Graduation Project for BI Track (Mansoura-Branch)

Design and implementation of Online Examination System

Team Members:

Nourhan Khaled

Mina Maged

Amir Ahmed

Abdallah Mohamed

Ebrahim Tarek

Acknowledgement:

First and foremost, we would express our deepest gratitude and appreciation to our advisor Dr.Rami Nagy for her support, outstanding guidance an encouragement throughout our graduation project.

As well as **All TAs** for their continuous support and help as they was always there for us providing more than the needed time and effort from them since the very beginning of our project.

Contents:

1-Inroduction:

Online examination system is a desktop-based examination system where examination is taken online i.e. through the internet or intranet using computer system. It is an effective solution for mass education evaluation. We have developed an online examination system based on a Browser/Server framework using Microsoft Visual Studio 2019 for the design, C# for coding, and Microsoft SQL Server as database. ASP.NET is the preferred web technology. The system carries out the examination and auto-grading for multiple choice questions which is feed into the system.

Types of Questions:

Multiple choices - a choose item is an item that provides a defined term and requires a test taker is to match identifying characteristic to the correct term.

True or False - identify the truth or false of the statement.

2-Background of the study:

Manual Examination System is replete with several problems. A cursory glance at Manual Examination Administration System reveals cases of examination malpractice and other immoral acts committed by students, which violates the rules and regulations of Universities as it concerns the administration of examination as well as the human moral content.This has taken a tool from the Nation, as it produces half-baked graduates who cannot compete with University graduates from other nations of the world in the labor market. The need to protect the image of the Nigerian nation as well as the University System is very pertinent. In furtherance, during manual computation of results, errors may arise due to “omission” or “commission”. There are also cases of missing examination scripts during marking. There is also a problem of time wasting, among others. This research suggests that if an efficient and effective online examination system is developed, where examinations will be taken online, and results computed and released immediately, as well as stored in a central database for documentation and future planning and evaluation purposes, there shall be relative balance and harmony within the University System. The staff will take the advantage of time that would have been spent on marking examination and preparing results to enable them do their research work. This will also cause the unserious students to be committed to their studies.

3-The waterfall Model:

Is one of the earliest attempts to describe the software development life cycle. In the waterfall model, the project is split up into phases: requirements capture, analysis, design, implementation, testing, maintenance, etc., i.e. development moves from concept, through analysis, design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order, without any overlapping or iterative steps. In the strict case, each phase must be finished before development proceeds to the next phase. SSADM revolves around the use of three key techniques, namely: Logical Data modeling, Data Flow Modeling and Entity Event Modeling.

Logical Data Modeling (LDS) This is the process of identifying, modeling and documenting the data requirements of an information system. A logical data flow model consists of a logical data structure and the associated documentation. LDS represents Entities and Relationships.

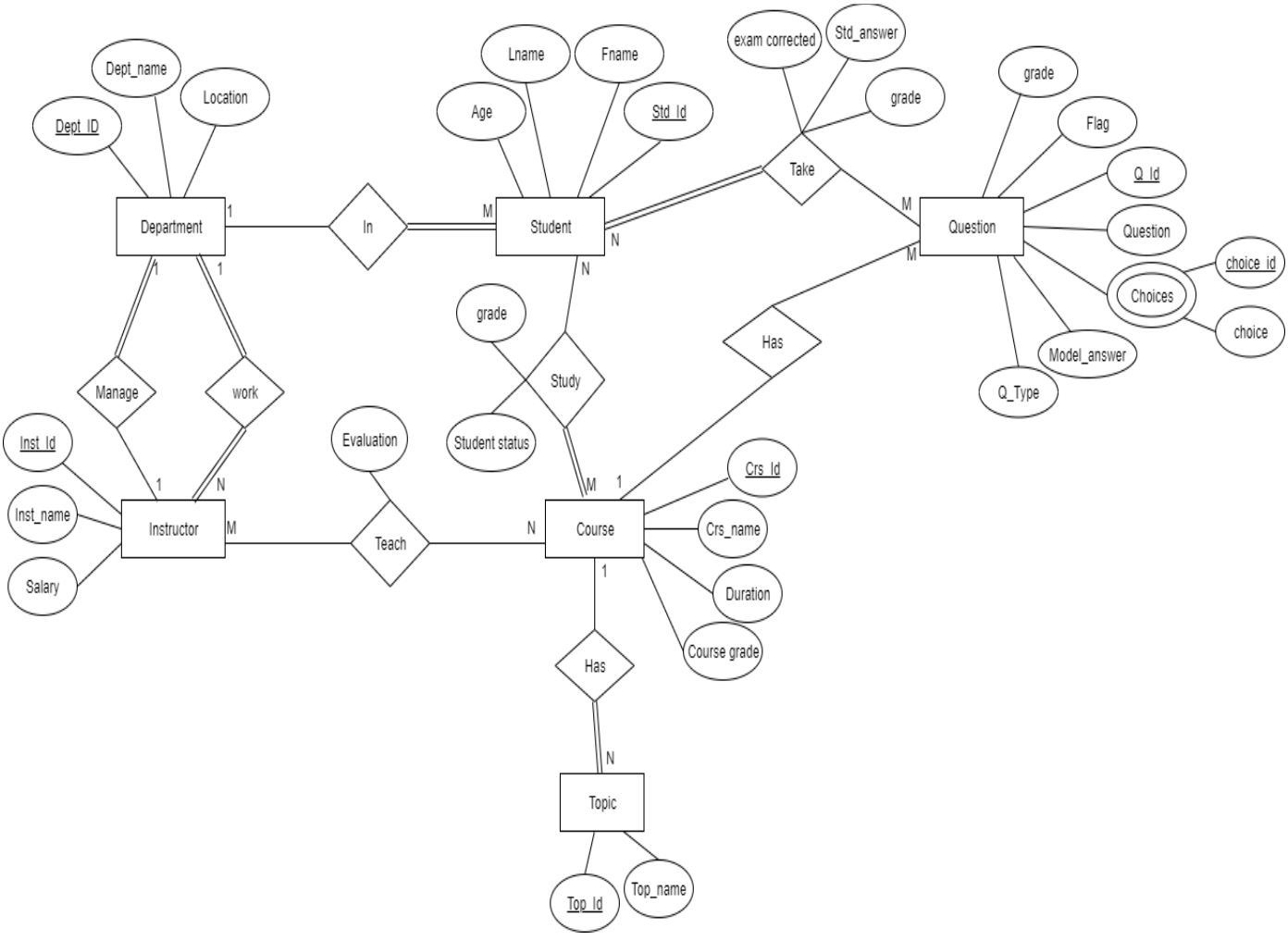
Data Flow Modeling (DFM) This is the process of identifying, modeling and documenting how data flows around an information system. A data flow model consists of a set of integrated data flow diagrams supported by appropriate documentation. DFMs represent processes (activities which transforms data from one form to another), data stores (holding areas for data), and external entities (things which send data into a system or receive data from a system) and finally data flows (routes by which data can flow through).

Entity Event Modeling (EEM) This is the process of identifying, modeling and documenting the events which affects each entity and the sequence in which these events occur. An EEM consists of a set of entity life histories one for each entity and appropriate supporting

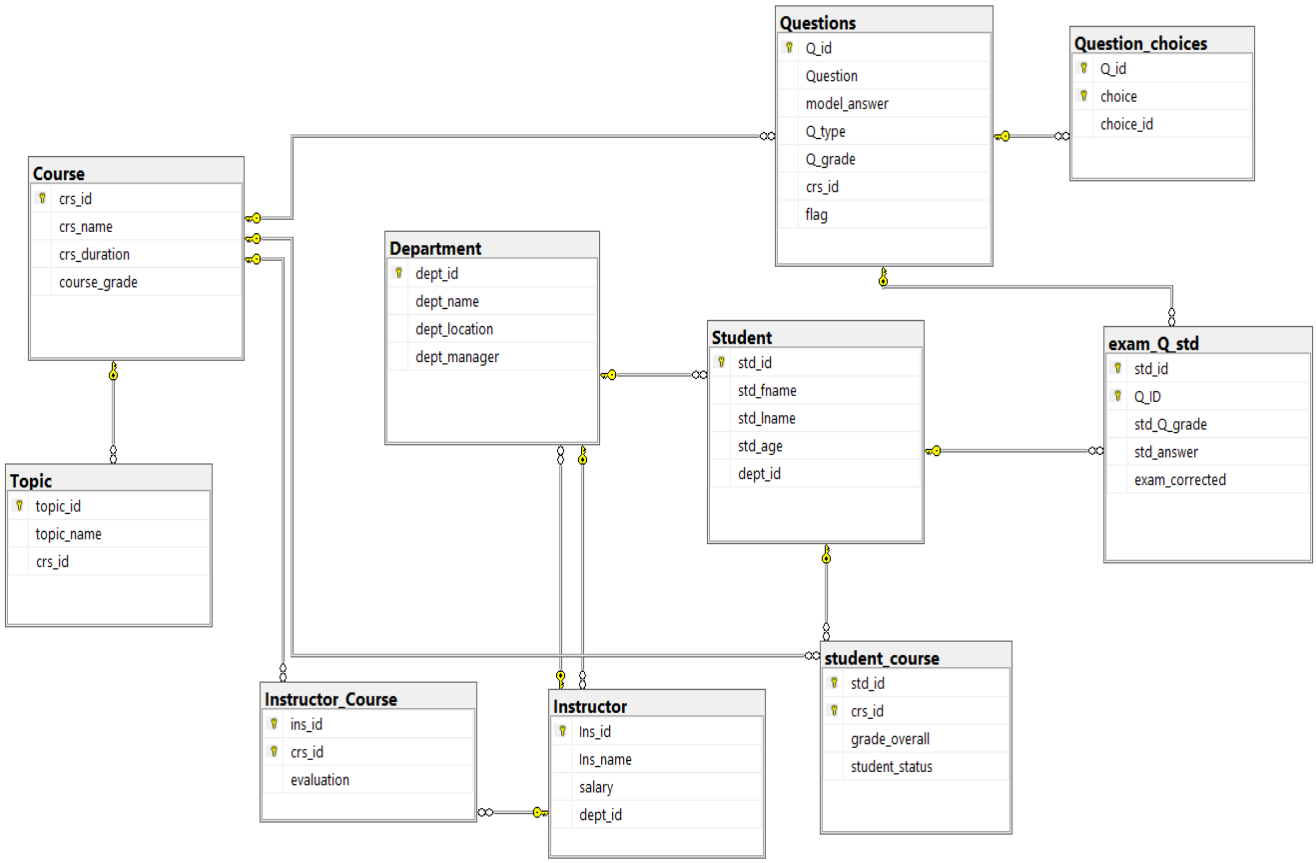
documentation. With respect to the above, SSADM provides a flow or a waterfall view of systems development, which has steps. Each step leads to the next step. The SSADM steps or stages are: Feasibility Study, Requirement analysis, Requirements specifications, Logical system specifications and Physical design.

4-System Diagrams:

ERD:



Database Design Diagram:



5-Materials and Methods:

1-SQL Server:

brings with it a vast array of new features, graphical user interfaces (GUIs), and management tools. The following list should

Give you a brief taste of these:

- The ability to host the .NET Framework common language runtime (CLR) in the database so that you can now program assemblies C# in the database. This may have interesting consequences for the SQL Server database programmer, who previously was limited to SQL and T-SQL,

and it will have dramatic implications for the way applications may be architected.

•Deep support for XML, via a full-fledged XML data-type that carries all the capabilities of relational data types. You can enter an XML document into your database, have it validated, and extract just part of the document. This means that you can marry semi-structured data with relational data, storing them in the same place and treating them in the same way. Additionally, server-side support is provided for XML Query (XQuery) and XML Schema Definition language (XSD) standards.

• A completely revamped GUI management tool called SQL Server Management Studio (SSMS), which provides a single, integrated environment for most management/administration requirements.

• A reporting framework (SQL Server Reporting Services, or SSRS) as an integral part of the database.

• A new application framework, the Service Broker, for asynchronous message delivery.

• Vastly improved and expanded SQL Server Integration

Services (SSIS; formerly Data Transformation Services), a tool for extracting, transforming, and loading data (again, a feature that is a costly add-on with other relational database management systems).

2-C#:

C# is a language targeted at developers for the Microsoft .NET platform who have already worked with a DESIGN AND IMPLEMENTATION OF

ONLINE EXAMINATION ADMINISTRATION SYSTEM 41 C-like language such as C, C++, or Java. Unlike previous versions of C or C++ for the

Microsoft Windows platform, C# code runs under a managed execution environment. Microsoft portrays C# as a modern and innovative language for .NET development and continues to deliver on that with new features such as Language Integrated Query (LINQ).

The new features in C# 3.0 allow for more of a declarative and functional style of programming, when that is appropriate, while it still has great object-oriented features as well.

The main idea is to use the style of programming that fits your problem, and C# will support your endeavor (Jay Hilyard and Stephen Teilhet,2008). C# allows you to perform many C/C++-like functions, such as direct memory access via pointers and operator overloading, that are not supported in Visual Basic .NET. C# is the system-level programming language for .NET. You can still do great application-level work in C#, (Jay Hilyard and Stephen Teilhet, 2008). If you have seen C#, you may have noticed that it looks a lot like Java; Java programmers will feel very much at home in C# once they learn the Framework SDK. C# can also be a great language for Visual Basic .NET programmers when they need a little more control over what the code is doing and don't want to have to write C++ to gain an advantage.

6-Features of Desktop App:

The system is designed to randomise questions for candidates taking the exams. For instance, if twenty candidates are taking the exams, candidate number one may be served with question number 4 as question 1 while candidate number 40 will be furnished with question number 20 as question 1. So, no two candidates can have the same question number furnished as question 1. Timer The application has a timer to regulate the examination time for each candidate taking the

examination. The Preparation System The preparation system is used to manage question storage, assign test ID and schedule the test.

- The question database is composed of the questions, a set of possible answers, the question types and other metadata, which are indexed by several factors, such as topics, keywords, complexity and difficulty, etc.

- The Auto-Grading System The auto-grading system is designed by the fuzzy matching algorithm and the macro programming technology, which is seasoned with variable question types.

An Appraisal of the System Design:

System design is the process or act of defining the hardware or software architecture, components, modules, interface and data for a computer system to satisfy specified requirements. One could see it as the application of system theory to computing. Some overlap with the discipline of system analysis appears inevitable. Nothing can guarantee that an automated system selection process will be successful, but adherence to a set of commonsense principles can help in securing a successful outcome. The focus of the process has been on a long term and has taken into account, the institutional context into which the system will fit. With the shift towards user empowerment, the involvement of users in the selection process is increasingly critical. The components of the selection process can be envisioned and combined in many different ways. This is shown in

the way the codes used were broken into four major modules and later reassembled together by creating a linking technology. Each of these modules contains particular ASP.NET base class libraries. The modules are discussed below:

Log In

Register Student For any user/student to be eligible for the examination, such a user/student must be registered. During registration, a student

Create Exams: Create exams once Student log in by student_ID and Course_ID. Create questions on the Topic related to the course and finally clicks submit. credentials are used by the student to write exams.

View Result Here, a score sheet that comprise results of all the users/students that took the exams can be viewed in one document.

users will not have any record in the database i.e. their preliminary result will not be displayed. The PIN is also destroyed.

Write Exams

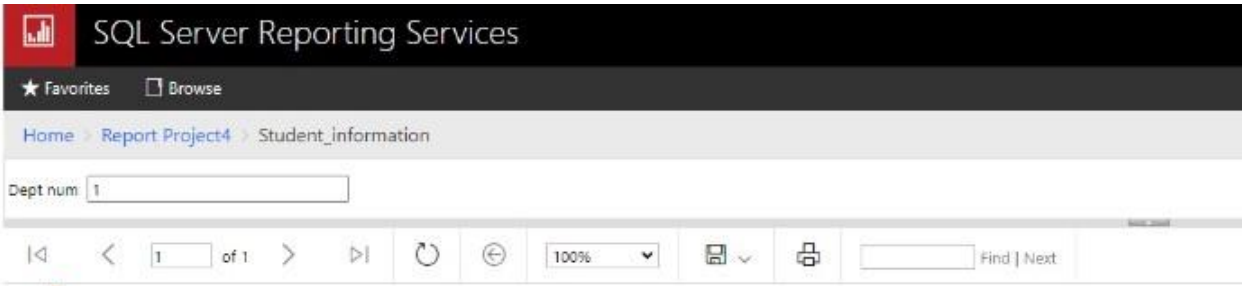
To write the exams, the student clicks on the user link on the top menu. The student login with the username and password assigned

during registration. The student is further prompted to enter the PIN generated by admin during registration. After logging in, the student

chooses the exam type and proceeds to answer the questions presented one after the other by clicking next button. When the student

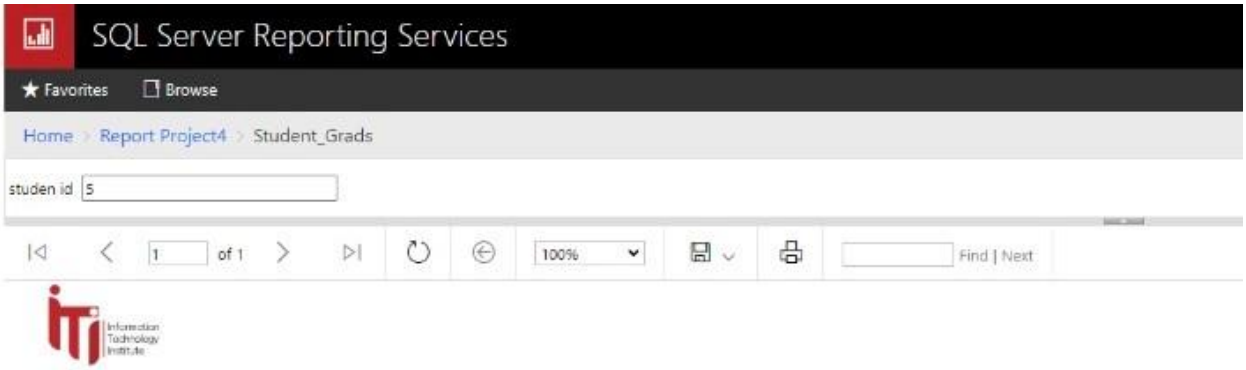
finish answering the questions, the student clicks on the submit button. On clicking the submit button, the student is presented with the preliminary result immediately.

-Reports:



Student_information

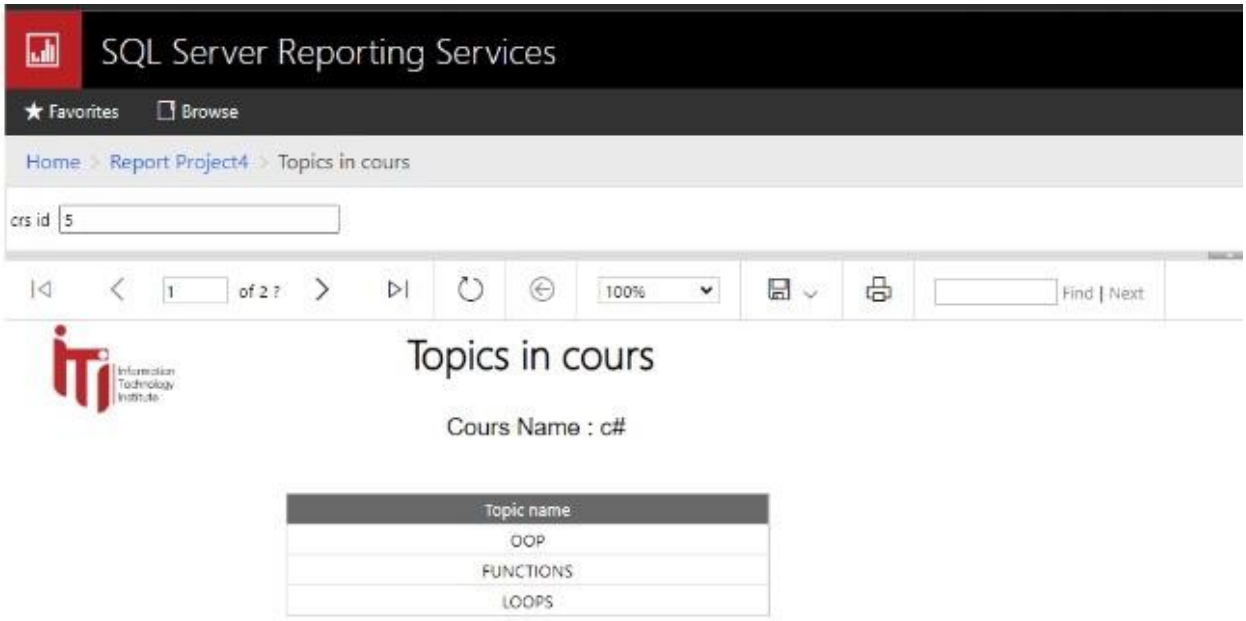
std id	std fname	std lname	std age
1	Ahmed	khaled	23
2	Mona	Ali	24
3	Mostafa	Ibrahim	25
4	Noran	Sherif	20
5	habiba	Khaled	20
6	Amira	Fayez	23
7	Khaled	Haez	26
8	Sosan	Ali	22
9	Menna	Hany	25
10	Sara	Hany	26



Student_Grads

Student Name ; habiba Khaled

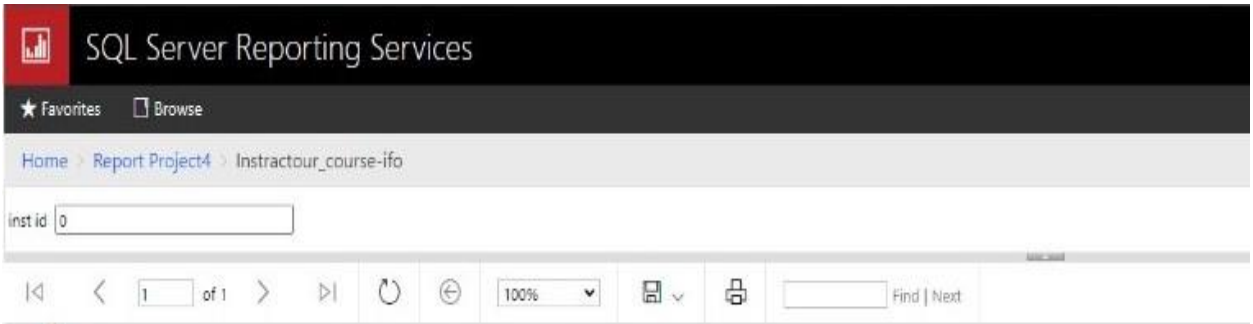
crs name	grade overall	student status	course grade
sql	45	no exam yet	50
oracle	0	no exam yet	50
java	0	no exam yet	50
c#	0	no exam yet	50
python	0	no exam yet	50
statistics course	0	no exam yet	50



Topics in cours

Cours Name : c#

Topic name
OOP
FUNCTIONS
LOOPS

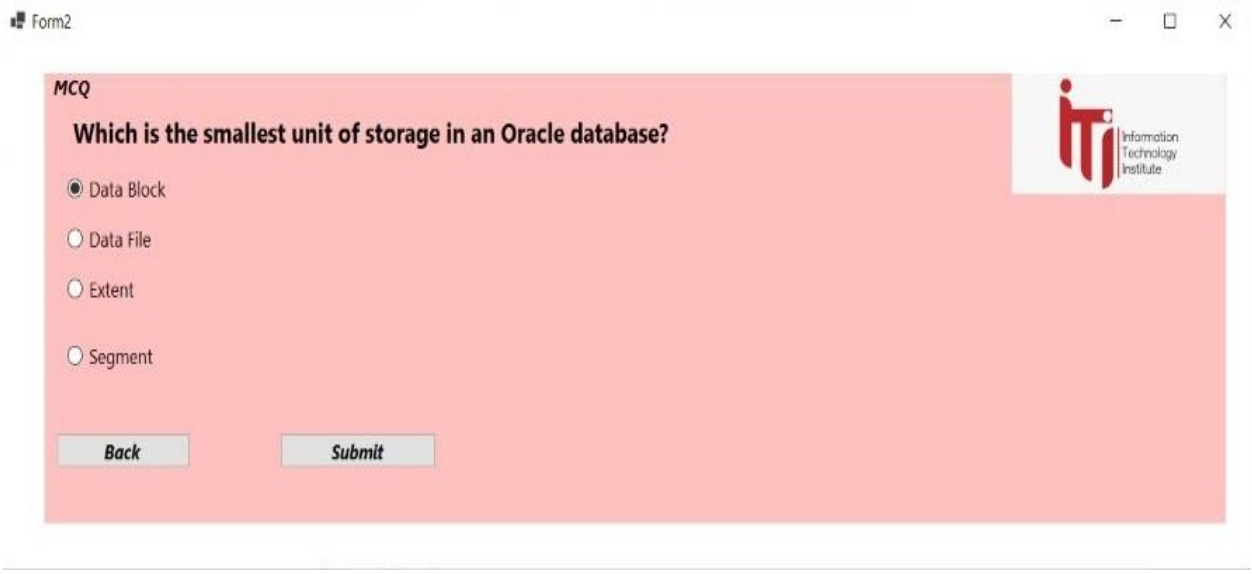


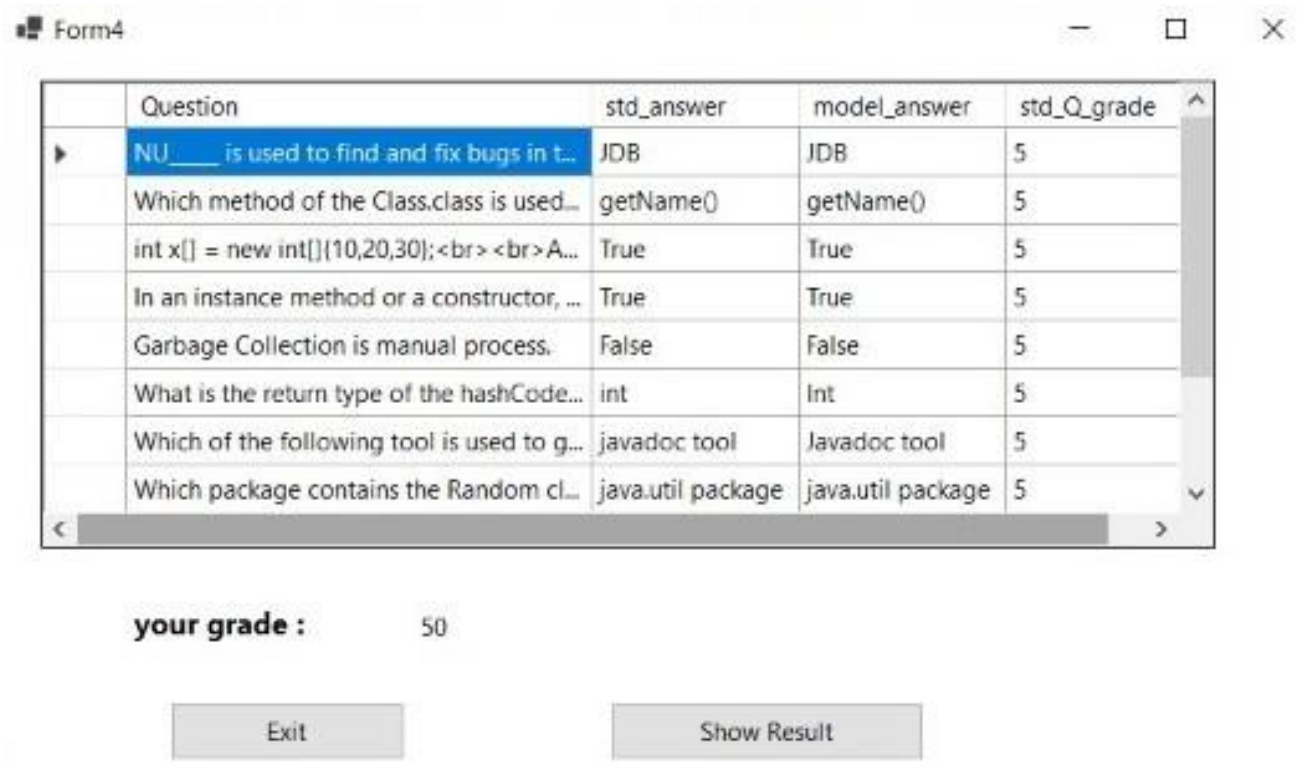
Instractour_course

Ins id	Ins name	crs name	number of studenst
4	Habiba Khaled	big data	10
11	Besher Khaeld	c#	5
11	Besher Khaeld	c++	5
21	Sohila	ccna	10
21	Sohila	ccnb	10
21	Sohila	ccne	10
6	Amira Fayez	java	11
7	Mostafa Ibrahim	javascript	11
5	Noran Sherif	mysql	11
8	saleh khaled	oracle	10
2	Mona Ahmed	python	10
1	Ahmed Ali	sql	10
3	Sara Ahmed	statistics course	10

-Desktop App:

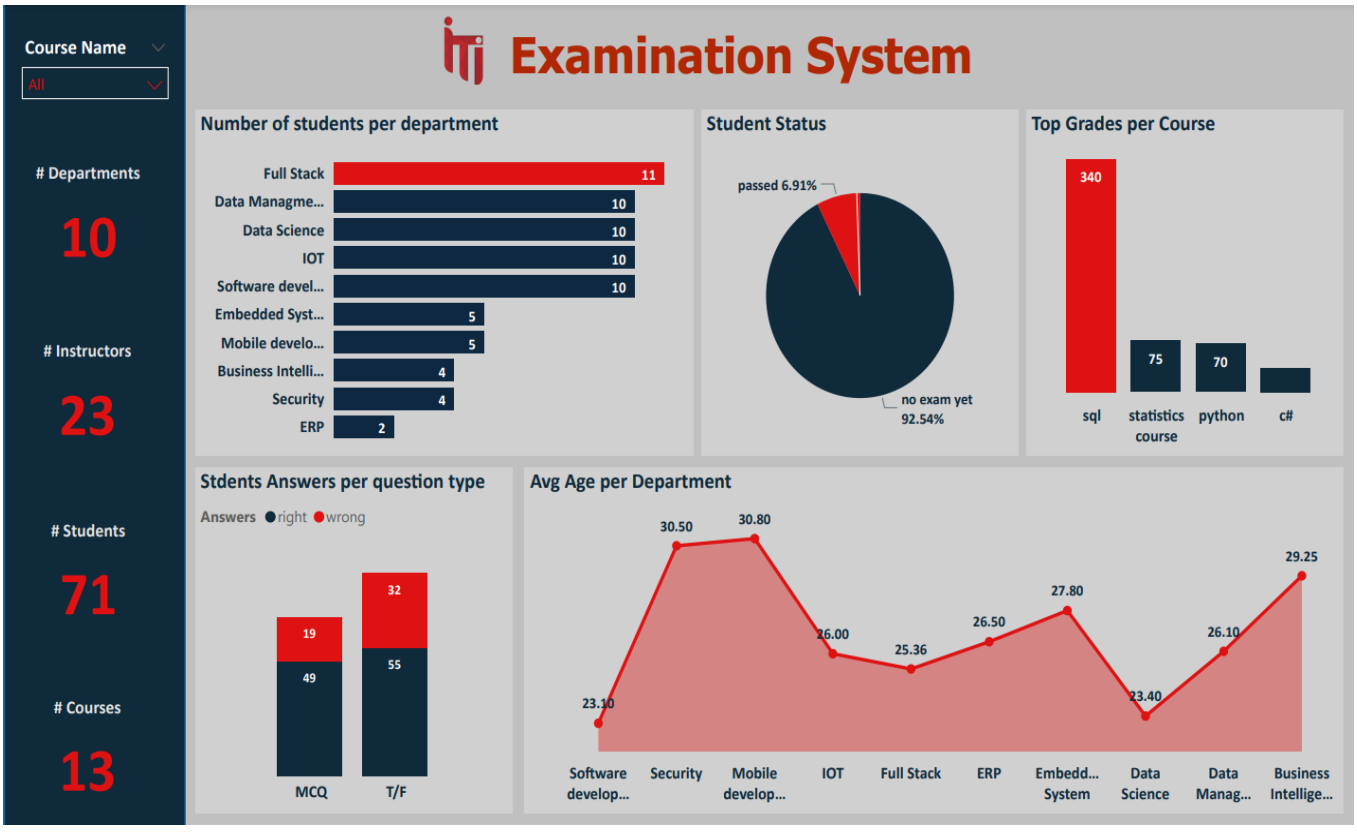

Form1
Examination System
Information Technology Institute
Sign In
Student ID :
Course ID :
Generate Exam
Show Results


Form2
MCQ
Which is the smallest unit of storage in an Oracle database?
Information Technology Institute
Data Block
Data File
Extent
Segment
Back
Submit


Form4
Question
std_answer
model_answer
std_Q_grade
NU____ is used to find and fix bugs in t...
JDB
JDB
5
Which method of the Class.class is used...
getName()
getName()
5
int x[] = new int[]{10,20,30};

A...
True
True
5
In an instance method or a constructor, ...
True
True
5
Garbage Collection is manual process.
False
False
5
What is the return type of the hashCode...
int
Int
5
Which of the following tool is used to g...
javadoc tool
Javadoc tool
5
Which package contains the Random cl...
java.util package
java.util package
5
your grade :
50
Exit
Show Result

-Dashboard:


Course Name
All
Departments
10
Instructors
23
Students
71
Courses
13
Examination System
Number of students per department
Full Stack 11
Data Managme... 10
Data Science 10
IOT 10
Software devel... 10
Embedded Syst... 5
Mobile develo... 5
Business Intelli... 4
Security 4
ERP 2
Student Status
passed 6.91%
no exam yet
92.54%
Top Grades per Course
340
75
70
sql
statistics course
python
c#
Stdents Answers per question type
Answers right wrong
19
49
32
55
MCQ
T/F
Avg Age per Department
23.10
30.50
30.80
26.00
25.36
26.50
27.80
23.40
26.10
29.25
Software develop...
Security
Mobile develop...
IOT
Full Stack
ERP
Embedd... System
Data Science
Data Manag...
Business Intellige...