

**Department of Computer Science,  
National University of Computer and Emerging Sciences,  
Islamabad**



**CS2005: Database Systems (Spring 2023)  
Semester Project  
(Deadline: 12<sup>th</sup> May 2023 11:59 PM)**

**Project groups:** This project can be done within a group of three (3) students. There is no restriction on the selection of group members. Students are allowed to make groups according to their preferences. Cross-section groups are also allowed.

**Submission:** All submissions MUST be uploaded on Google Classroom. Solutions sent to the emails will not be graded. To avoid last-minute problems (unavailability of Google Classroom, load shedding, network down, etc.), you are strongly advised to start working on the project from day one.

You are required to use Visual Studio 19 or above and SQL Server for the project. Combine all your work in one file named ROLL\_NUM\_DB\_P (e.g., 20i-1234\_DB\_P.zip). **SUBMIT COMPLETE PROJECT.** Submit the .zip file in the classroom within a given deadline. Failure to submit according to the above format would result in ZERO marks.

**Deadline:** The deadline to submit the project is **12<sup>th</sup> May 2023 at 11:59 PM**. Correct and timely submission of the project is the responsibility of every group; hence no relaxation will be given to anyone.

**Plagiarism:** **ZERO marks** will be awarded if any significant part of the project is found plagiarized. A code is considered plagiarized if **more than 20%** code is not your own work.

**Department of Computer Science,  
National University of Computer and Emerging Sciences,  
Islamabad**



## **FAST NUCES FLEX Management System**

A FLEX system is a database management system of FAST NUCES which involves designing and implementing a database to manage and schedule university students' academic information. This type of system would allow the university to manage various aspects of student management, such as enrollment, course registration, scheduling, and student performance tracking. With a flex management system, students would be able to access and manage their academic information and schedules, while the university would be able to manage its resources and course offerings more effectively. The goal of a flex management system for students at Fast NUCES would be to improve the overall academic experience for students and optimize the university's operations.

There are many users involved in this system so the basic thing which you need to perform is a **User Management**. FLEX system database may have many users. Each user must have a user account. In the system which you are designing roles are **Academic Officers, Faculty, and Students**.

Flex is a system in which you just have to implement the features which are mentioned in the document. Do not add extra features to the system. Follow the requirements strictly. Make proper Sign Up, Login for each role. Some of the requirements might include user-friendly interfaces, efficient data processing, security and privacy, scalability, and integration with other systems.

Every user who are involved in the system have their own User Interface. You must create three interfaces.

- Academic Office Interface
- Faculty Interface
- Students Interface

### **Academic Office Interface:**

The main role in this project will be of academic office because academic office will offer courses in every semester. Academic Office are users which authority to offer courses, manage students by assigning courses to the registered students and allocate the courses to the respective Course and Lab Instructors. The features in this interface will offer the courses and show them to the students (The students should see the offered courses on their interface). Keep in mind before registering the student to specific course check the Pre-Requisite of the course. Once the students registered to the specific courses the academic officers' should start making sections. Here you have to check that a student can only take 6 courses in one semester not more than that and also check if the count of the registered students in the course is less than 10 than the course will not be offered. In each section the count of the student should not be greater than 50. In one section the students should be in range of 10 to 50 not more than that. After making sections the courses will be allocated to the Course and Lab Instructors. One course/lab instructor can only teach maximum 3 courses and minimum less than 3 courses with less workload in a semester.

There will be a proper report generation process too. The Academic Officers will generate following reports:

- **Offered Courses Report:** This report contains all the courses offered in a semester with the course codes and credit hours.

**Department of Computer Science,  
National University of Computer and Emerging Sciences,  
Islamabad**



	Course Codes	Courses	Credit Hrs
<b>Spring 2023</b>	CS-XXX	Database Systems	3
	CS-XXX	COAL	2
	CS-XXX	Operating System	3
	CS-XXX	Data Structure	3

- **Students Section Report:** This report contains all the students' names with registration number in a specific section. Sort the report on the basis of the registration no in ascending order.

	Registration No.	Student Name
<b>Section A</b>	19I-XXXX	A
	19I-XXXX	B
	20I-XXXX	C
	21I-XXXX	D

- **Course Allocation Report:** This report contains the information of the course allocated to which course/lab instructor and as well as the coordinator of the course.

Course Code	Course	CHs	Section	Instructor	Coordinator
<b>CS-XXX</b>	<b>Database Systems</b>	3	CS-2B	Dr. Shujaat Hussain	Dr. Shujaat Hussain
			CS-2C	Dr. Shujaat Hussain	
			CS-2G	Ms. Noor ul Ain	
			CS-2D	Dr. Amna Basharat	

**Note:** Make excel sheet populate the excel sheet with at least 50 records manually and then import the data to the tables from that sheet.

### Faculty Interface:

This interface is for the faculty members who are teaching the courses. Faculty members are users which authority to set marks distribution, manage attendance, manage evaluations, generate grades and reports. The faculty members can only see the courses assigned to them with section as shown in the image given below.

#### Set Marks Distribution

Campus

Islamabad

Semester

Spring 2023

Code - Title	Section	Teacher
<a href="#">CS2001 - Data Structures</a>	BCS-4B	Urooj Ghani
<a href="#">CL2005 - Database Systems - Lab</a>	BCS-4A	Urooj Ghani
<a href="#">CL2005 - Database Systems - Lab</a>	BCS-4B	Urooj Ghani
<a href="#">CL2005 - Database Systems - Lab</a>	BCS-4C	Urooj Ghani

# Department of Computer Science, National University of Computer and Emerging Sciences, Islamabad



The faculty can set marks distribution like the weightage of the assignments, quizzes, sessional and finals. Keep in mind that the total marks of course is 100 so the distribution should be in such a way that it is exactly equal to 100 not more than 100 and not less than 100.

Set Distribution

Course : CS2001 - Data Structures  
Section : BCS-4B

Add course content detail
New

**NOTE!** Note: To Remove Evaluation Insert Zero  
Already saved press save to update

Eval Type
+ Add to List

Sr#	Evaluation Name	Weightage	Range
1	Assignment	15	Range: 0 to 100
2	Final Exam	40	Range: 0 to 100
3	Quiz	15	Range: 0 to 100
4	Sessional-I	15	Range: 0 to 100
5	Sessional-II	15	Range: 0 to 100

Reset Default Values
Save

The faculty will mark the attendance of the students in each section and also they can add the marks of the evaluations. You have to make separate interface for the attendance and evaluation management in the faculty interface. When the marks get finalized at the end of the semester then the faculty will generate grades on the basis of the marks taken by the students. Keep in mind that the grading policy used will be absolute.

## Absolute Grading Scheme:

Total Marks (%)	Grade
≥ 90	A+
86-89	A
82-85	A-
78-81	B+
74-77	B
70-73	B-
66-69	C+
62-65	C
58-61	C-
54-57	D+
50-53	D
≤ 49	F

There will be a proper report generation process too. The Faculty will generate following reports:

- **Attendance Sheet Report:** This report contains all the registered students registration numbers, names and attendance of the semester with percentage of the attendance.
- **Evaluation Report:** This report contains all the evaluation marks of the students with the total marks at the end column.

**Department of Computer Science,  
National University of Computer and Emerging Sciences,  
Islamabad**



- **Grade Report:** This report contains all the grades of the student in specific course with registration no and names.

Roll No	Name	Section	Marks	Grade
19I-XXXX	A	CS-2B	97	A+
19I-XXXX	B	CS-2B	96	A+
20I-XXXX	C	CS-2B	76	B
21I-XXXX	D	CS-2B	75	B

- **Count of Grades Report:** This report contains all the grades count in a specific section.

Grade	Count
A+	10
A	5
A-	20
B+	5

- **Students Feedback Report:** This report contains all the feedback given by the students to the teacher.

**Student Interface:**

This interface is for the students who registered themselves in the courses. You have to design this interface like your flex interface. Students are users who can see their information on the interface like their attendance, evaluation marks of each registered course, transcript, and previous semester CGPAs comparison graphs. The students can also give feedback to the teachers. For this you have to design the form. You have to make the same form same as given below:

**Link to the Form:** <https://www.jotform.com/build/231072139016446>

# Department of Computer Science, National University of Computer and Emerging Sciences, Islamabad



## Teachers Assessment Form

**Date**

mm-dd-yyyy

Date

**Name of Teacher**

First Name

Last Name

**Subject**

**Schedule**

**Room Number**

**School year**

Please fill out the form in evaluating your instructor for the semester. After completion, please press the submit button.

For reference, the metric are as follows:

- 1 - Poor
- 2 - Below Average
- 3 - Average
- 4 - Good
- 5 - Excellent

### Appearance and Personal Presentation \*

	1	2	3	4	5
Teacher attends class in a well presentable manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher shows enthusiasm when teaching in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher shows initiative and flexibility in teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher is well articulated and shows full knowledge of the subject in teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher speaks loud and clear enough to be heard by the whole class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Professional Practices \*

	1	2	3	4	5
Teacher shows professionalism in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher shows commitment to teaching the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher encourages students to engage in class discussions and ask questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher handles criticisms and suggestions professionally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher comes to class on time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher ends class on time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**Department of Computer Science,  
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**Teaching Methods \***

	1	2	3	4	5
Teacher shows well rounded knowledge over the subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher has organized the lesson conducive for easy understanding of students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher shows dynamism and enthusiasm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher stimulates the critical thinking of students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher handles the class environment conducive for learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Disposition Towards Students \***

	1	2	3	4	5
Teacher believes that students can learn from the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher shows equal respect to various cultural backgrounds, individuals, religion, and race	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher finds the students strengths as basis for growth and weaknesses for opportunities for improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher understands the weakness of a student and helps in the student's improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Comments**

**Submit**

The feedback given to the teacher should be visible to the faculty on their interface with proper comments and find the percentage from the question values at the end and show percentage to the faculty member as well with comments.

### **Additional details and advice**

The system is designed and developed keeping in view that,

- System should be user friendly
- All the webpages navigate properly
- The system is also equipped with state of security features, which enables only the authorized people to view or modify the sensitive information
- The information is protected by login and password, which can be assigned to each user of the system.
- Log every event that a particular user performs to keep history of each and everything. This is known as audit trail. Audit records provide information about the operation that was audited, the user performing the operation, and the date and time of the operation. This thing is for 20 bonus marks.
- User Management is most important part of the project. Make sure that assign right privileges to the right roles.

**Department of Computer Science,  
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**What to submit**

Submit your code and sql queries for this project, programmed in C# using Visual Studio 2019 and SQL Server. A document highlighting the design in terms of relationships/associations between different entities like ERD, Schema Diagram, and Mappings of the relationships must be submitted. Evaluation criteria that will be used for the grading is also shared with the project description. Each group must fill and bring the evaluation form (Rubric) for the demo.

**Project Consultant Teacher:**

For any query consult with Miss Urooj Ghani

**Good Luck!**



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