FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT OF INFORMATION AND MEDIA TECHNOLOGY

FIRST SEMESTER 2017/2018 EXAMINATION

COURSE CODE:	CIT 414
COURSE TITLE:	Web Database Applications
CREDIT UNITS:	2
TIME ALLOWED:	3 1/2 Hours
COURSE LECTURER(S):	DR. H. O. Aliyu
NUMBER OF QUESTIONS:	4
NUMBER OF PAGES:	4

INSTRUCTIONS

- Answer all questions in Parts I and II
- Do **not** use red pen
- Please use a clear handwriting
- This exam is opened book and opened laptop
- Use of cell phones and internet **not** allowed

Part I: Essay (30 Minutes)

Question 1:

a. Based on your understanding of the 3-tier Architecture of Web-Database Applications, provide suitable answers to items *i - x* in the table below. **[5 Marks]**

Tier	Component	Functions	Example 1	Example 2
Second tier	Middleware	Executes business and data processing logics	*i*	*ii*
	iii	Supplies web pages to the client	*iv*	*v*
First tier	*vi*	Submit page requests to the server using HTTP and renders the results to the user	Google Chrome	*vii*
Third tier	*viii*	facilitates the persistent storage of, and access to, application data	*ix*	*x*

b. Considering the HTML form in Figure 1:
   i. In one or two sentences, comment on whether or not the attributes specified in line 1 are sufficient to submit all the input types specified in the form to the server. If you think any attribute is missing, what is it and what value should it take? **[2 marks]**
   ii. Which PHP super global array would you use, in a server side script, to retrieve the attributes of the input expected in line 5? What are those attributes? **[3 marks]**

```
1  <form name = "profileForm" action = "profileUpdate.php" method = "POST">
2      First Name: <input type = "text" name = "fName" size = "25"><br/>
3      Last Name: <input type = "text" name = "lName" size = "25"><br/>
4      Age: <input type = "text" name = "age" size = "3"><br/>
5      Select Display Picture (max size: 20KB): <input type = "file" name = "dp"><br/>
6      <input type= "submit" name = "submit" value = "Update">
7  </form>
```
Figure 1: HTML Form

Question 2:

a. In maximum of five sentences, identify the bug(s) in the PHP script shown in Figure 2 stating the line number(s) and the associated bugs. **[5 marks]**
b. Rewrite the script in (a) with all errors fixed **[5 marks]**

```php
1  <?php
2      $myFile = "cit414.txt";
3      if (!($fh = fopen($myFile, 'r')))
4          exit ("Failed to open file". $myFile);
5      $lineno = 1;
6      fclose($fh);
7      while ($lineno <= 5){
8          $x = fwrite($fh, "Line ".$lineno);
9          $lineno++;
10  ?>
```

Figure 2: File processing

Question 3: Imagine that Figure 3 shows the two tables that make up a database. Are the structures of the tables normal? If yes justify your answer in not more than five (5) sentences; if no, take them to 3NF. **[10 marks]**

StudentDetails

matricNo	firstName	surName	deptCode	department	phoneNo	courseReg
2014/102CI	Kunle	Chinedu	IMT	Info. & Media Technology	08084123079, 07032489750	CIT414, CPT416, IMT413
2013/342CS	Obinna	Garba	CSS	Cyber Security Science	09025478963, 08061020354	CSS401, CPT310,
2014/126CT	Dada	Sokoto	CPT	Computer Science	08020149357	CPT416, CPT400
2015/490CT	Enagi	Emeka	CPT	Computer Science	07060854231	CPT400, IMT413
2014/710CI	Wanen	Jega	IMT	Info. & Media Technology	08061102873, 08050193075	CIT323, CIT405

Course

courseCode	courseTitle	unit
CIT414	Web Database Applications	2
IMT413	Human Computer Interaction	2
CPT416	Software Engineering	3
CSS401	Ethical Hacking	2
CPT310	Network Security	1
CPT400	Operating Systems	3
CIT323	Java Programming	3
CIT405	IT Laws	2

Figure 3: Normalization test

Part II: Practical   (3 Hours)

Question 4: CIT Institute (CITI) is a company that specializes in IT training. The institute offers several advanced IT courses, each of which is taught by a teaching team of two or more experienced instructors. An instructor may belong to a maximum of four (4) teaching teams. At CITI, each IT course is taught in a session that spans a specified period of time so that a trainee, who is willing to take a course, can enroll in a session that suits his/her schedule. CITI, however, has a space constraint and cannot accommodate more than 50 trainees in a training session. The Entity Relationship Diagram in Figure 4 represents the data model for CITI.

a. Translate the data model into a set of tables in a relational database.   [5 marks]
b. Using your answer in (a) create a MySQL database (using appropriate domains for the table fields) named **CITI_db_X** where **X** is your matriculation number. e.g., if your matriculation number is 2018/1/12345CI, name your database **CITI_db_2018_1_12345CI**   [5 marks]
c. Build suitable PHP-base web application on your database to achieve the following:

   i.   Allow CITI administrative staff to login and register instructors and create teaching teams, courses, and training sessions
   ii.   Allow prospective trainees register online and select from a list of published training sessions to enroll in. *[Hint 1: The enrollment form may represent each published training session as an HTML checkbox tag with the name attribute equal to the sessionID and the title and description of the associated course as the content of the tag. On submit, you may use isset($_POST["checkBoxName"]) to find out whether it is checked or not]*
   iii.   Allow CITI administrative staff view lists of enrollees for the published training sessions.

   [Hint 2: You may use SQL COUNT function before every enrollment to ensure not more than 50 trainees enroll in a session. This may also be useful when creating teaching teams to ensure an instructor does not belong to more than four teams]

   Name your web application **CITI_app_X** where **X** is your matriculation number as described in (b) above.

   Export your database to a *.sql file and submit the file in your web application folder.

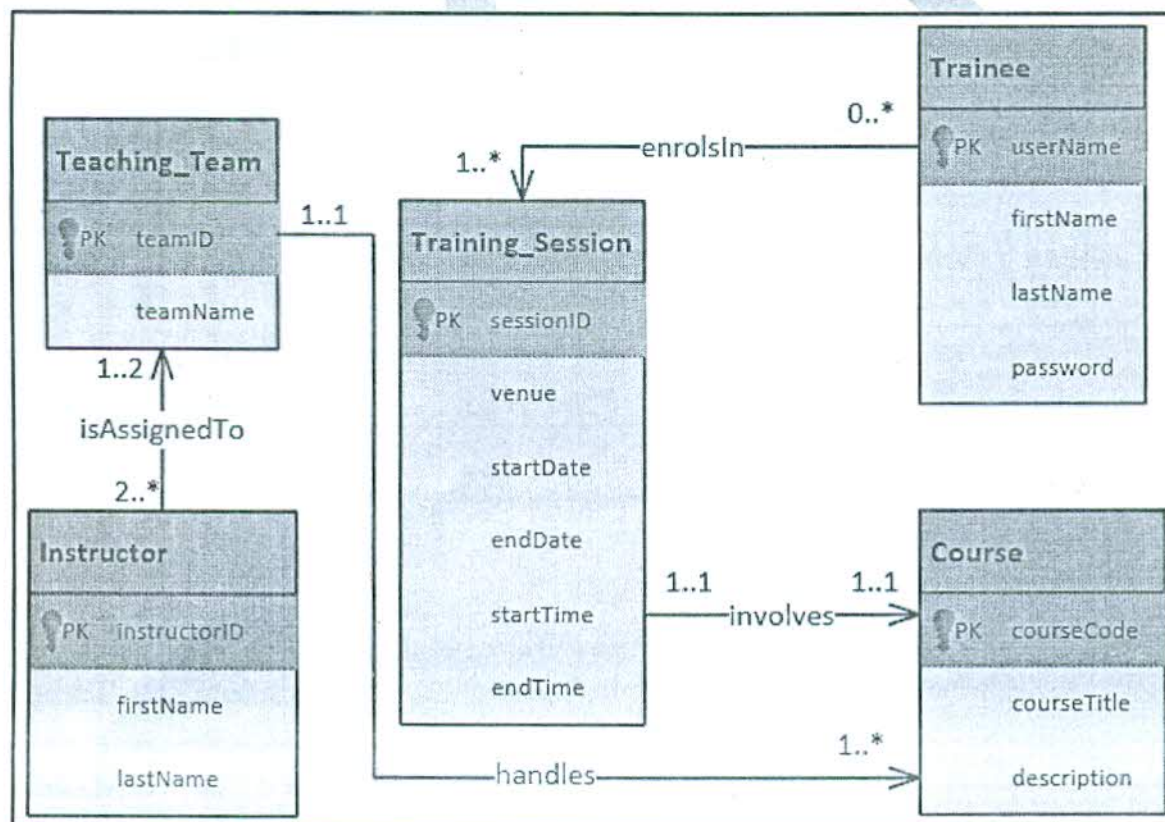   [20 marks]

Figure 4: Data model for CIT Institute

Best of Luck!