

## INFORMATION SYSTEM FOR EVENT MANAGEMENT

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This work presents the design and implementation of an information system tailored for efficient event management within a university setting. It details the development process, emphasizing the utilization of cutting-edge technologies and tools to create a robust system capable of storing, processing, and analyzing vast amounts of event-related data. Ultimately, the crafted information system serves as a patent asset for enhancing the organizational efficacy of university event management, streamlining processes and fostering improved coordination and execution of diverse events and activities.

**Keywords:** database development; MS SQL Server; table creation, query creation.

## ИНФОРМАЦИОННАЯ СИСТЕМА ДЛЯ УПРАВЛЕНИЯ МЕРОПРИЯТИЯМИ

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Статья посвящена разработке и внедрению информационной системы, предназначенной для эффективного управления мероприятиями в университетских условиях. Подробно описан процесс разработки, особое внимание уделяется использованию передовых технологий и инструментов для создания надежной системы, способной хранить, обрабатывать и анализировать большие объемы данных. Созданная информационная система служит патентным активом для повышения организационной эффективности управления университетскими мероприятиями, оптимизации процессов и содействия улучшению координации и проведения различных мероприятий.

**Ключевые слова:** разработка баз данных; MS SQL-сервер; создание таблиц, создание запросов.

In the contemporary university environment, the culture of events stands as a vital component encompassing academic symposiums, cultural showcases, and social gatherings. Yet, effective management of these diverse events demands a robust framework that seamlessly blends technological advancements with

administrative efficiency. In this context, the development of a dedicated information system emerges as a crucial solution to address the multifaceted challenges encountered in event management within university settings.

Currently, registration for university events is carried out through a group in the Telegram messenger, which is an inefficient and inconvenient process. One of the main problems is the inability to control the number of remaining seats at the event. Some students send applications for participation in private messages, while others do so in a group. This fragmented approach to registration creates difficulties in organizing and planning events, as well as complicates the work of organizers, who need to accurately determine the number of participants and prepare the appropriate resources.

The proposed information system functions as a centralized repository, consolidating comprehensive event details and ensuring accessibility for students, faculty, and staff, regardless of their geographical location or academic affiliation.

Participants can effortlessly access event details and register, thereby reducing administrative burdens and optimizing resource allocation. For event organizers, the information system serves as a versatile tool for streamlining administrative tasks and optimizing resource utilization. From managing participant registrations and monitoring attendance to soliciting feedback and evaluating event efficacy, the system provides organizers with actionable insights and analytics. By automating routine tasks, organizers can focus on enhancing the quality and impact of university events.

After analyzing the activities of the institution, we identified 7 main subjects in it – Registration, Feedback, Student, Event, Location, Category, Organizer. Then we determined the attributes, type and size of the data for them.

Using online tool draw.io, a logical schema was modeled, which is shown in figure 1.

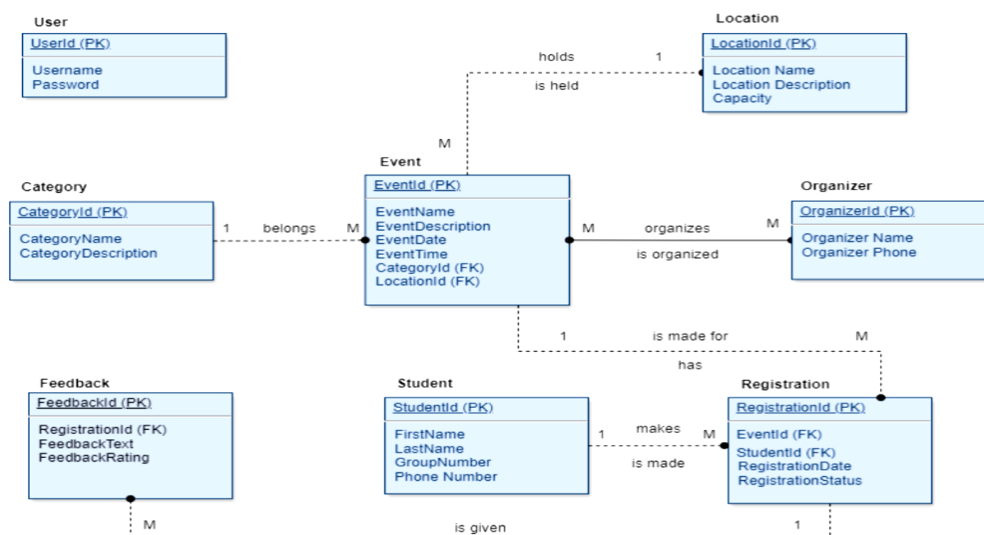


Fig. 1. Logical schema in draw.io

Because SQL is reliable and has little chance of data loss, it was utilized to design and maintain the database.

Following the creation of the tables in the MS SQL Server DBMS, specific values were added to them. SQL queries were used for all of this. Figure 2 and figure 3 show an example of creating and filling a table.

```
-- Registration Table
CREATE TABLE Registration (
    RegistrationId INT PRIMARY KEY IDENTITY (1,1),
    EventId INT NOT NULL,
    StudentId INT NOT NULL,
    RegistrationDate DATE NOT NULL,
    RegistrationStatus Text NOT NULL,
    CONSTRAINT FK_Event_Registration FOREIGN KEY (EventId) REFERENCES Event(EventID) ON UPDATE CASCADE,
    CONSTRAINT FK_Student_Registration FOREIGN KEY (StudentId) REFERENCES Student(UserId) ON UPDATE CASCADE
);
```

Fig. 2. Creating the table «Registration»

```
-- Inserting data into Registration table
INSERT INTO Registration (EventId, StudentId, RegistrationDate, RegistrationStatus)
VALUES (10, 100, '2024-04-18', 'Confirmed'),
(12, 102, '2024-04-20', 'Confirmed'),
(14, 104, '2024-04-23', 'Pending'),
(16, 106, '2024-04-25', 'Confirmed'),
(18, 108, '2024-04-27', 'Pending'),
(20, 110, '2024-04-29', 'Confirmed'),
(22, 112, '2024-05-01', 'Confirmed'),
(24, 114, '2024-05-03', 'Pending'),
(26, 102, '2024-05-05', 'Confirmed'),
(10, 104, '2024-05-07', 'Confirmed');
```

Fig. 3. Filling the table «Registration»

Consequently, all tables were finished and generated. Figure 4 displays the general layout of the Microsoft SQL Server database.

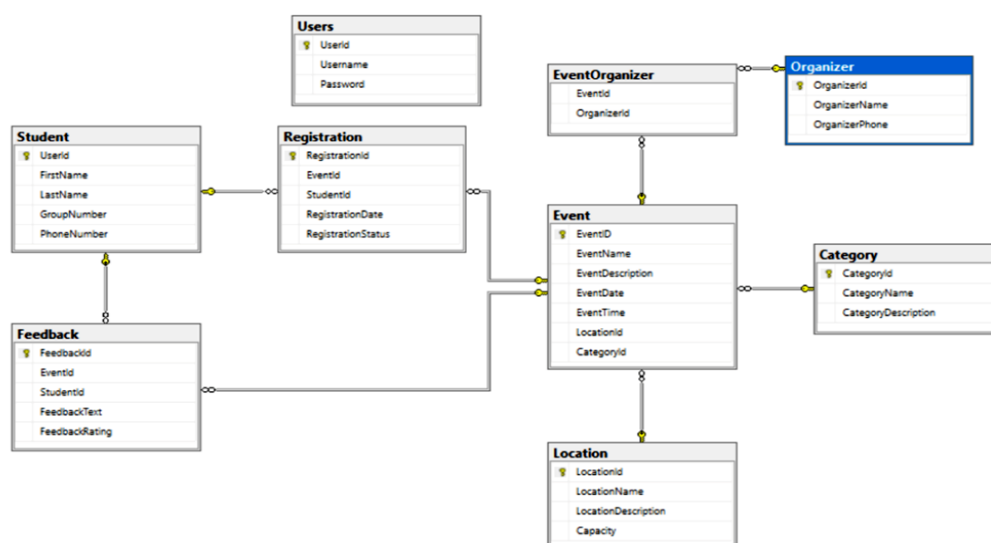


Fig. 4. Resulting schema

Creating queries for information processing tasks like grouping, sorting, sampling, and so on is essential to making the database easily accessible. We have created the subsequent:

In the EventManagement database, a suite of meticulously designed queries demonstrates the synergy between data manipulation and selection, crucial for seamless event coordination in universities.

The initial query efficiently handles post-event tasks by updating registration statuses and inserting pending feedback records. This structured approach seamlessly integrates administrative functions into database operations [4]. The subsequent query introduces a streamlined student registration process, showcasing the system's adaptability. Through a two-step insertion, it records student details and orchestrates event registrations with precision, highlighting the system's versatility. In parallel, the system proactively manages event timelines with a query updating registration statuses for past events. By categorizing registrations as 'Cancelled' for past events, it enhances administrative clarity. Addressing capacity constraints, another query updates registration statuses for fully booked events, swiftly flagging registrations as 'Declined'. This preemptive action mitigates logistical hurdles and boosts attendee satisfaction [3].

Data selection queries provide insights into event operations, informing strategic decision-making. The first query meticulously curates event details, offering a comprehensive view of the event landscape. This aids in event planning and resource allocation. In tandem, the system assesses event engagement through a query tallying total registrations for each event. Organizers gain insights into event popularity, informing future initiatives. Additionally, the system leverages feedback by computing average ratings for each event, empowering organizers to refine experiences and foster engagement. Inclusivity is emphasized through a query identifying students yet to register for any event, promoting participation and community engagement. Finally, data analytics spotlight top-performing events, enabling resource allocation and amplifying event impact [1, 2].

The query for creating the finding the top 5 events with the highest number of registrations is shown in figure 5, and the result is shown in figure 6.

```
SELECT TOP (5) e.EventName, COUNT(r.RegistrationId) AS TotalRegistrations
FROM Event e
JOIN Registration r ON e.EventID = r.EventId
GROUP BY e.EventName
ORDER BY TotalRegistrations DESC;
```

*Fig.5. Resulting of creating query*

	EventName	TotalRegistrations
1	Introduction to AI	3
2	Product Launch Event	1
3	Panel on Future Tech	1
4	Networking Mixer	1
5	Hackathon 2024	1

*Fig.6. Resulting of implemeting query*

The university event management system uses advanced technologies like MS SQL Server and meticulous query creation to streamline processes, reduce administrative burdens, optimize resource allocation, and provide valuable insights for organizers. This system offers efficiency, accessibility, and actionable insights, enhancing organizational efficacy and fostering community engagement, making it a significant advancement in university event management.

To bring our project to life, we'll use C# for building the backbone of our information system. With its versatility and efficiency, C# is the perfect fit for creating robust and scalable applications. Alongside C#, we'll use other tools and frameworks to develop the system's web interface and database interactions. Our goal is to deliver a user-friendly and efficient information system for university event management, incorporating features like notifications and user personal accounts to enhance the user experience.

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