

# Module ICT3715

## INFORMATION AND COMMUNICATION TECHNOLOGY PROJECT

STUDENT NUMBER (Student completes)									
1	0	8	2		5	5	9		2

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9	6	0	9	3	0	5	4	8	9	0	8	9	

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### **INSTRUCTIONS:**

Complete this Front Page (page 1)

Complete the Plagiarism Pledge (page 2). Your assignment will not be assessed without this.

After you have completed the front page with your information, the plagiarism pledge, and Assignment 3 with Section A and B, save the document as a PDF document.

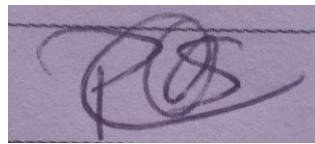
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8. I understand that, if I am guilty of the infringement of breach of copyright/plagiarism or unethical practice, I will be subject to the applicable disciplinary code as determined by Unisa.
9. The marker has the right to refuse to assess the assignment and the system if plagiarism is detected.

Student name and Surname: Kagiso S Phasha

Student number: 10825592



Student signature:

Date: 07 August 2022

## Assignment 3 [848069]

**Due date Monday 8 August 2022, 11:00 PM**

**Notes:**

This is a compulsory assignment. The assignment contributes to 40% of your year mark.

**System | Online examination file submission system**

Due to the pandemic, the University of South Africa (UNISA) has decided to conduct all examinations in an online environment.

The purpose of this project is then to look at the digital environment and design and develop a simulation of such a system, using the real-life scenario and environment.

You thus must design and develop an online examination file submission system, that can be presented to the University to be used as an alternative to the current system.

**Note:** You are not allowed to develop any other system or use any other data that was not prescribed or provided to you.

The outcome of this assignment will form part of the design, development, and implementation of the database and the system. Your implementation effort will be greatly reduced if you take care with the preparation phases of the system.

**Instructions:**

- ❖ Make sure that you did complete the instructions on page 1 of this document
- ❖ Complete the header and footer with your own information
- ❖ Add your practical system content to the document
- ❖ Remove everything that is in brackets []
- ❖ Keep the answers that you had for the Assignment 1 and 2 also in this document
- ❖ Make sure that your Table of Content is updated
- ❖ Save the document as PDF, e.g., 12345678\_ICT3715\_03.pdf, (replace 1234568 with your student number)
- ❖ When you are done submit via myModules 2022 on the Module Site under Assignment 3

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## 1 Assignment 3

### 1.1 Section A = MIS Reports [20]

#### 1.1.1 Create the Daily MIS report (5)

##### Reason

- To find the number of modules written in a day or any particular day specified by the user

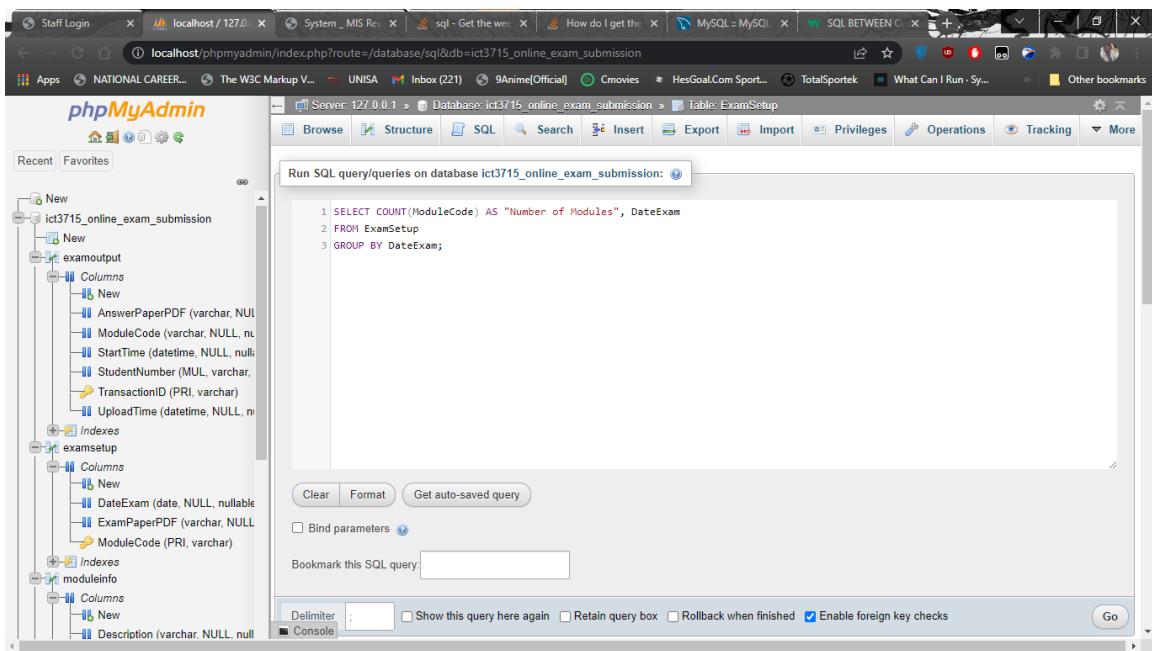
##### Query

```
SELECT COUNT(ModuleCode) AS "Number of Modules", ModuleCode, DateExam  
FROM ExamSetup  
GROUP BY DateExam
```

```
SELECT COUNT(ModuleCode) AS "Number of Modules", ModuleCode, DateExam  
FROM ExamSetup  
WHERE DateExam = CURRENT_DATE  
GROUP BY DateExam
```

```
SELECT COUNT(ModuleCode) AS "Number of Modules", ModuleCode, DateExam  
FROM ExamSetup  
WHERE DateExam = "2022-11-13"  
GROUP BY DateExam
```

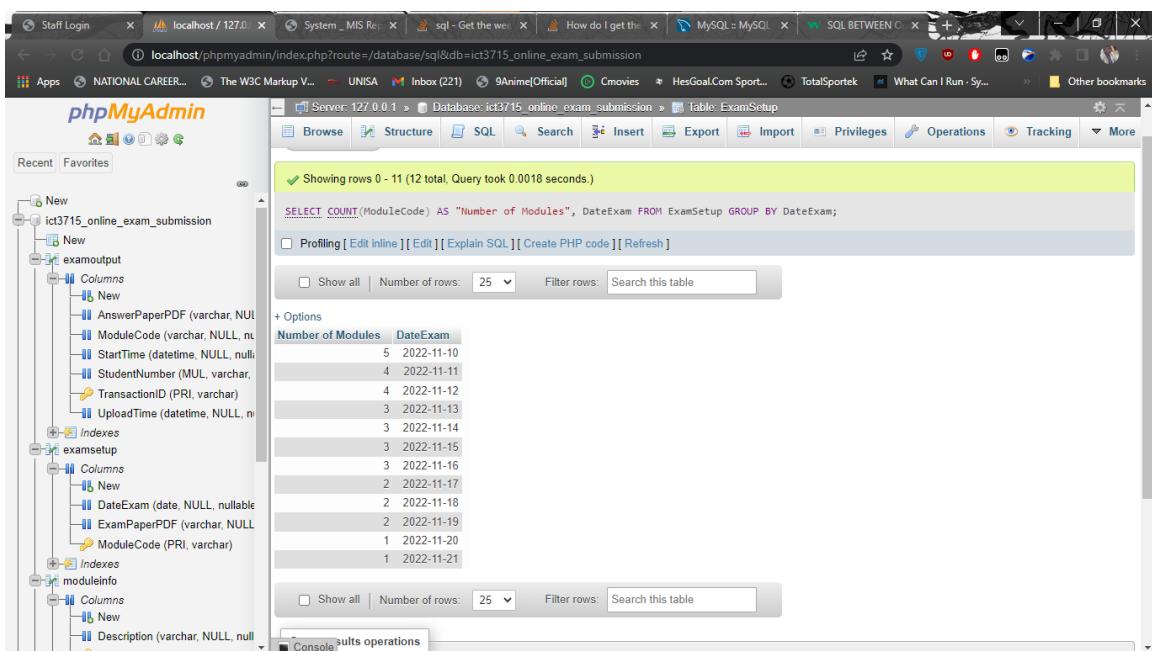
##### Screen dumps



The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The left sidebar lists tables: 'examoutput', 'examssetup', and 'moduleinfo'. The 'ExamSetup' table is selected. The main area contains a SQL query editor with the following code:

```
1 SELECT COUNT(ModuleCode) AS "Number of Modules", DateExam
2 FROM ExamSetup
3 GROUP BY DateExam;
```

Below the query, there are buttons for 'Clear', 'Format', and 'Get auto-saved query'. A checkbox for 'Bind parameters' is also present. At the bottom, there are options for 'Delimiter' (set to ':'), checkboxes for 'Show this query here again', 'Retain query box', and 'Rollback when finished', and a checked checkbox for 'Enable foreign key checks'. A 'Go' button is at the far right.



The screenshot shows the results of the executed SQL query. The message 'Showing rows 0 - 11 (12 total, Query took 0.0018 seconds.)' is displayed. The query was:

```
SELECT COUNT(ModuleCode) AS "Number of Modules", DateExam FROM ExamSetup GROUP BY DateExam;
```

Below the message, there is a link for 'Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]'. The results table shows the following data:

Number of Modules	DateExam
5	2022-11-10
4	2022-11-11
4	2022-11-12
3	2022-11-13
3	2022-11-14
3	2022-11-15
3	2022-11-16
2	2022-11-17
2	2022-11-18
2	2022-11-19
1	2022-11-20
1	2022-11-21

At the bottom, there are buttons for 'Show all', 'Number of rows: 25', 'Filter rows: Search this table', and a 'Console' link.

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The left sidebar lists tables: 'examoutput', 'examssetup', and 'moduleinfo'. The 'examoutput' table is selected, showing columns: AnswerPaperPDF, ModuleCode, StartTime, StudentNumber, TransactionID, and UploadTime. The 'examssetup' table is also visible. The main area contains a SQL query editor with the following code:

```

1 | SELECT COUNT(ModuleCode) AS "Number of Modules", DateExam
2 | FROM ExamSetup
3 | WHERE DateExam = '2022-11-13'
4 | GROUP BY DateExam;

```

Below the query, there are buttons for 'Clear', 'Format', and 'Get auto-saved query'. A checkbox for 'Bind parameters' is present. At the bottom, there are options for 'Delimiter' (set to ':'), checkboxes for 'Show this query here again', 'Retain query box', and 'Rollback when finished', and a checked checkbox for 'Enable foreign key checks'. A 'Go' button is at the far right.

The screenshot shows the results of the executed SQL query. The message 'Your SQL query has been executed successfully.' is displayed. The query was:

```

SELECT COUNT(ModuleCode) AS "Number of Modules", DateExam FROM ExamSetup WHERE DateExam = '2022-11-13' GROUP BY DateExam;

```

The results table shows one row with the value '3' under 'Number of Modules' and '2022-11-13' under 'DateExam'. Below the table, there are buttons for 'Print', 'Copy to clipboard', 'Export', 'Display chart', and 'Create view'. A 'Bookmark this SQL query' section is also present.

### 1.1.2 Create the Weekly MIS report (5)

#### Reason

- To find the number of exam files that have been uploaded by students for each module starting from the beginning of the week up to a specific day of that particular week, with the initial day of the week being Sunday.

#### Query

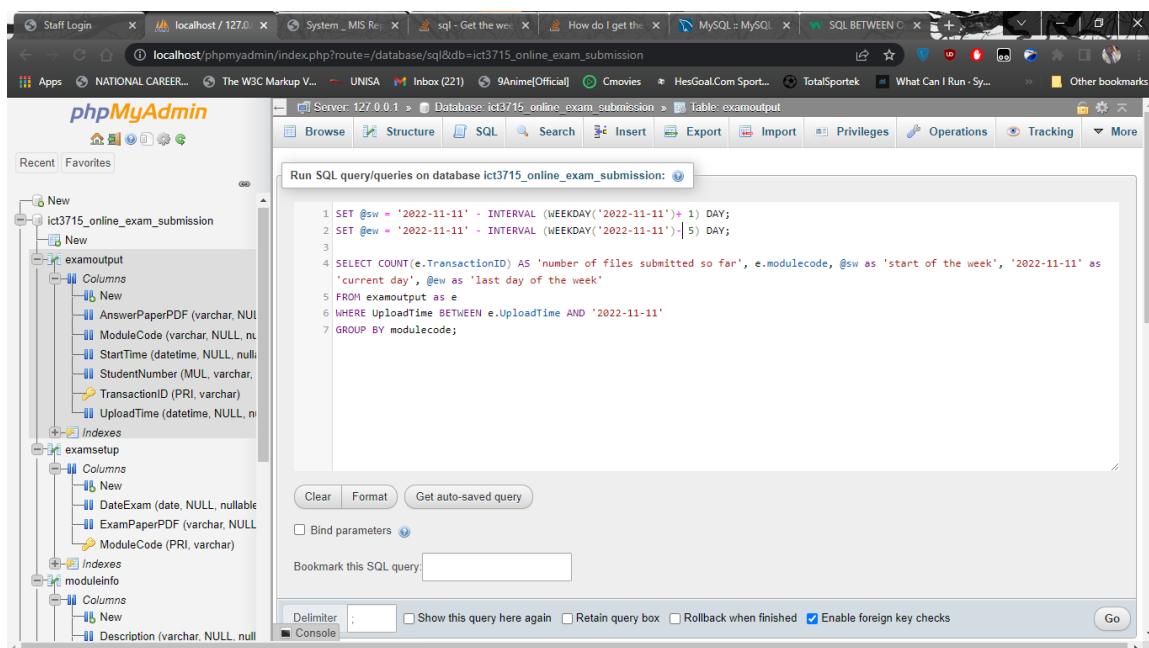
- Beginning of the week and End of the week respectively

```
SET @sw = '2022-11-11' - INTERVAL (WEEKDAY('2022-11-11') + 1) DAY;
```

```
SET @ew = '2022-11-11' - INTERVAL (WEEKDAY('2022-11-11') - 5) DAY;
```

```
SELECT COUNT(e.TransactionID) AS 'number of files submitted so far',
e.modulecode, @sw as 'start of the week', '2022-11-11' as 'current day', @ew as
'last day of the week'
FROM examoutput as e
WHERE e.UploadTime <= '2022-11-11'
GROUP BY modulecode;
```

#### Screen dumps



The screenshot shows the phpMyAdmin interface for a database named 'ict3715\_online\_exam\_submission'. The left sidebar lists tables: 'examoutput', 'examsetup', and 'moduleinfo'. The 'examoutput' table is selected. The main area shows the SQL query:

```
1 SET @sw = '2022-11-11' - INTERVAL (WEEKDAY('2022-11-11')+1) DAY;
2 SET @ew = '2022-11-11' - INTERVAL (WEEKDAY('2022-11-11')-5) DAY;
3
4 SELECT COUNT(e.TransactionID) AS 'number of files submitted so far', e.modulecode, @sw as 'start of the week', '2022-11-11' as
'current day', @ew as 'last day of the week'
5 FROM examoutput as e
6 WHERE UploadTime BETWEEN e.UploadTime AND '2022-11-11'
7 GROUP BY modulecode;
```

Below the query, there are buttons for 'Clear', 'Format', 'Get auto-saved query', 'Bind parameters', and a 'Bookmark this SQL query' input field. At the bottom, there are checkboxes for 'Delimiter', 'Show this query here again', 'Retain query box', 'Rollback when finished', and 'Enable foreign key checks', followed by a 'Go' button.

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0007 seconds.)

```
SET @ew = '2022-11-11' - INTERVAL WEEKDAY('2022-11-11')- 5) DAY;
```

Showing rows 0 - 4 (total, 5 total). Query took 0.0111 seconds.

```
SELECT COUNT(e.TransactionID) AS 'number of files submitted so far', e.modulecode, @sw as 'start of the week', '2022-11-11' as 'current day', @ew as 'last day of the week' FROM examoutput as e WHERE UploadTime BETWEEN e.UploadTime AND '2022-11-11' GROUP BY modulecode;
```

number of files submitted so far	modulecode	start of the week	current day	last day of the week
324	AST2652	2022-11-06	2022-11-11	2022-11-12
335	ENG1011	2022-11-06	2022-11-11	2022-11-12
341	ICT1111	2022-11-06	2022-11-11	2022-11-12
316	ICT2612	2022-11-06	2022-11-11	2022-11-12
316	MAT2612	2022-11-06	2022-11-11	2022-11-12

### 1.1.3 Create one other MIS report (5)

#### Reason

- The number of students writing exams for each module

#### Query

```
SELECT COUNT(DISTINCT StudentNumber) AS "Number of Students Writing",
ModuleCode
FROM StudentModule
GROUP BY ModuleCode
ORDER BY COUNT(StudentNumber) ASC
```

#### Screen dumps

```

1 SELECT COUNT(DISTINCT StudentNumber) AS "Number of Students Writing", ModuleCode
2 FROM StudentModule
3 GROUP BY ModuleCode
4 ORDER BY COUNT(StudentNumber) ASC
    
```

Run SQL query/queries on database ict3715\_online\_exam\_submission:

Clear Format Get auto-saved query

Bind parameters

Bookmark this SQL query:

Delimiter : Show this query here again Retain query box Rollback when finished Enable foreign key checks Go

Number of Students Writing	ModuleCode
316	ICT2612
316	ICT1116
316	ICT3611
316	ICT1117
316	ICT3722
316	ICT1118
316	MAT2612
316	ICT1119
316	ICT1120
317	ICT1113
317	CHE3703
317	ICT1114
317	CHE3704
317	ICT1115

#### 1.1.4 Create one other MIS report (5)

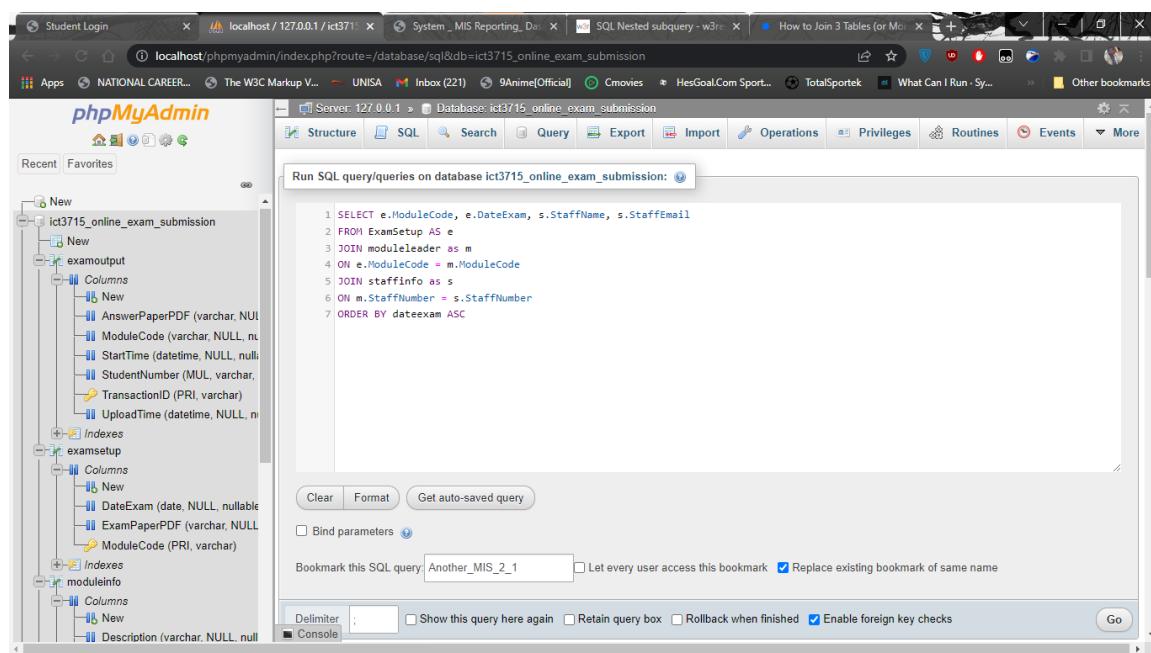
##### Reason

- To find the names of modules, the module leaders along with their email addresses in case any issues arise. The information received will either be for the current day or any specific day specified, it can even be used to search by module code.

Query

```
SELECT e.ModuleCode, e.DateExam, s.StaffName, s.StaffEmail
FROM ExamSetup AS e
JOIN moduleleader as m
ON e.ModuleCode = m.ModuleCode
JOIN staffinfo as s
ON m.StaffNumber = s.StaffNumber
ORDER BY dateexam ASC
```

```
SELECT e.ModuleCode, e.DateExam, s.StaffName, s.StaffEmail
FROM ExamSetup AS e
JOIN moduleleader as m
ON e.ModuleCode = m.ModuleCode
JOIN staffinfo as s
ON m.StaffNumber = s.StaffNumber
WHERE dateexam = '2022-11-11'
```

Screen dumps

Showing rows 0 - 24 (33 total, Query took 0.0092 seconds.)

```
SELECT e.ModuleCode, e.DateExam, s.StaffName, s.StaffEmail FROM ExamSetup AS e JOIN moduleleader AS m ON e.ModuleCode = m.ModuleCode JOIN staffinfo AS s ON m.StaffNumber = s.StaffNumber ORDER BY dateexam ASC;
```

ModuleCode	DateExam	StaffName	StaffEmail
MAT2612	2022-11-10	PG SMITH	pg.smith@unisa.ac.za
ENG1011	2022-11-10	SX SITHOLE	sx.sithole@unisa.ac.za
AST2652	2022-11-10	JH NEL	jh.nel@unisa.ac.za
ICT1111	2022-11-10	PA RAMAPOS	pa.ramapos@unisa.ac.za
ICT2612	2022-11-10	W TIMAKWI	w.timakwi@unisa.ac.za
ICT3611	2022-11-10	SS STRYDOM	ss.strydom@unisa.ac.za
ENG1012	2022-11-11	K TAU	k.tau@unisa.ac.za
CHE1504	2022-11-11	B BAXTER	b.baxter@unisa.ac.za
ICT1112	2022-11-11	M MNATZI	m.mnatzi@unisa.ac.za
CHE181T	2022-11-12	B BAXTER	b.baxter@unisa.ac.za
ENG1013	2022-11-12	PK SINGH	pk.singh@unisa.ac.za
ICT3722	2022-11-12	M MNATZI	m.mnatzi@unisa.ac.za
ICT1113	2022-11-12	MWS SHARPWELL	mws.sharpwell@unisa.ac.za
Console	2022-11-13	LM NKOSI	lm.nkosi@unisa.ac.za

Run SQL query/queries on database ict3715\_online\_exam\_submission:

```
1 SELECT e.ModuleCode, e.DateExam, s.StaffName, s.StaffEmail
2 FROM ExamSetup AS e
3 JOIN moduleleader AS m
4 ON e.ModuleCode = m.ModuleCode
5 JOIN staffinfo AS s
6 ON m.StaffNumber = s.StaffNumber
7 WHERE dateexam = '2022-11-11'
```

The screenshot shows the phpMyAdmin interface for a database named 'ict3715\_online\_exam\_submission'. The left sidebar lists tables: 'examoutput', 'examsetup', and 'moduleinfo'. The 'examsetup' table is selected, showing its columns: ModuleCode, DateExam, StaffName, and StaffEmail. A SQL query is displayed at the top:

```
SELECT e.ModuleCode, e.DateExam, s.StaffName, s.StaffEmail FROM ExamSetup AS e JOIN moduleleader AS m ON e.ModuleCode = m.ModuleCode JOIN staffinfo AS s ON m.StaffNumber = s.StaffNumber WHERE dateexam = '2022-11-11';
```

The results of the query are listed below:

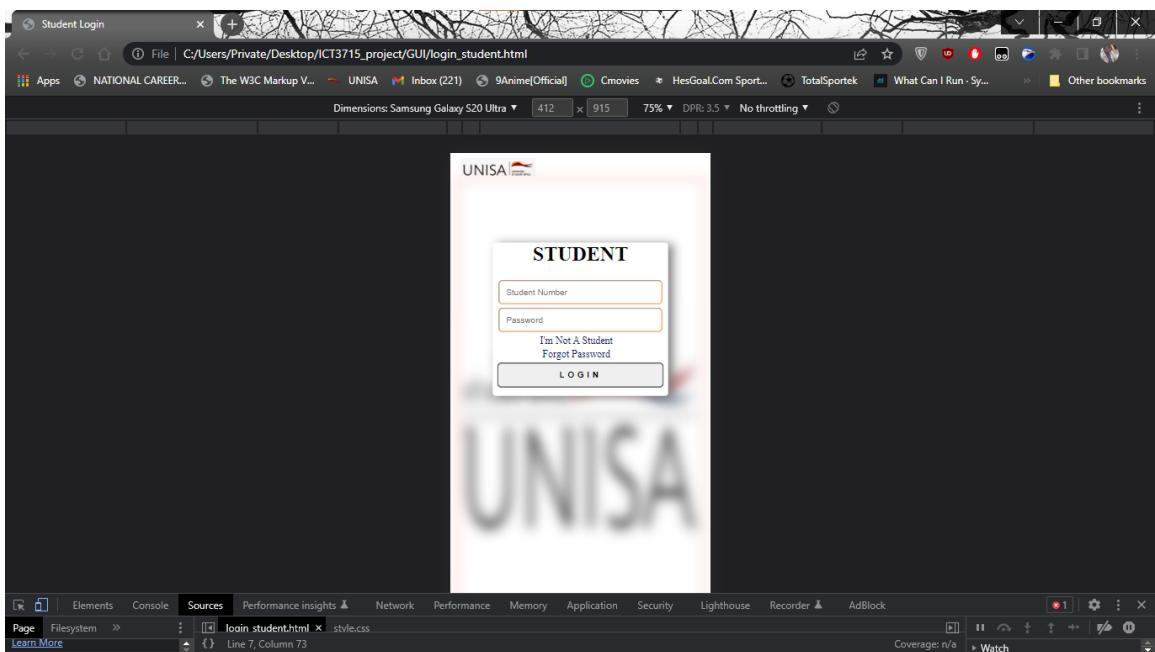
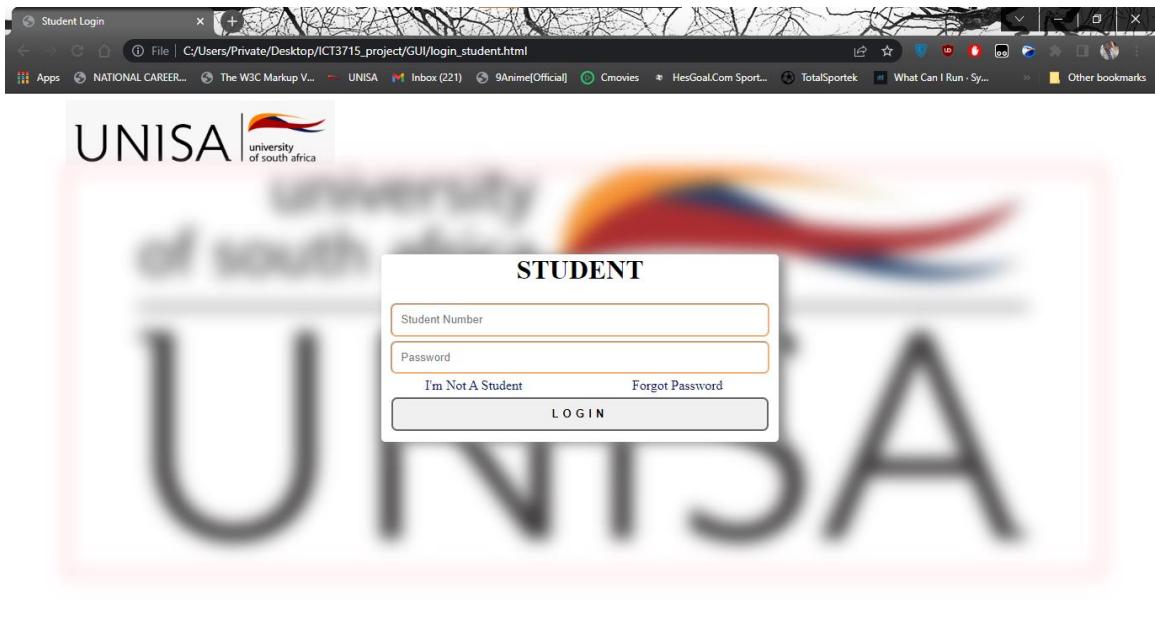
ModuleCode	DateExam	StaffName	StaffEmail
ICT1112	2022-11-11	M MNATZI	m.mnatzi@unisa.ac.za
CHE1504	2022-11-11	B BAXTER	b.baxter@unisa.ac.za
ICT3611	2022-11-11	SS STRYDOM	ss.strydom@unisa.ac.za
ENG1012	2022-11-11	K TAU	k.tau@unisa.ac.za

## 1.2 Section B = Graphical User Interfaces [20]

### 1.2.1 Student login GUI (7)

**Creating the Graphical User Interfaces for the Student Login**

Screen dumps

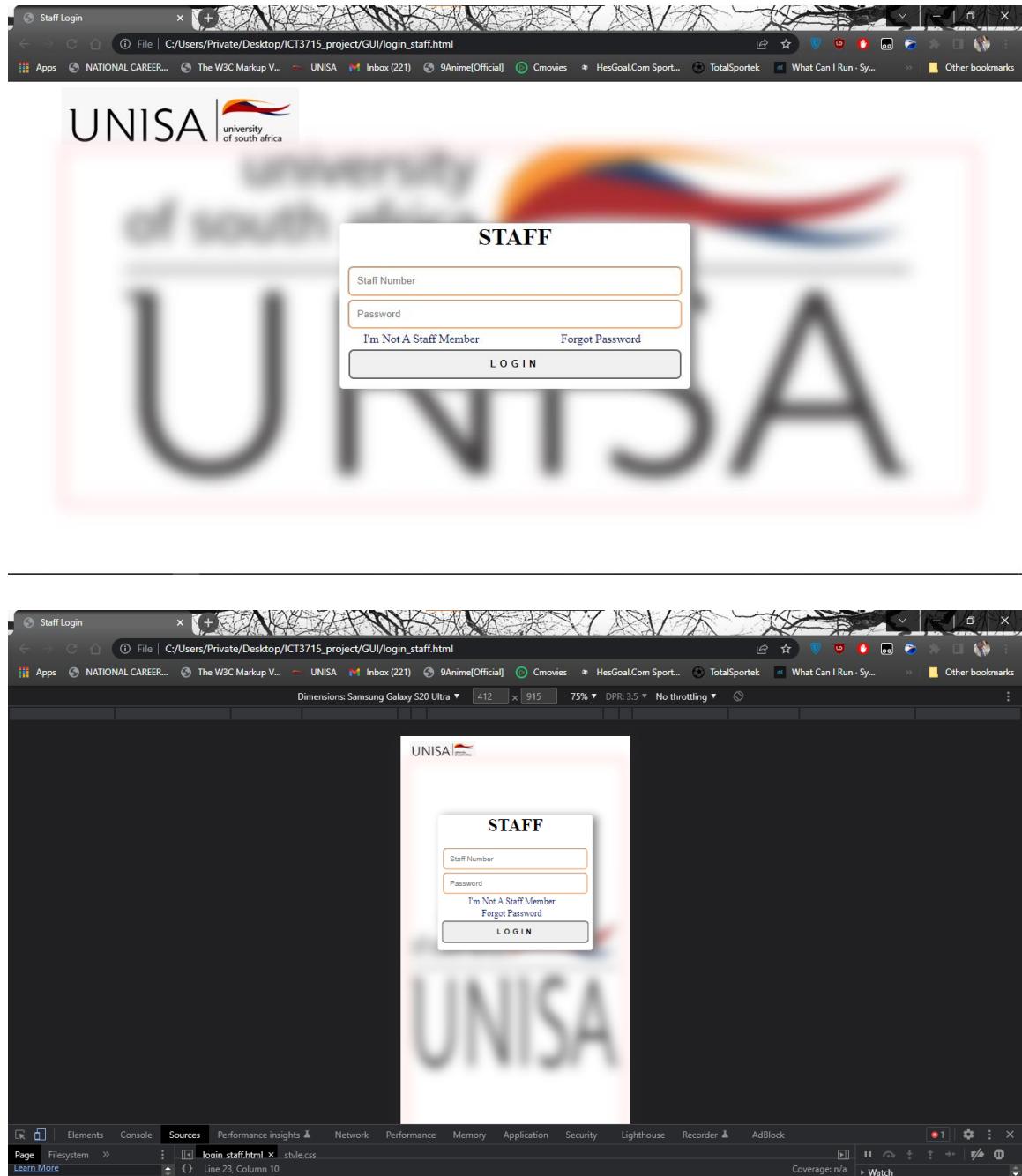


**Code**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="Cache-control" content="no-cache">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" type="text/css" href="style.css" media="screen">
    <title>Student Login</title>
</head>
<body>
    <header>
        
    </header>
    <div class="background"></div>
    <form method="POST" action="" class="login">
        <h1>Student</h1>
        <input type="text" name="username" id="username" placeholder="Student Number">
        <input type="password" name="password" id="password" placeholder="Password">
        <div id="links">
            <a href="login_staff.html">I'm Not A Student</a>
            <a href="#" style="margin-left: 3em;">Forgot Password</a>
        </div>
        <input type="submit" name="submit" value="Login">
    </form>
</body>
</html>
```

### 1.2.2 Lecturer login GUI (7)

#### Creating the Graphical User Interfaces for the Lecturer Login Screen dumps



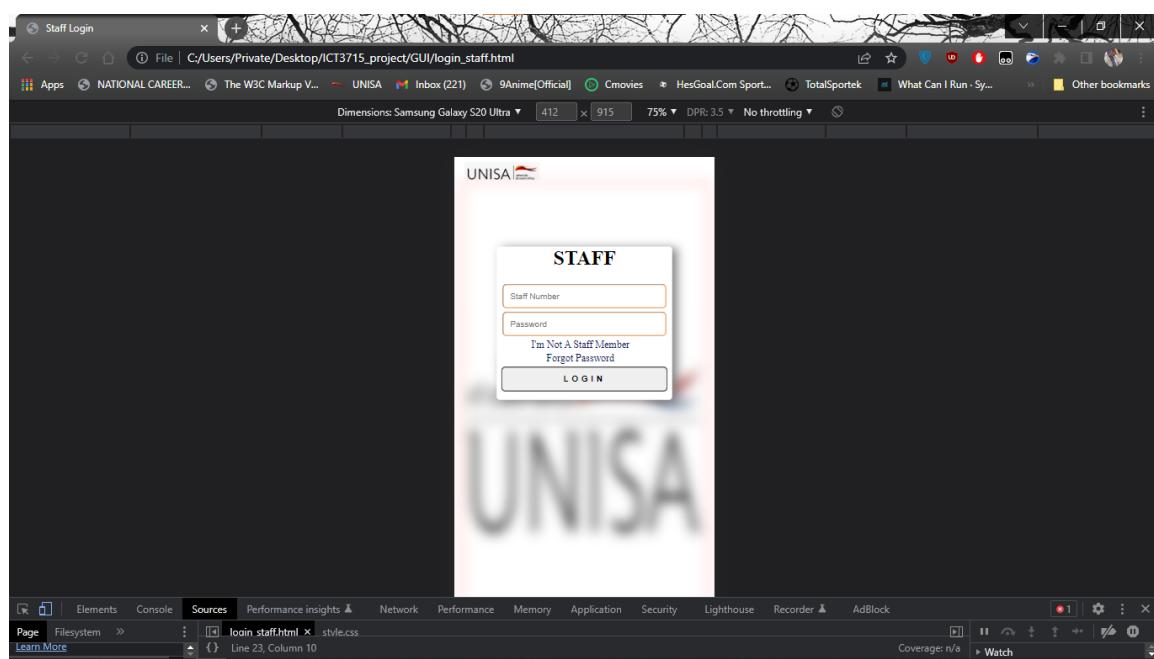
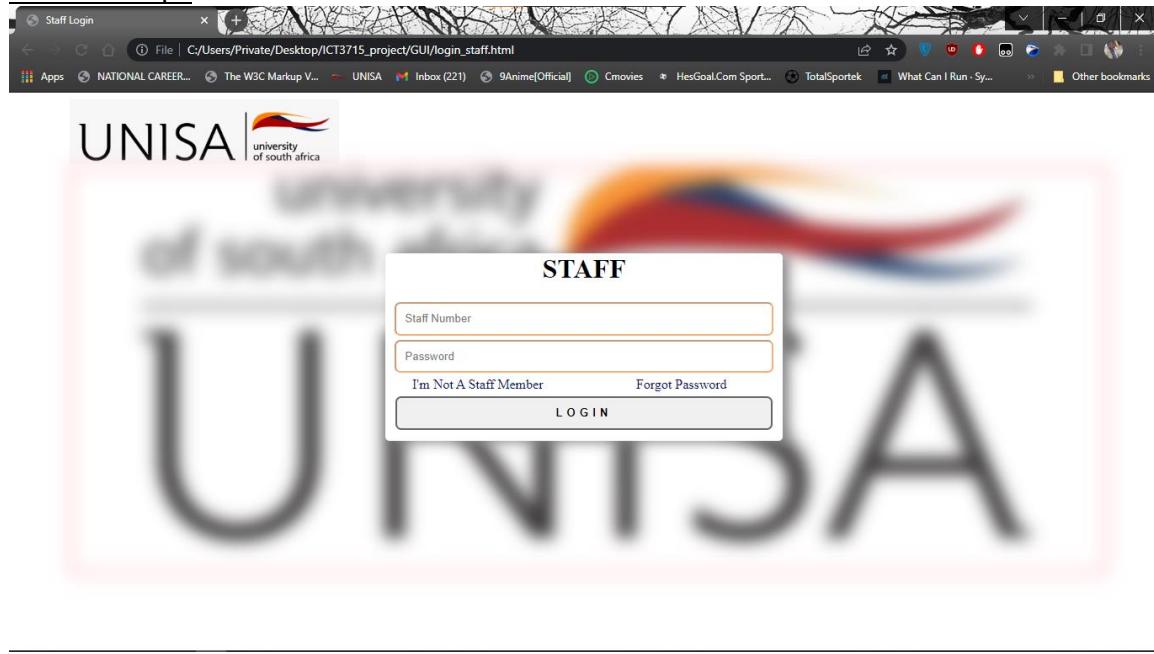
**Code**

```
<!DOCTYPE html>

<html lang="en">
    <head>
        <meta charset="UTF-8">
        <meta http-equiv="Cache-control" content="no-cache">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <link rel="stylesheet" type="text/css" href="style.css" media="screen">
        <title>Staff Login</title>
    </head>
    <body>
        <header>
            
        </header>
        <div class="background"></div>
        <form method="POST" action="" class="login">
            <h1>Staff</h1>
            <input type="text" name="username" id="username" placeholder="Staff Number">
            <input type="password" name="password" id="password" placeholder="Password">
            <div id="links">
                <a href="login_student.html">I'm Not A Staff Member</a>
                <a href="#" style="margin-left: 3em;">Forgot Password</a>
            </div>
            <input type="submit" name="submit" value="Login">
        </form>
    </body></html>
```

### 1.2.3 Exam Department (Staff member) login GUI (6)

#### Creating the Graphical User Interfaces for the Exam Department (Staff member) Login Screen dumps



**Code**

```
<!DOCTYPE html>

<html lang="en">
    <head>
        <meta charset="UTF-8">
        <meta http-equiv="Cache-control" content="no-cache">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <link rel="stylesheet" type="text/css" href="style.css" media="screen">
        <title>Staff Login</title>
    </head>
    <body>
        <header>
            
        </header>
        <div class="background"></div>
        <form method="POST" action="" class="login">
            <h1>Staff</h1>
            <input type="text" name="username" id="username" placeholder="Staff Number">
            <input type="password" name="password" id="password" placeholder="Password">
            <div id="links">
                <a href="login_student.html">I'm Not A Staff Member</a>
                <a href="#" style="margin-left: 3em;">Forgot Password</a>
            </div>
            <input type="submit" name="submit" value="Login">
        </form>
    </body></html>
```

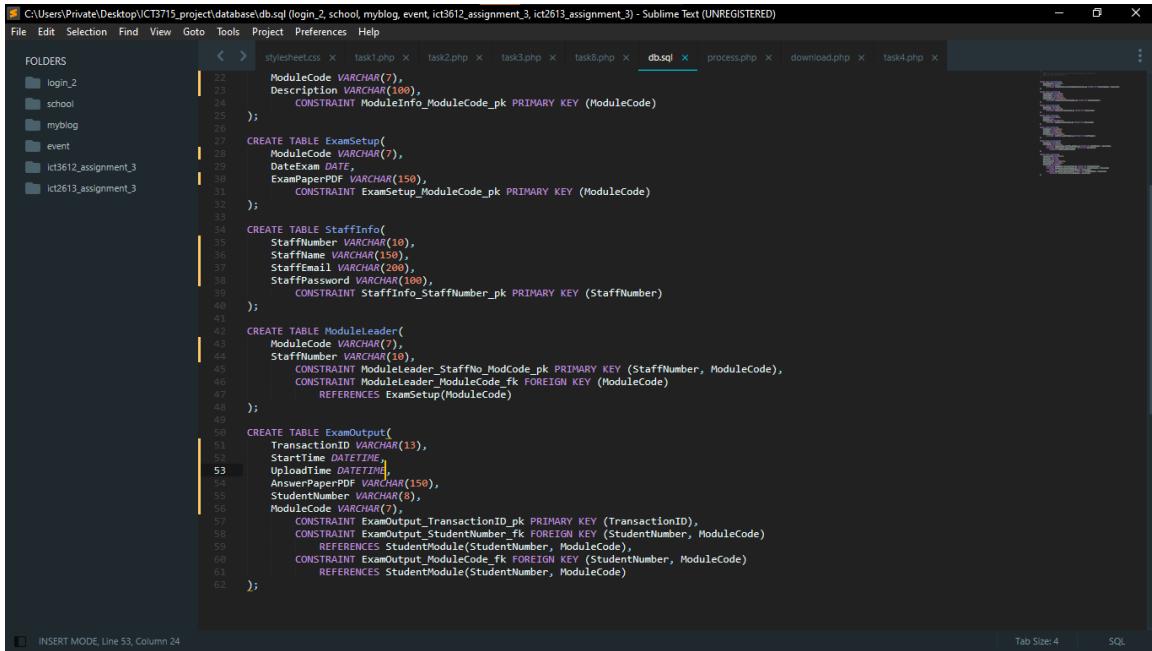
## 2 Assignment 2

## **2.1 Section A = Database [20]**

### **2.1.1 Create the database for your system and importing the data from your .csv file (20)**

The first thing I did was to write a code that I used to create the tables for my database.

The data that we were given on MyUNISA stated that the StartTime and UploadTime columns have a data type of DATE but the data in csv file was TIME, for my own convenience during the data cleaning process I merged the date from the Date Exam column with StartTime and UploadTime so that it stores the date and time in the same column. That meant I had to also change the data type from DATE to TIMESTAMP.



The screenshot shows a Sublime Text window with multiple tabs open, including stylesheet.css, task1.php, task2.php, task3.php, task8.php, db.sql (which is the active tab), process.php, download.php, and task4.php. The db.sql tab contains SQL code for creating tables and defining primary keys and foreign keys. The code includes tables for ModuleInfo, ExamSetup, StaffInfo, ModuleLeader, and ExamOutput.

```

22     ModuleCode VARCHAR(7),
23     Description VARCHAR(100),
24     CONSTRAINT ModuleInfo_ModuleCode_pk PRIMARY KEY (ModuleCode)
25   );
26
27 CREATE TABLE ExamSetup(
28   ModuleCode VARCHAR(7),
29   DateExam DATE,
30   ExamPaperID VARCHAR(150),
31   CONSTRAINT ExamSetup_ModuleCode_pk PRIMARY KEY (ModuleCode)
32 );
33
34 CREATE TABLE StaffInfo(
35   StaffNumber VARCHAR(10),
36   StaffName VARCHAR(150),
37   StaffEmail VARCHAR(200),
38   StaffPassword VARCHAR(100),
39   CONSTRAINT StaffInfo_StaffNumber_pk PRIMARY KEY (StaffNumber)
40 );
41
42 CREATE TABLE ModuleLeader(
43   ModuleCode VARCHAR(7),
44   StaffNumber VARCHAR(10),
45   CONSTRAINT ModuleLeader_StaffNo_ModCode_pk PRIMARY KEY (StaffNumber, ModuleCode),
46   CONSTRAINT ModuleLeader_ModuleCode_fk FOREIGN KEY (ModuleCode)
47     REFERENCES ExamSetup(ModuleCode)
48 );
49
50 CREATE TABLE ExamOutput(
51   TransactionID VARCHAR(13),
52   StartTime DATETIME,
53   UploadTime DATETIME,
54   AnswerPaperPDF VARCHAR(150),
55   StudentNumber VARCHAR(8),
56   ModuleCode VARCHAR(7),
57   CONSTRAINT ExamOutput_TransactionID_pk PRIMARY KEY (TransactionID),
58   CONSTRAINT ExamOutput_StudentNumber_fk FOREIGN KEY (StudentNumber, ModuleCode)
59     REFERENCES StudentModule(StudentNumber, ModuleCode),
60   CONSTRAINT ExamOutput_ModuleCode_fk FOREIGN KEY (StudentNumber, ModuleCode)
61     REFERENCES StudentModule(StudentNumber, ModuleCode)
62 );

```

After that was done then I turned my attention to the csv data file that we cleaned in Assignment 1, to make things easier for myself I then proceeded to create 7 separate csv files each representing the tables in my database. I then copied corresponding columns from the original csv file (csv data file with cleaned data but will refer to it as the original csv file) to their respective csv file e.g. the StudentInfo table has 4 columns, so I only copied the 4 columns from the original csv file, so I did that for all 7 csv files.

I then removed duplicates on the StudentInfo, ModuleInfo, StaffInfo, ExamSetup and ModuleLeader csv files preparing for the import.

I'm using MySQL for my database, after the creation of my database and the tables on phpMyAdmin site, I clicked on the database I will be using then click on any table I wanted to import data to. I imported the data to my tables in the following order: StudentInfo, ModuleInfo, StudentModule, StaffInfo, ExamSetup, ModuleLeader and ExamOutput taking into account the foreign key constraints for certain tables.

For the first table I clicked on it and there's a tab on the right hand side of the screen on the top with different headings, I then clicked on a button labelled import, select the file that I wanted to import then click the Go button at the bottom of the table to finish the import.

There are 2 pictures for each table below, one taken immediately after the import just finished successfully and the other on showing that the data exists in the tables.

## StudentInfo

The screenshot shows the phpMyAdmin interface for a MySQL database named 'ict3715\_online\_exam\_submission'. The left sidebar lists various databases and tables, including 'studentinfo' which is currently selected. The main panel displays the results of an import operation into the 'studentinfo' table. A green message bar at the top states: 'Import has been successfully finished, 1 query executed. (StudentInfo.csv)'. Below it, another message bar shows: '5371 rows inserted. (Query took 0.5754 seconds)' followed by the SQL command: 'LOAD DATA LOCAL INFILE 'C:\\xampp\\tmp\\php4C84.tmp' INTO TABLE 'studentinfo' FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\r\n';'. At the bottom, a warning message is displayed: 'Warning: #1265 Data truncated for column 'StudentNumber' at row 1'. There is also a 'Console' button at the bottom left.

**phpMyAdmin**

Showing rows 0 - 24 (5371 total, Query took 0.0011 seconds.)

SELECT \* FROM `studentinfo`

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

Number of rows: 25 Filter rows: Search this table Sort by key: None

	StudentNumber	StudentName	StudentEmail	StudentPassword
<input type="checkbox"/>	11141311	OD MASEKO	11141311@mylife.unisa.ac.za	11141311
<input type="checkbox"/>	11153623	KY MAKHAFOLA	11153623@mylife.unisa.ac.za	11153623
<input type="checkbox"/>	11162384	QP KALENGA	11162384@mylife.unisa.ac.za	11162384
<input type="checkbox"/>	11207520	UU MAPHUTHA	11207520@mylife.unisa.ac.za	11207520
<input type="checkbox"/>	11260693	EU UBISI	11260693@mylife.unisa.ac.za	11260693
<input type="checkbox"/>	11261613	PT NGQENGELELE	11261613@mylife.unisa.ac.za	11261613
<input type="checkbox"/>	11276374	QD MACHETE	11276374@mylife.unisa.ac.za	11276374
<input type="checkbox"/>	11286271	TN MMOLOTSI	11286271@mylife.unisa.ac.za	11286271
<input type="checkbox"/>	11296841	EX MPHACHELE	11296841@mylife.unisa.ac.za	11296841
<input type="checkbox"/>	11348843	UX SEWNARAIN	11348843@mylife.unisa.ac.za	11348843
<input type="checkbox"/>	11350641	CK GONDO	11350641@mylife.unisa.ac.za	11350641
<input type="checkbox"/>	11357287	CV MANDIPIRA	11357287@mylife.unisa.ac.za	11357287
<input checked="" type="checkbox"/>	11372737	XH THWALA	11372737@mylife.unisa.ac.za	11372737
<input type="checkbox"/>	11384884	RQ SIBINDLA	11384884@mylife.unisa.ac.za	11384884
<input type="checkbox"/>	11447994	VJ MHLONGO	11447994@mylife.unisa.ac.za	11447994
<input type="checkbox"/>	11477936	SR HANKEY	11477936@mylife.unisa.ac.za	11477936
<input type="checkbox"/>	11483332	XO CHARUMBIRA	11483332@mylife.unisa.ac.za	11483332
<input type="checkbox"/>	11490131	W MOKOENA	11490131@mylife.unisa.ac.za	11490131
<input type="checkbox"/>	11492193	EP GILL	11492193@mylife.unisa.ac.za	11492193
<input type="checkbox"/>	11523952	UD CHINYANGA	11523952@mylife.unisa.ac.za	11523952
<input type="checkbox"/>	11533815	U MANGOUA MENDJIYA	11533815@mylife.unisa.ac.za	11533815
<input type="checkbox"/>	11536884	PB MTJWARA	11536884@mylife.unisa.ac.za	11536884
<input type="checkbox"/>	11566745	VN MAKHUDU	11566745@mylife.unisa.ac.za	11566745
<input type="checkbox"/>	11582146	KM MAPHWANYA	11582146@mylife.unisa.ac.za	11582146
<input type="checkbox"/>	11627788	JD WILLIAMS	11627788@mylife.unisa.ac.za	11627788

Check all With selected: Edit Copy Delete Export

Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label:   Let every user access this bookmark

Bookmark this SQL query

## ModuleInfo

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The 'moduleinfo' table is selected. A message at the top indicates 'Import has been successfully finished, 1 query executed. (ModuleInfo.csv)'. Below it, another message says '34 rows inserted. (Query took 0.2620 seconds.)'. The SQL query shown is:

```
LOAD DATA LOCAL INFILE 'C:\\xampp\\tmp\\phpB5E3.tmp' INTO TABLE 'moduleinfo' FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\r\n';
```

Buttons for 'Edit inline', 'Edit', and 'Create PHP code' are visible.

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The 'moduleinfo' table is selected. A message at the top indicates 'Showing rows 0 - 24 (34 total, Query took 0.0019 seconds.)'. The table data is as follows:

ModuleCode	Description
AST2652	Accounting Sciences II
CHE1504	Introduction to Chemistry I
CHE181T	Chemistry I (Theory)
CHE2611	Inorganic Chemistry II (Theory)
CHE2613	Organic Chemistry II (Theory)
CHE3701	Inorganic Chemistry III (Theory)
CHE3703	Organic Chemistry III (Theory)
CHE3704	Analytical Chemistry III
CHE4801	Inorganic Chemistry IV
ELE2561	Electrical Engineering II (Theory)
ENG1011	Engineering Methods
ENG1012	Engineering Design
ENG1013	Engineering Smart systems

## StudentModule

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The 'studentmodule' table is selected. A green message bar at the top indicates 'Import has been successfully finished, 1 query executed. (StudentModule.csv)'. Below it, another message bar shows '10741 rows inserted (Query took 1.8934 seconds.)'. The SQL query shown is:

```
LOAD DATA LOCAL INFILE 'C:\xampp\tmp\php90FD.tmp' INTO TABLE `studentmodule` FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\r\n';
```

Below the messages are links for 'Edit inline', 'Edit', and 'Create PHP code'. A warning message at the bottom states 'Warning: #1265 Data truncated for column 'StudentNumber' at row 1'.

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The 'studentmodule' table is selected. A green message bar at the top indicates 'Showing rows 0 - 24 (10741 total, Query took 0.0030 seconds.)'. The SQL query shown is:

```
SELECT * FROM `studentmodule`
```

The results table displays 24 rows of data, each with a checkbox, edit, copy, and delete link for the 'StudentNumber' and 'ModuleCode' columns. The data is as follows:

	StudentNumber	ModuleCode
<input type="checkbox"/>	11141311	AST2652
<input type="checkbox"/>	11141311	ICT1113
<input type="checkbox"/>	11153623	CHE1504
<input type="checkbox"/>	11153623	ICT1114
<input type="checkbox"/>	11162384	CHE181T
<input type="checkbox"/>	11162384	ICT1115
<input type="checkbox"/>	11207520	CHE2611
<input type="checkbox"/>	11207520	ICT1116
<input type="checkbox"/>	11260693	CHE2613
<input type="checkbox"/>	11260693	ICT1117
<input type="checkbox"/>	11261613	CHE3701
<input type="checkbox"/>	11261613	ICT1118
<input type="checkbox"/>	11276374	CHE3703

## StaffInfo

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The 'Table' tab is selected for the 'staffinfo' table. A success message at the top states: 'Import has been successfully finished, 1 query executed. (StaffInfo.csv)'. Below it, another message says: '25 rows inserted. (Query took 0.1110 seconds.)'. The SQL query shown is: 'LOAD DATA LOCAL INFILE 'C:\xampp\temp\php5B66.tmp' INTO TABLE `staffinfo` FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\r\n';'. A warning message at the bottom indicates: 'Warning: #1265 Data truncated for column 'StaffNumber' at row 1'.

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The 'Table' tab is selected for the 'staffinfo' table. A message at the top says: 'Showing rows 0 - 24 (25 total, Query took 0.0020 seconds.)'. The SQL query shown is: 'SELECT \* FROM `staffinfo`'. The results table displays 25 rows of data with columns: StaffNumber, StaffName, StaffEmail, and StaffPassword. The data includes various staff members such as D NEL, F PRETORIUS, PG SMITH, L BUSASU, D ZULU, etc., with their respective emails and passwords.

StaffNumber	StaffName	StaffEmail	StaffPassword
1389884	D NEL	d.nel@unisa.ac.za	1389884
1550751	F PRETORIUS	f.pretorius@unisa.ac.za	1550751
1722194	PG SMITH	pg.smith@unisa.ac.za	1722194
1927785	L BUSASU	l.busasu@unisa.ac.za	1927785
2067863	D ZULU	d.zulu@unisa.ac.za	2067863
3858852	PK SINGH	pk.singh@unisa.ac.za	3858852
4102703	FCD MHALATSI	fcd.mhalatsi@unisa.ac.za	4102703
4511492	TK DEBEER	tk.debeer@unisa.ac.za	4511492
4556445	M MNATZI	m.mnatzi@unisa.ac.za	4556445
4760241	OD BHOHLE	od.bhohole@unisa.ac.za	4760241
4866926	VV ERASMUS	w.erasmus@unisa.ac.za	4866926
4975413	MD NAIDOO	md.naidoo@unisa.ac.za	4975413
5017037	JH NEL	jh.nel@unisa.ac.za	5017037

## ExamSetup

Import has been successfully finished, 1 query executed. (ExamSetup.csv)

34 rows inserted. (Query took 0.1749 seconds.)

LOAD DATA LOCAL INFILE 'C:\\xampp\\tmp\\php7CEF.tmp' INTO TABLE `examsetup` FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\r\n';

[ Edit inline ] [ Edit ] [ Create PHP code ]

Warning: #1265 Data truncated for column 'DateExam' at row 1

Warning: #1261 Row 1 doesn't contain data for all columns

Warning: #1261 Row 2 doesn't contain data for all columns

Warning: #1261 Row 3 doesn't contain data for all columns

Warning: #1261 Row 4 doesn't contain data for all columns

Warning: #1261 Row 5 doesn't contain data for all columns

Warning: #1261 Row 6 doesn't contain data for all columns

Warning: #1261 Row 7 doesn't contain data for all columns

#1261 Row 8 doesn't contain data for all columns

Showing rows 0 - 24 (34 total, Query took 0.0011 seconds.)

SELECT \* FROM `examsetup`

	ModuleCode	DateExam	ExamPaperPDF			
<input type="checkbox"/>	Edit	Copy	Delete	AST2652	2022-11-10	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE1504	2022-11-11	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE181T	2022-11-12	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE2611	2022-11-13	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE2613	2022-11-14	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE3701	2022-11-15	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE3703	2022-11-16	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE3704	2022-11-17	NULL
<input type="checkbox"/>	Edit	Copy	Delete	CHE4801	2022-11-18	NULL
<input type="checkbox"/>	Edit	Copy	Delete	ELE2561	2022-11-19	NULL
<input type="checkbox"/>	Edit	Copy	Delete	ENG1011	2022-11-10	NULL
<input type="checkbox"/>	Edit	Copy	Delete	ENG1012	2022-11-11	NULL
<input type="checkbox"/>	Edit	Copy	Delete	ENG1013	2022-11-12	NULL

## ModuleLeader

**phpMyAdmin**

Server: 127.0.0.1 » Database: ict3715\_online\_exam\_submission » Table: moduleleader

- [Browse](#)
- [Structure](#)
- [SQL](#)
- [Search](#)
- [Insert](#)
- [Export](#)
- [Import](#)
- [Privileges](#)
- [Operations](#)
- [Tracking](#)
- [Triggers](#)

Import has been successfully finished, 1 query executed. (ModuleLeader.csv)

34 rows inserted. (Query took 0.4010 seconds.)

```
LOAD DATA LOCAL INFILE 'C:\\xampp\\tmp\\php7841.tmp' INTO TABLE `moduleleader` FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\\r\\n';
```

[ Edit inline ] [ Edit ] [ Create PHP code ]

Warning: #1265 Data truncated for column 'StaffNumber' at row 1

Warning: #1062 Duplicate entry '5017037-AST2652' for key 'PRIMARY'

Warning: #1062 Duplicate entry '5509541-CHE1504' for key 'PRIMARY'

Warning: #1062 Duplicate entry '5509541-CHE181T' for key 'PRIMARY'

Warning: #1062 Duplicate entry '5133768-CHE2611' for key 'PRIMARY'

Warning: #1062 Duplicate entry '5133768-CHE2613' for key 'PRIMARY'

Warning: #1062 Duplicate entry '7443352-CHE3701' for key 'PRIMARY'

Warning: #1062 Duplicate entry '9530053-CHE3703' for key 'PRIMARY'

[ Console ] [ #1062 Duplicate entry '5133768-CHE3704' for key 'PRIMARY' ]

**phpMyAdmin**

Server: 127.0.0.1 » Database: ict3715\_online\_exam\_submission » Table: moduleleader

- [Browse](#)
- [Structure](#)
- [SQL](#)
- [Search](#)
- [Insert](#)
- [Export](#)
- [Import](#)
- [Privileges](#)
- [Operations](#)
- [Tracking](#)
- [Triggers](#)

Showing rows 0 - 24 (34 total). Query took 0.0010 seconds.

```
SELECT * FROM `moduleleader`
```

[ Profiling ] [ Edit inline ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

	ModuleCode	StaffNumber
<input type="checkbox"/>	Edit  Copy  Delete ENG1016	1389884
<input type="checkbox"/>	Edit  Copy  Delete ENG1014	1550751
<input type="checkbox"/>	Edit  Copy  Delete MAT2612	1722194
<input type="checkbox"/>	Edit  Copy  Delete ENG1019	1927785
<input type="checkbox"/>	Edit  Copy  Delete ICT1119	2067863
<input type="checkbox"/>	Edit  Copy  Delete ENG1013	3858852
<input type="checkbox"/>	Edit  Copy  Delete ENG1015	4102703
<input type="checkbox"/>	Edit  Copy  Delete ENG1017	4511492
<input type="checkbox"/>	Edit  Copy  Delete ENG1018	4511492
<input type="checkbox"/>	Edit  Copy  Delete ICT1112	4556445
<input type="checkbox"/>	Edit  Copy  Delete ICT3722	4556445
<input type="checkbox"/>	Edit  Copy  Delete ICT1116	4760241
<input type="checkbox"/>	Edit  Copy  Delete ICT1118	4866926

[ Console ] [ Copy ] [ Delete ]

## ExamOutput

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The left sidebar shows the database structure with tables like examoutput, examsetup, moduleinfo, etc. The main window shows the results of an import operation:

- Import has been successfully finished, 1 query executed. (ExamOutput.csv)
- 10741 rows inserted. (Query took 8.8606 seconds.)
- LOAD DATA LOCAL INFILE 'C:\xampp\tmp\php5C6B.tmp' INTO TABLE `examoutput` FIELDS TERMINATED BY ';' ENCLOSED BY '\"' ESCAPED BY '\\\' LINES TERMINATED BY '\r\n';
- [Edit inline] [Edit] [Create PHP code]
- Warning: #1265 Data truncated for column 'StartTime' at row 1
- Warning: #1265 Data truncated for column 'UploadTime' at row 1
- Warning: #1265 Data truncated for column 'StudentNumber' at row 1

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The left sidebar shows the database structure. The main window displays the contents of the 'examoutput' table:

	TransactionID	StartTime	UploadTime	AnswerPaperPDF	StudentNumber	ModuleCode
<input type="checkbox"/>	AAB01377-6753	2022-11-10 10:12:36	2022-11-10 11:24:05	13775740_ICT2612_EXAM_2022-11-10_11:24:05.pdf	13775740	ICT2612
<input type="checkbox"/>	aaEa8531-8024	2022-11-10 10:41:40	2022-11-10 11:51:37	85314079_ENG1011_EXAM_2022-11-10_11:51:37.pdf	85314079	ENG1011
<input type="checkbox"/>	aaE4312-4056	2022-11-15 11:15:20	2022-11-15 11:16:44	43122598_ENG1016_EXAM_2022-11-15_11:16:44.pdf	43122598	ENG1016
<input type="checkbox"/>	aaEH4977-8680	2022-11-10 10:34:28	2022-11-10 10:57:48	49776634_ICT2612_EXAM_2022-11-10_10:57:48.pdf	49776634	ICT2612
<input type="checkbox"/>	aaEn2185-7464	2022-11-13 10:27:24	2022-11-13 10:52:55	21857663_ENG1014_EXAM_2022-11-13_10:52:55.pdf	21857663	ENG1014
<input type="checkbox"/>	aaFa7542-2041	2022-11-11 11:01:16	2022-11-11 11:17:08	75420873_ICT1112_EXAM_2022-11-11_11:17:08.pdf	75420873	ICT1112
<input type="checkbox"/>	AAf2548-8260	2022-11-14 10:15:09	2022-11-14 11:55:06	25481729_ENG1015_EXAM_2022-11-14_11:55:06.pdf	25481729	ENG1015
<input type="checkbox"/>	Aahu1291-1035	2022-11-17 11:30:06	2022-11-17 11:47:23	12912495_ICT1118_EXAM_2022-11-17_11:47:23.pdf	12912495	ICT1118
<input type="checkbox"/>	Aal07210-5585	2022-11-19 10:35:50	2022-11-19 10:50:06	72108114_ICT1120_EXAM_2022-11-19_10:50:06.pdf	72108114	ICT1120
<input type="checkbox"/>	aAjE2780-2796	2022-11-10 10:03:37	2022-11-10 10:41:29	27804513_AST2652_EXAM_2022-11-10_10:41:29.pdf	27804513	AST2652
<input type="checkbox"/>	aaJl3642-8050	2022-11-16 10:22:21	2022-11-16 10:44:44	36425651_ENG1017_EXAM_2022-11-16_10:44:44.pdf	36425651	ENG1017
<input type="checkbox"/>	aaaj2863-2752	2022-11-19 10:18:43	2022-11-19 10:31:13	28639302_ELE2561_EXAM_2022-11-19_10:31:13.pdf	28639302	ELE2561

After all data was imported

The screenshot shows the phpMyAdmin interface for the database 'ict3715\_online\_exam\_submission'. The left sidebar lists databases like 'information\_schema', 'mysql', 'performance\_schema', 'phpmyadmin', 'test', and 'wordpress'. The main area displays the table structure with the following data:

Table	Action	Rows	Type	Collation	Size	Overhead
examoutput	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	10,741	InnoDB	utf8mb4_general_ci	4.0 MiB	-
examsetup	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	34	InnoDB	utf8mb4_general_ci	16.0 KiB	-
moduleinfo	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	34	InnoDB	utf8mb4_general_ci	16.0 KiB	-
moduleleader	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	34	InnoDB	utf8mb4_general_ci	32.0 KiB	-
staffinfo	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	25	InnoDB	utf8mb4_general_ci	16.0 KiB	-
studentinfo	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	5,371	InnoDB	utf8mb4_general_ci	464.0 KiB	-
studentmodule	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	10,741	InnoDB	utf8mb4_general_ci	432.0 KiB	-
<b>7 tables</b>	<b>Sum</b>	<b>26,980</b>	<b>InnoDB</b>	<b>utf8mb4_general_ci</b>	<b>5.0 MiB</b>	<b>0 B</b>

Below the table list, there are buttons for 'Check all' and 'With selected:'.

At the bottom, there are links for 'Print' and 'Data dictionary', and a 'Create table' form with fields 'Name:' and 'Number of columns: 4'.

Although the previous method I used was successful for other tables with small data, it couldn't handle importing large amount of data. For example the StudentModule and ExamOutput files have more than 10 000 rows of data each, a problem occurred when I tried importing data and the process became long and it would terminate after 300 seconds with not all of the data imported. The first thing I tried was to disable the "partial import" checkbox under the import tab but that also didn't work.

I then did a little more research and I found out that under the "import" tab just below the "partial import" there's a section called "format" with the initial value of the item in the input box being "CSV", I then changed that from "CSV" to "CSV using LOAD DATA" and

to my surprise the data was imported just after a few seconds, I then did the same for the other table.

## 2.2 Section B = Backup and Recovery for the Database and Programming code [10]

### 2.2.1 Database (5)

#### BACKUP

For my backup I tried to use the export method on phpMyAdmin were you click on the database you want to export and then go to the “export” tab but that method didn’t work for me, I then decided to use MySQL dump.

- I first navigated to where “xampp” folder is located
- Go to “mysql” folder inside “xampp”
- Then into the “bin” folder
- Check to see that the file “mysqldump.exe” exists in that folder
- Then run command prompt in that folder as administrator

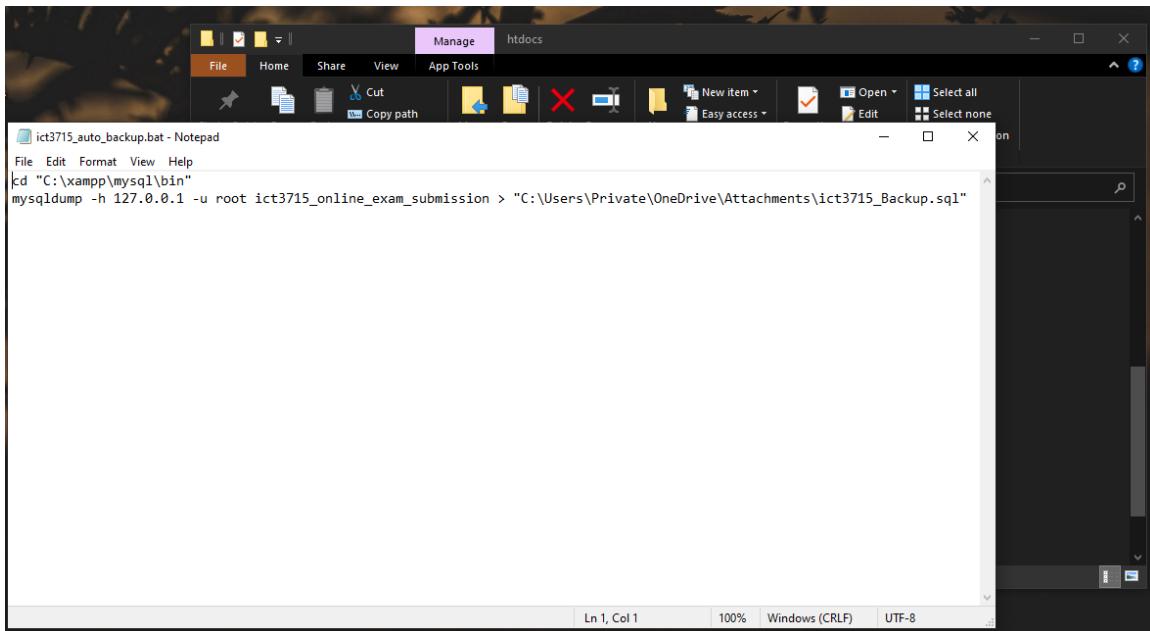
I entered the following script in the command prompt

```
“mysqldump -hostname -u username -p password -databasename > file  
location\name.sql”
```

- ❖ With hostname being the site were your database is located
- ❖ username is the username you use when accessing the database
- ❖ password of that username
- ❖ database name being the database you want to backup
- ❖ file location is where you specify where you want the backup to be stored after downloading
- ❖ name being the file name of the backup

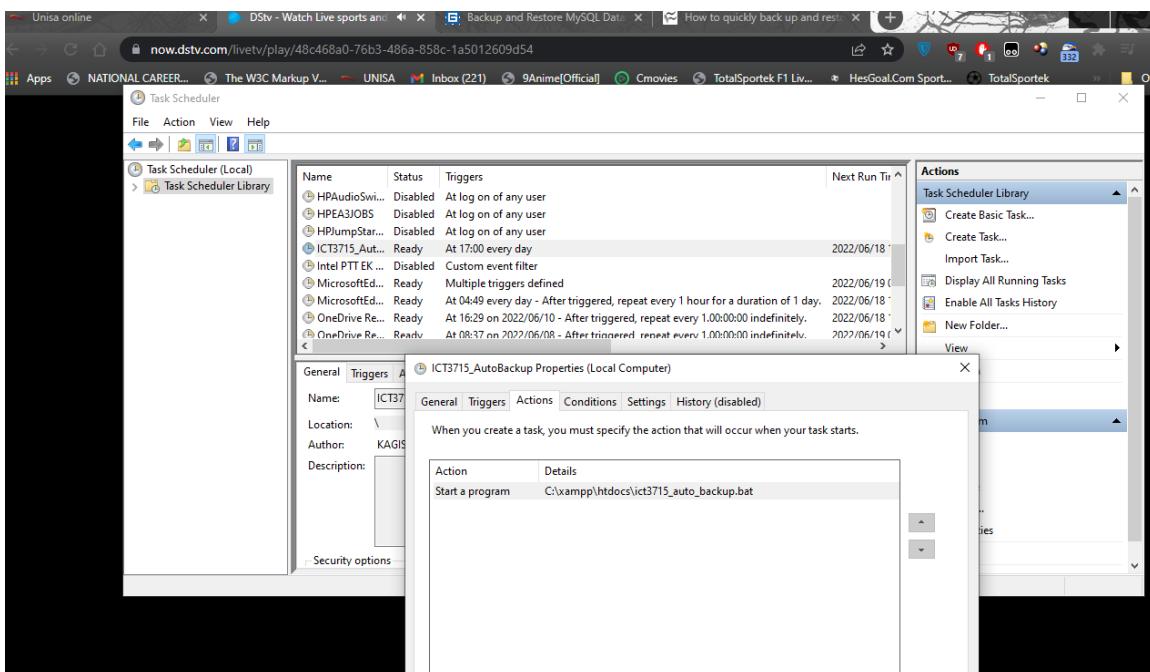
The process worked but that meant having to do this manually for way too many times for my liking, I decided to automate the process.

- ✓ I first created a new file, copied the code from earlier in command prompt and pasted it in my document but made a few changes

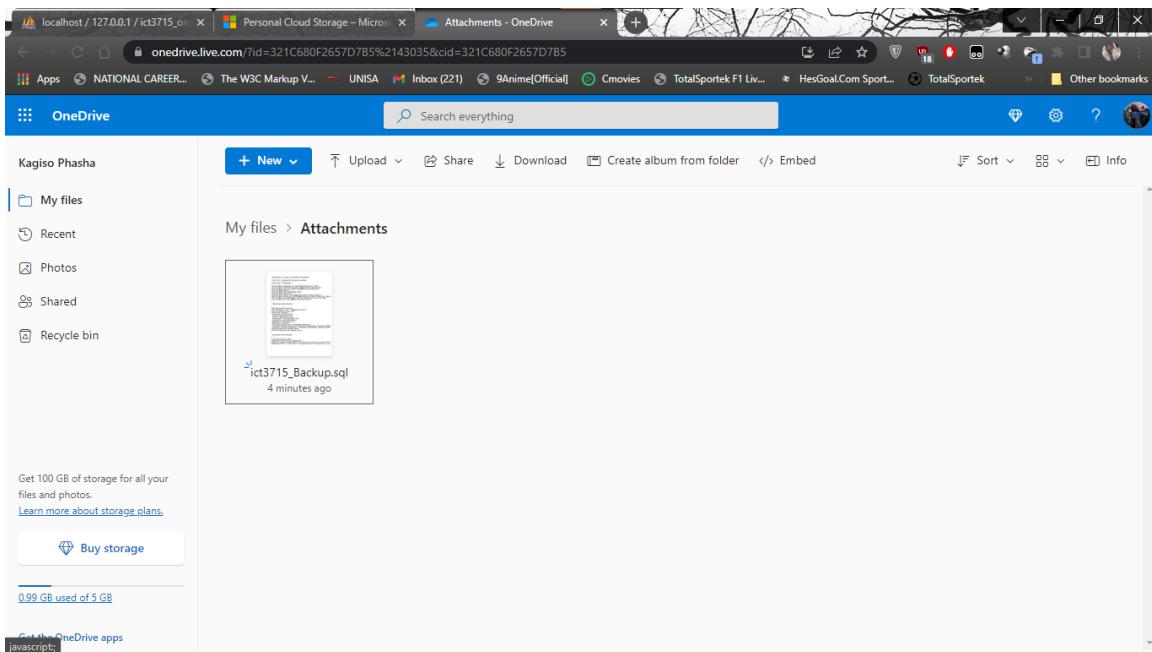


```
ict3715_auto_backup.bat - Notepad
File Edit Format View Help
cd "C:\xampp\mysql\bin"
mysqldump -h 127.0.0.1 -u root ict3715_online_exam_submission > "C:\Users\Private\OneDrive\Attachments\ict3715_Backup.sql"
```

- ✓ Changed the file extension name to .bat to make an executable
- ✓ Created a task scheduler for the file so that it executes every day at a specific time and the backup automatically get downloaded to the folder I mentioned in the script

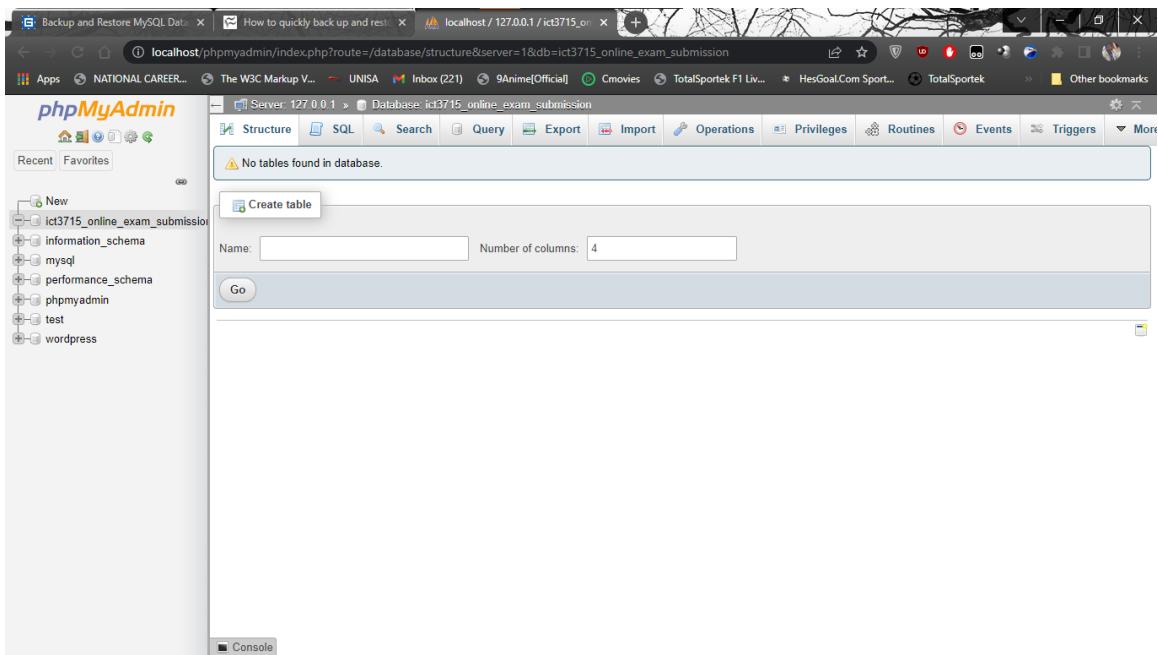


The folder is a OneDrive folder that automatically uploads any file that gets added to it at any time and the file is synchronized across all my devices and I can access it from any device. In a way the file is stored both online and local at the same time. From time to time I would copy the backup into Google Drive and an external media.



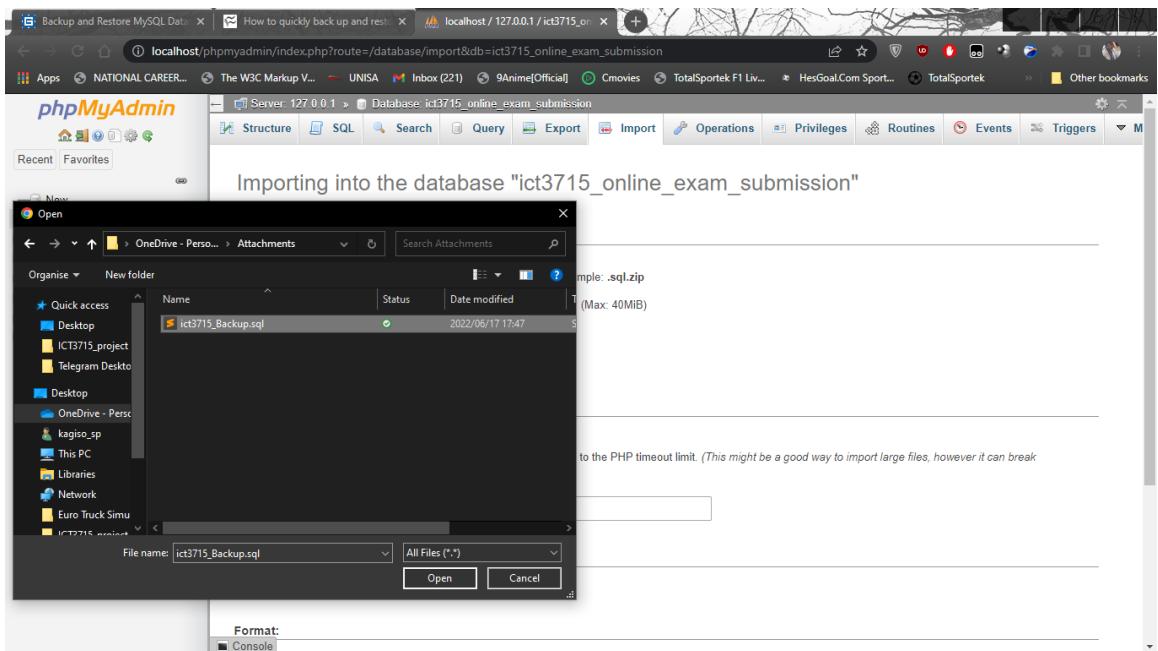
## RECOVERY

To make sure the recovery would be successful I first deleted the database going with the assumption that it was corrupted and created a new one again with the same name but no tables.



I then downloaded the backup that was created earlier on OneDrive

Go to the database and navigate to the “import tab”



Then select the backup I want to restore (above picture) and click on the “Go” button at the bottom

Then I just wait till everything is done, it might take a while

The screenshot shows two instances of the phpMyAdmin interface. The top instance displays a success message: "Import has been successfully finished. 90 queries executed. (ict3715\_Backup.sql)". The bottom instance shows the table structure for the database "id3715\_online\_exam\_submission". The table list includes:

Table	Action	Rows	Type	Collation	Size	Overhead
examoutput	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	10,741	InnoDB	utf8mb4_general_ci	2.0 MiB	-
examsetup	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	33	InnoDB	utf8mb4_general_ci	16.0 KiB	-
moduleinfo	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	34	InnoDB	utf8mb4_general_ci	16.0 KiB	-
moduleleader	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	33	InnoDB	utf8mb4_general_ci	32.0 KiB	-
staffinfo	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	24	InnoDB	utf8mb4_general_ci	16.0 KiB	-
studentinfo	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	5,370	InnoDB	utf8mb4_general_ci	464.0 KiB	-
studentmodule	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	10,741	InnoDB	utf8mb4_general_ci	432.0 KiB	-
7 tables	<a href="#">Sum</a>	26,976	InnoDB	utf8mb4_general_ci	3.0 MiB	0 B

## 2.2.2 Programming code & Portfolio (assignments) (20)

I have a specific folder that I use for this project, every time I'm done using it I just copy the entire folder into another OneDrive folder in my laptop and my work gets saved online and can access it from anywhere at any time. Even though my work is saved online I still keep other copies of it in different external medias.

Should my laptop gets damaged or stolen all I have to do to recover all of my work is to log in to my OneDrive and download my work from there.

### 3 Assignment 1

#### 3.1 Section A [4]

##### 3.1.1 Programming Languages (2)

PHP, JavaScript, HTML, CSS

##### 3.1.2 Database (2)

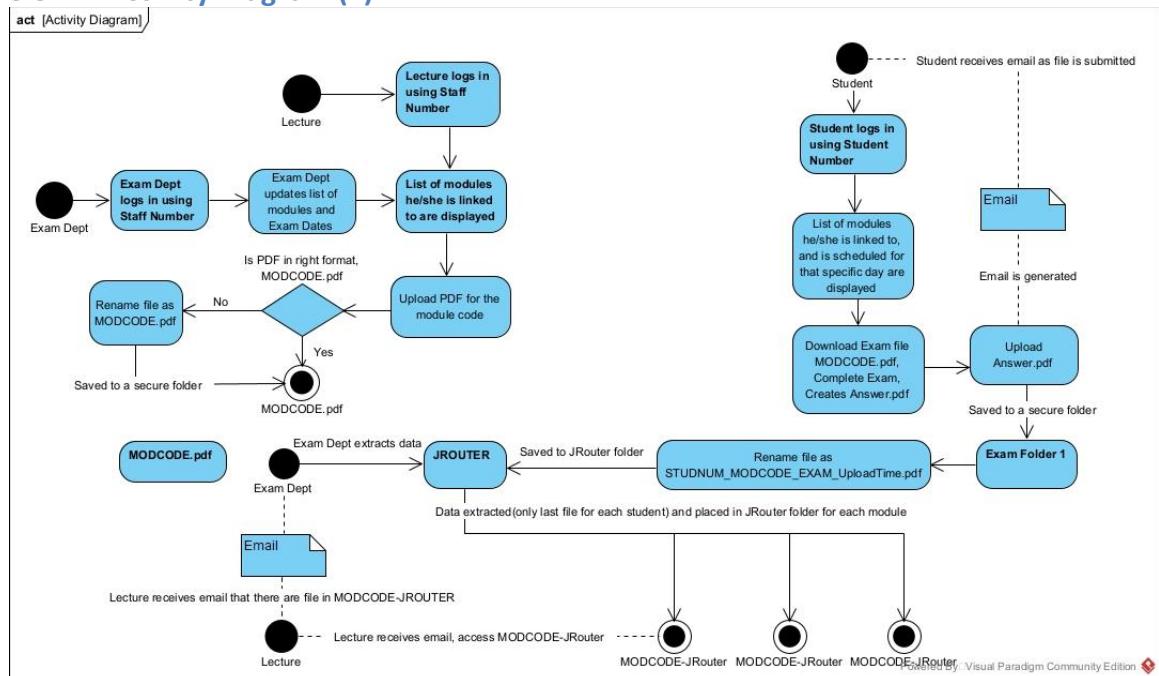
MySQL

#### 3.2 Section B [10]

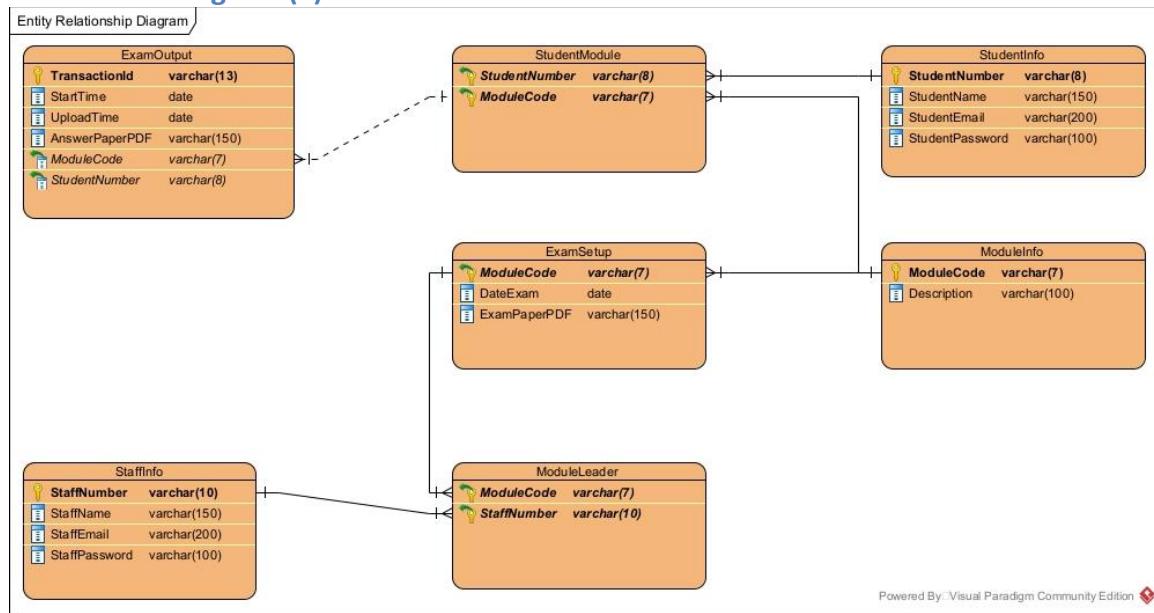
##### 3.2.1 Cleaning the data

#### 3.3 Section C [10]

##### 3.3.1 Activity Diagram (7)



### 3.3.2 ERD Diagram (3)



## 3.4 Section Backup and Recovery for the Database and Programming code [6]

### 3.4.1 Backup and Recovery Software for the Database (3)

- OneDrive
- Google Drive

### 3.4.2 Backup and Recovery process for the Programming code and your Portfolio (assignments) (3)

- OneDrive