**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI**

**WORK INTEGRATED LEARNING PROGRAMMES**

**Database Design and Applications**

**CSI ZG518 / SS ZG518/SE ZG518**

**2nd semester 2023-24**

**Assignment**

The students are expected to submit a single document (Word/ PDF) that includes the following.

Written/ typed Report that includes ER Diagram, Conversion to Relational Model and indices needs to be submitted. In the same report include the SQL Queries and snapshots of the Results. It’s imperative that the student submits the snapshots of results after running SQL queries. At the beginning of the report Include the Signed Declaration (details mentioned in following pages.)

The assignment carries a total of **15 marks.**

All assignments must be submitted **individually** via the **Taxila Portal**. No submissions through email or other sources will be accepted.

The submission deadline is **30th April 2024, by the end of the day (EOD).**

Please adhere to these guidelines meticulously to ensure your submission is evaluated fairly and accurately. Assignments submitted after the deadline or failing to meet the outlined requirements will be subject to penalties. Ensure that you submit the assignment a day in advance to avoid the network congestions.

The instructor in-charge is not responsible for the delay caused due to unforced reasons. Make-up is not possible for this evaluation component.

The detailed description of assignment are as follows.

The students are expected to build a web-based software application named "HealthTrack," designed to facilitate the management and tracking of personal health records for individuals.

This platform will be especially beneficial in improving healthcare outcomes by enabling better coordination between patients and healthcare providers, streamlining the process of tracking health metrics over time, and providing insights into personal health trends.

**Description of the Application**

**Users:** The primary users of HealthTrack will include individual patients, healthcare providers (such as doctors and nurses), and health researchers.

**Benefits:**

* For patients, it provides a centralized platform to store and access their medical history, prescription details, and appointments, facilitating better health management.
* Healthcare providers can access patient records for more informed decision-making, improving the accuracy of diagnoses and the effectiveness of treatment plans.
* Health researchers can utilize anonymized data for studying health trends and outcomes, contributing to medical research and public health policies.

**Functions & Features:**

* **Personal Health Record Management:** Users can store their medical history, including past illnesses, surgeries, allergies, and medications.
* **Appointment Scheduling:** Patients can schedule appointments with their healthcare providers through the platform.
* **Medication Tracking:** Features include medication reminders and the ability to log medication intake.
* **Health Metrics Tracking:** Users can log and track various health metrics over time, such as blood pressure, glucose levels, and weight.
* **Data Sharing:** Patients can share their health records with healthcare providers or family members as needed.
* **Health Insights:** The application can analyze health data to provide personalized health insights and recommendations.

**Concurrent Users:** The system is designed to support tens of thousands of users simultaneously, ensuring scalability and performance for a wide user base.

**Assignment Steps**

The students are expected to write all of them in the written report. The snapshots of SQL queries and results need to be submitted.

You are free to use pen and paper to draw ER diagram. There is no need to use any software for it. Just ensure that the ER diagram is readable and highlights the cardinality and technical details clearly.

You are expected to show in step by step manner the conversion of ER diagram to Relation model. Rest of the details are mentioned as follows.

You are also expected to mention the section numbers in the report corresponding to the following points for transparency in assessment process.

1. **Write a brief description of the application:** Provided with details on users, benefits, functions, and features.
2. **Draw ER diagram for the application:** This would involve defining entities such as Users, Health Records, Appointments, Medications, Health Metrics, and Relationships among them. **[3 Marks]**
3. **Convert ER model to relational model:** This step would include defining tables based on the ER diagram, identifying primary and foreign keys, and establishing relationships between tables. Normalize the Relational model to 3NF. **[4 Marks]**
4. **Write SQL queries to fulfill the end-user needs:** Queries could include creating, reading, updating, and deleting records (CRUD operations), along with more complex queries for analytics and insights based on health data. **[4 Marks]**
5. **Design indices to enhance the performance of queries:** This would involve identifying frequently accessed data and complex queries to determine which columns to index. For example, indexing patient IDs in the Health Records table or indexing date columns in the Appointments table could significantly speed up search queries and reports. **[4 Marks]**

**Policy Against Academic Malpractices**

1. All submitted assignments must be the original work of the individual student. Any content derived from other sources must be properly cited according to the university’s citation guidelines.
2. The use of AI tools, including chatbots and code generators, to create or contribute to the assignment is strictly prohibited. All thoughts, analyses, and writings must originate from the student.
3. While students are encouraged to discuss concepts and learn collaboratively, the actual assignment work, including the ideation, design, coding, and writing, must be done individually. Sharing work or copying from others (including but not limited to peers, online sources, and published works) is a violation.
4. Plagiarism, in any form, whether from internet sources, books, journals, or peer assignments, will result in a score of zero.

Any student found in violation of these policies will receive a score of zero for the assignment. Repeated offenses may lead to further disciplinary action, including failing the course or referral to the university’s academic integrity board.

Please submit the (scanned/ digitally) signed declaration on the next page along with your assignment.

**Declaration**

I, [Full Name], a WILP student of MTech at BITS Pilani, ID number [Student ID], hereby declare that I understand and agree to adhere to the university's policy on academic integrity in relation to the submission of my assignment for the course CSI ZG518 / SS ZG518/SE ZG518, taught by Professor Amit Dua.

By signing this declaration, I affirm that:

* All components of the submitted assignment are my original work, crafted independently. Any ideas, data, or direct quotations from other sources have been appropriately cited and credited, in accordance with the university’s citation guidelines.
* I have not used any artificial intelligence tools, including but not limited to chatbots and code generators, to assist in the creation or composition of this assignment.
* The work submitted is the result of my individual effort. I have not shared my work with others, nor have I copied or used others' work as my own.
* I understand that plagiarism, in any form, is a serious violation of academic integrity. This includes copying material from the internet, books, journals, or from the work of other students without proper attribution and referencing. I acknowledge that any act of plagiarism will result in a score of zero for the assignment.

I am aware that any violation of these policies in not conducive for healthy learning and development of meaningful skills.

I am fully aware that genuinely attempting this assignment will result in my long term learning and my personal growth.

This is self-declaration is made in good faith and accurately reflects my commitment to show up as a worthy member of the society.

Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[Full Name]

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_