokumen			
	2.1 Jenis font : Times New Roman	√		Selesai
	2.2 Saiz font perenggan : 12	√		Selesai
	2.3 Saiz font tajuk : 14	√		Selesai
	2.5 Margin : 1.0 inci (Atas, Bawah, Kiri dan Kanan)	√		Selesai
3.	Format kandungan			
	3.1 Muka hadapan	√		Selesai
	3.2 Perakuan	√		Selesai
	3.3 Penghargaan	√		Selesai
	3.4 Isi Kandungan	√		Selesai
	3.5 Sumber Rujukan	√		Selesai
	3.5 Lampiran	√		Selesai
4.	Pelaporan Setiap Fasa Disertakan Dengan Lengkap			
	4.1 Fasa 1: Menganalisis Masalah	√		Selesai
	4.2 Fasa 2 : Mereka Bentuk Penyelesaian	√		Selesai
	4.3 Fasa 3 : Melaksanakan Penyelesaian	√		Selesai
	4.4 Fasa 4 : Menguji dan Menyah Ralat	√		Selesai
	4.5 Fasa 5 : Mendokumentasi	√		Selesai
5.	Pelaporan disusun mengikut susunan	√		Selesai

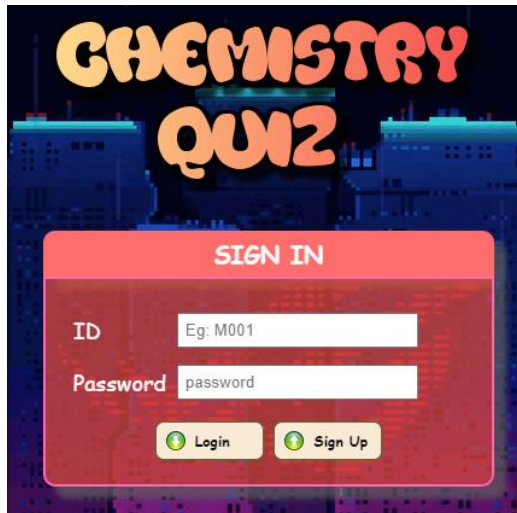


Fasa 6 : Nilai

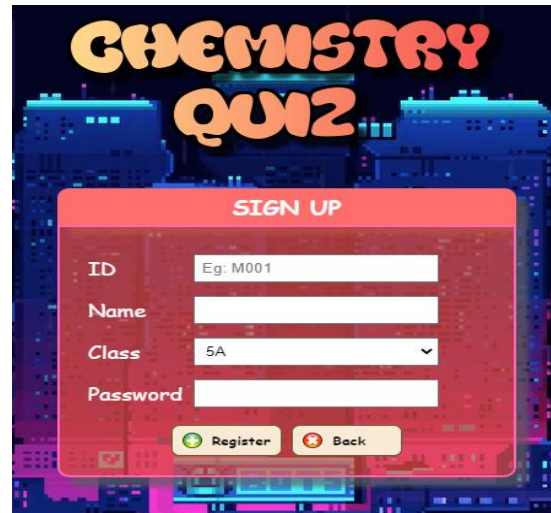
## Manual Pengguna

### BAHAGIAN MOD GURU

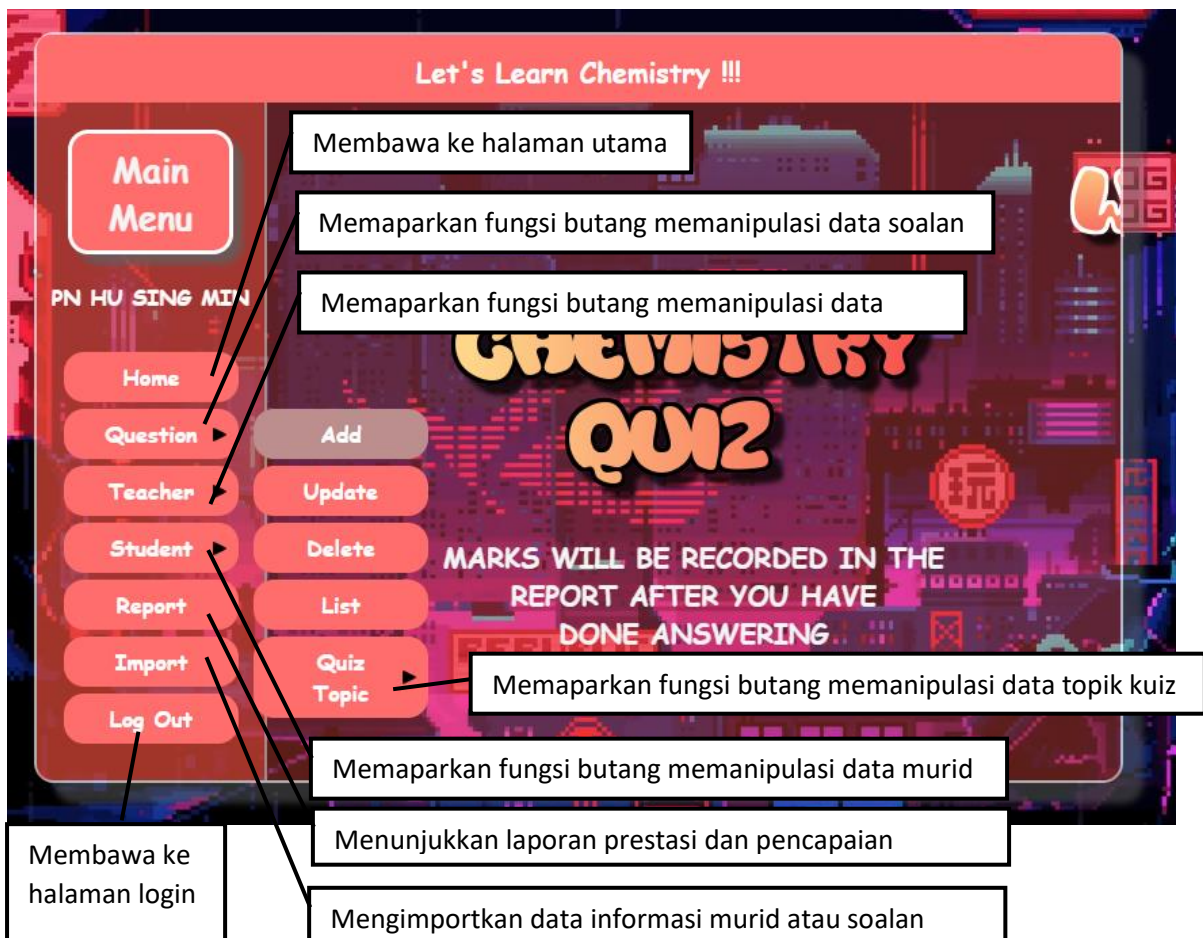
1. Masuk nombor ID dan password akaun guru untuk menggunakan aplikasi

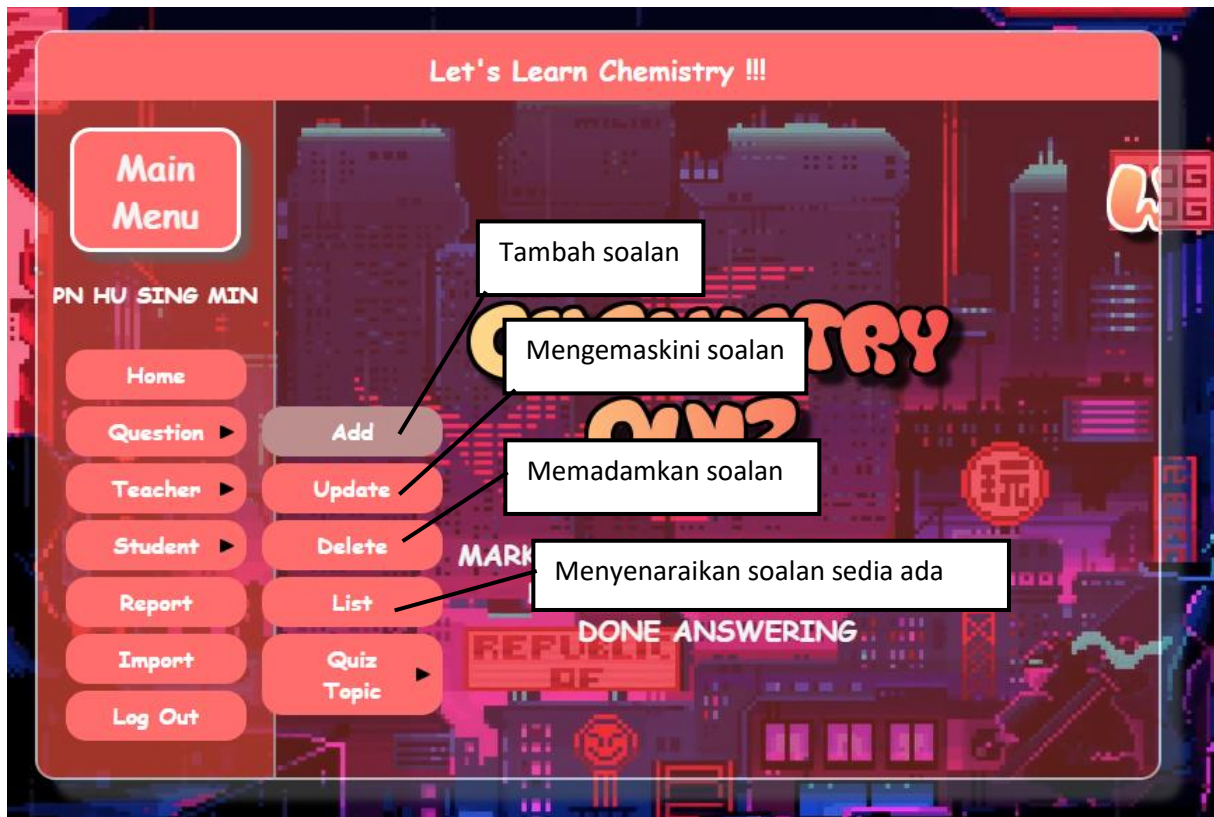


2. Sekiranya anda tidak mempunyai akaun, mendaftarkan diri di “Sign Up”



3. Anda akan dibawa ke halaman utama yang mempunyai beberapa butang yang berfungsi





4. Fungsi tambah soal

5. Fungsi mengemaskini soal

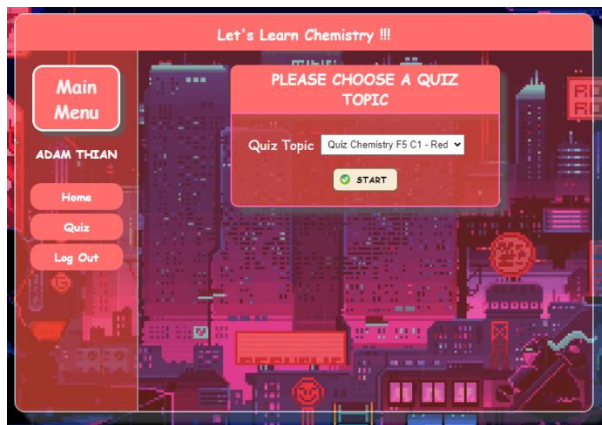
6. Fungsi memadamkan soal

7. Fungsi menyenaraikan soal

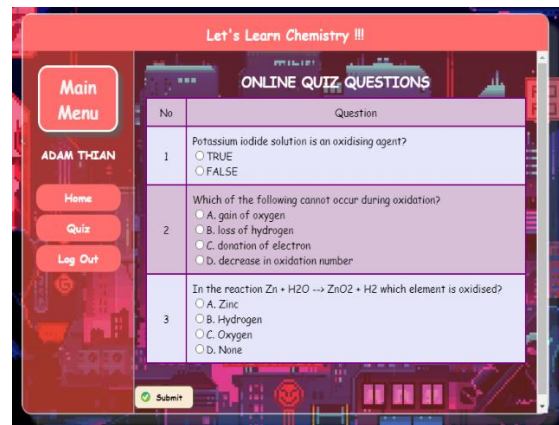
Question ID	Question	Option A	Option B	Option C	Option D
S101	What is oxidation number of Cr in Cr2O7 <sup>2-</sup>	-2	+2	+6	+12
S102	What is an electrolytic cell?	a cell that converts chemical energy into electrical energy	a cell that converts electrical energy into electrical energy	a cell that converts electrical energy into chemical energy	A cell that converts kinetic energy into potential energy.
S103	Which metals can displace zinc from zinc nitrate	Magnesium	Silver	Copper	Iron



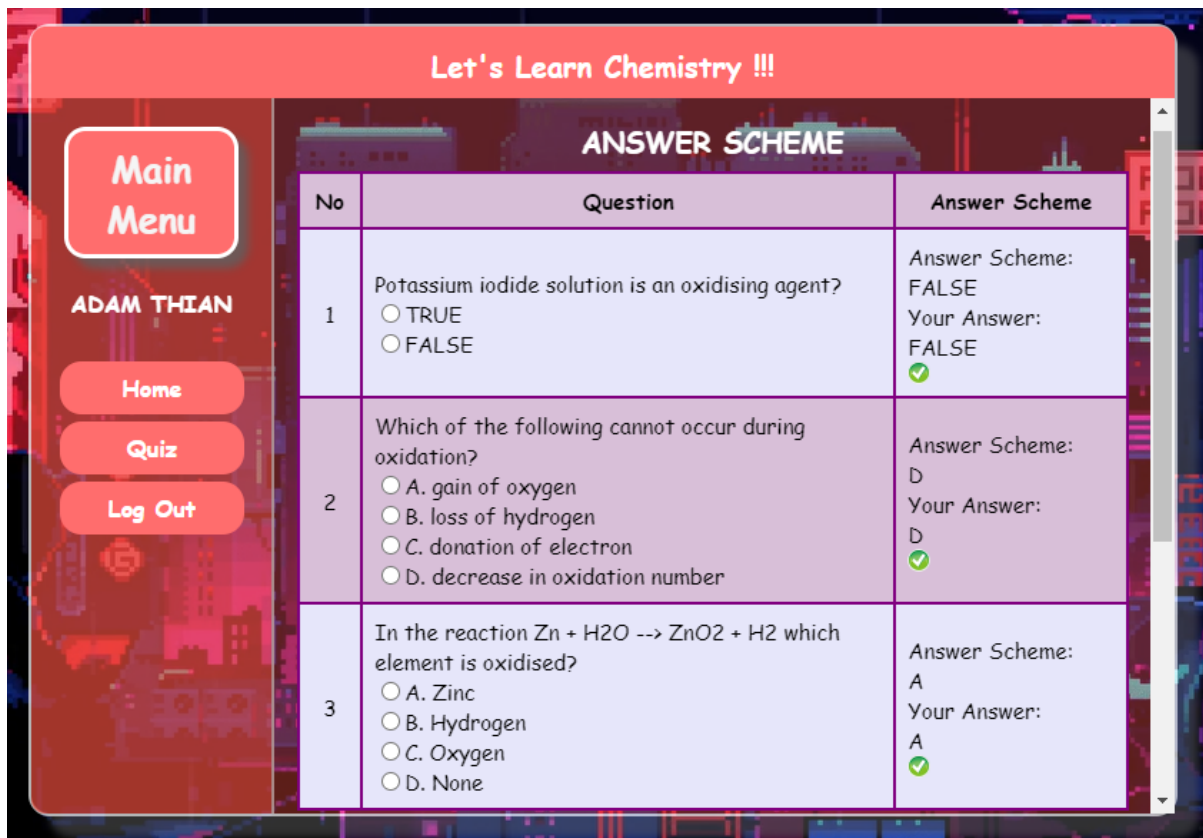
#### 4. Memilih topik kuiz



#### 5. Menjawab soalan



#### 6. Paparan markah dan skema jawapan selepas menjawab



## Sumber Rujukan

### 1. Internet

“Pengajaran HTML dan CSS”, dikemaskini pada 1 December 2020,  
<https://sites.google.com/moe-dl.edu.my/fs4a-html/pengajaran-siri-fs4a/pengajaran-html?authuser=0>

“Pengajaran SQL dan database”, dikemaskini pada 9 Decemebr 2020,  
<https://sites.google.com/moe-dl.edu.my/fs4a-sql/pengajaran-siri-fs4a/pengajaran-sql?authuser=0>

“Contoh manual pengguna”, dimuatnaik pada 25 Mei 2018,  
<https://pdfcoffee.com/contoh-manual-pengguna-sains-komputer-pdf-free.html>

### 2. Video

“Mendokumentasi fasa 4 dan fasa 5”, dimuatnaik pada 27 Ogos 2021,  
<https://www.youtube.com/watch?v=t3piCNodPUQ>

“SAINS KOMPUTER SPM : Langkah-Langkah Bina Kerja Kursus Sains Komputer”,  
dimuatnaik pada 14 Februari 2021,  
<https://www.youtube.com/watch?v=a8kbbGMlepw&t=107s>

“Kerja Kursus Ting 4 - Fasa 2 (Penormalan)”, dimuatnaik pada 14 Ogos 2021  
[https://www.youtube.com/watch?v=BG\\_31ZJJic4](https://www.youtube.com/watch?v=BG_31ZJJic4)

### 3. Buku Ilmiah

- Norlini binti Ramli, Paridah binti Daud, Noor Azma binti Ismail, 2017. KSSM Sains Komputer Tingkatan 5. Selangor: Oxford Fajar Sdn. Bhd.
- Ismail bin Shaari. Road To Be SuperHeroes HTML, CSS, PHP, SQL Programming

## Lampiran 1

### Penormalan



