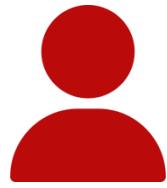


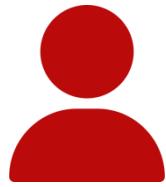
# ITI Automated Examination Management System

*Tanta Branch*

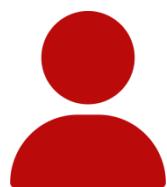
# Team Members



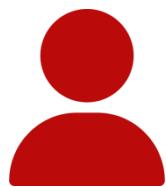
**Ahmed Khaled**



**Abdelaziz Ragab**



**Areej Fathy**



**Marwa Aboelenin**

# Overview



## ➤ About System:

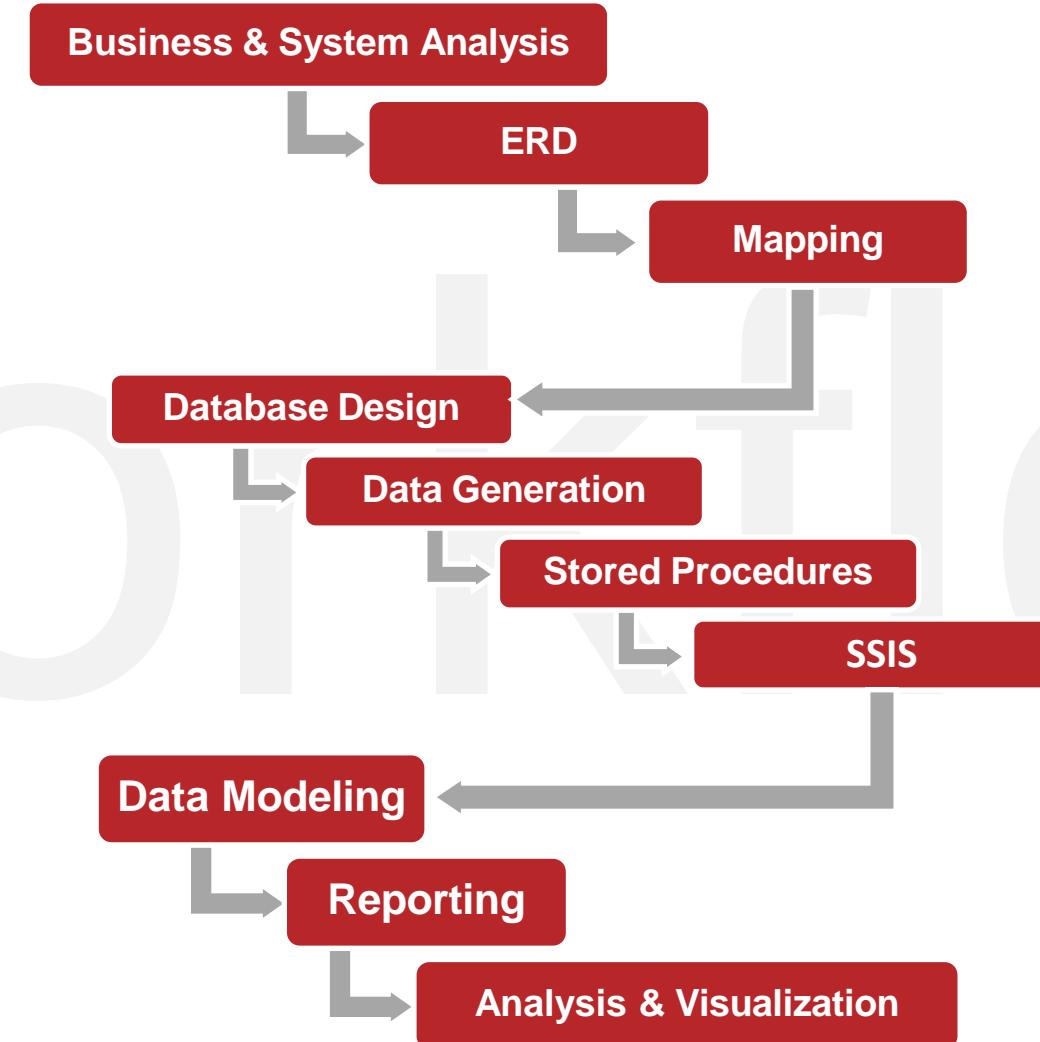
- This project introduces a complete Examination Management System for ITI.
- It manages students, courses, questions, exams, and answers — aiming to streamline exam administration and enhance performance tracking.

## ➤ Technology Tools:

- **SQL Server & SSMS** for database design and stored procedures
- **Redgate & Excel** for data generation and testing
- **SSIS** to build ETL pipelines to transfer data from the database to the data warehouse model.
- **SSRS** for building dynamic reports
- **Power BI** for interactive analytics dashboards.



# Project Workflow



# Business & System Analysis



## ➤ Business Need:

- Automate and streamline exam processes at ITI to reduce errors and save time.

## ➤ System Goals:

- Manage exams, students, courses, and results
- Support multiple user roles
- Enable real-time reporting and analysis

## ➤ Key Functions:

- Question and exam generation
- Answer correction
- Student and instructor management
- SSRS reports & Power BI dashboards

## ➤ Stakeholders:

- Students, Instructors, Department Managers, ITI Admins



# Software Tools



draw.io

**Database Modeling  
(ERD & Mapping)**



ChatGPT



Excel



**Data Generation**

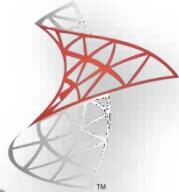


Power BI Report Builder



**Power BI**

**Data Analysis & Visualization**



Microsoft®  
**SQL Server®**

**SQL Server**

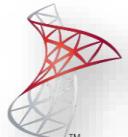


**SSMS**

**Database Management**



**On-Premises  
Data Gateway**



Microsoft®  
**SQL Server®**  
Integration Services

**SSIS**

**Data Integration**



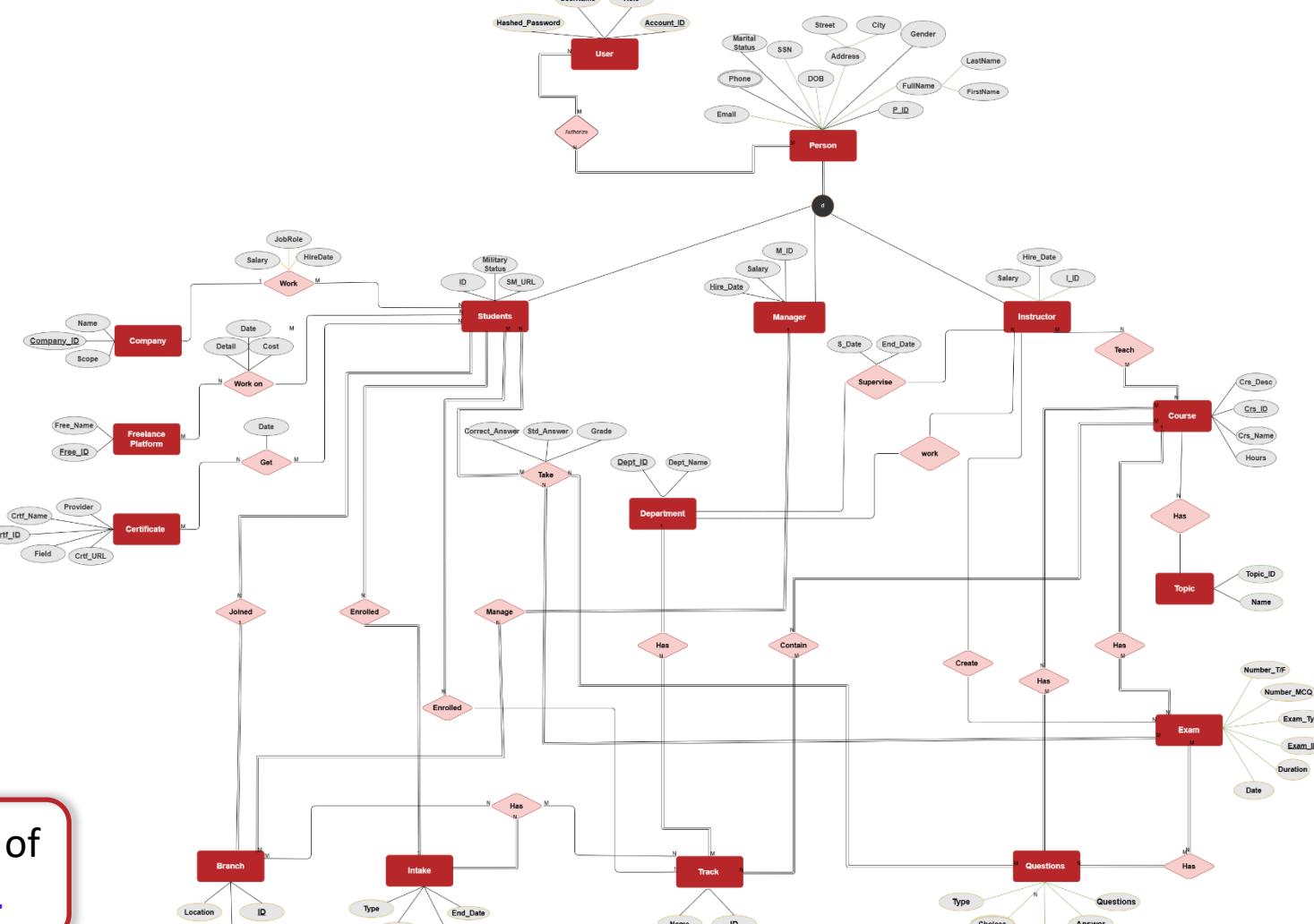
Microsoft®  
**SQL Server®**  
Reporting Services

**SSRS  
Reporting**

# Entity Relationship Diagram (ERD)

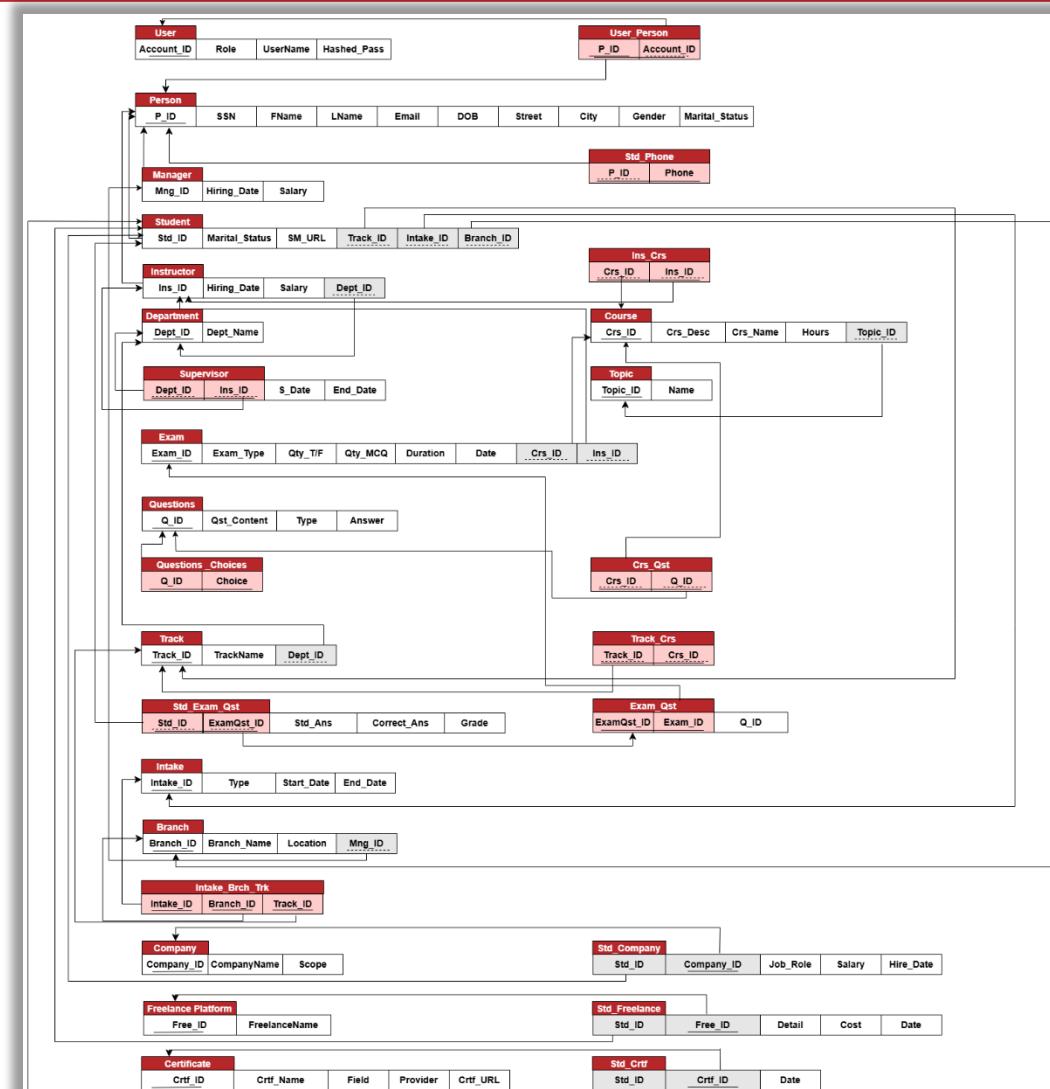


draw.io



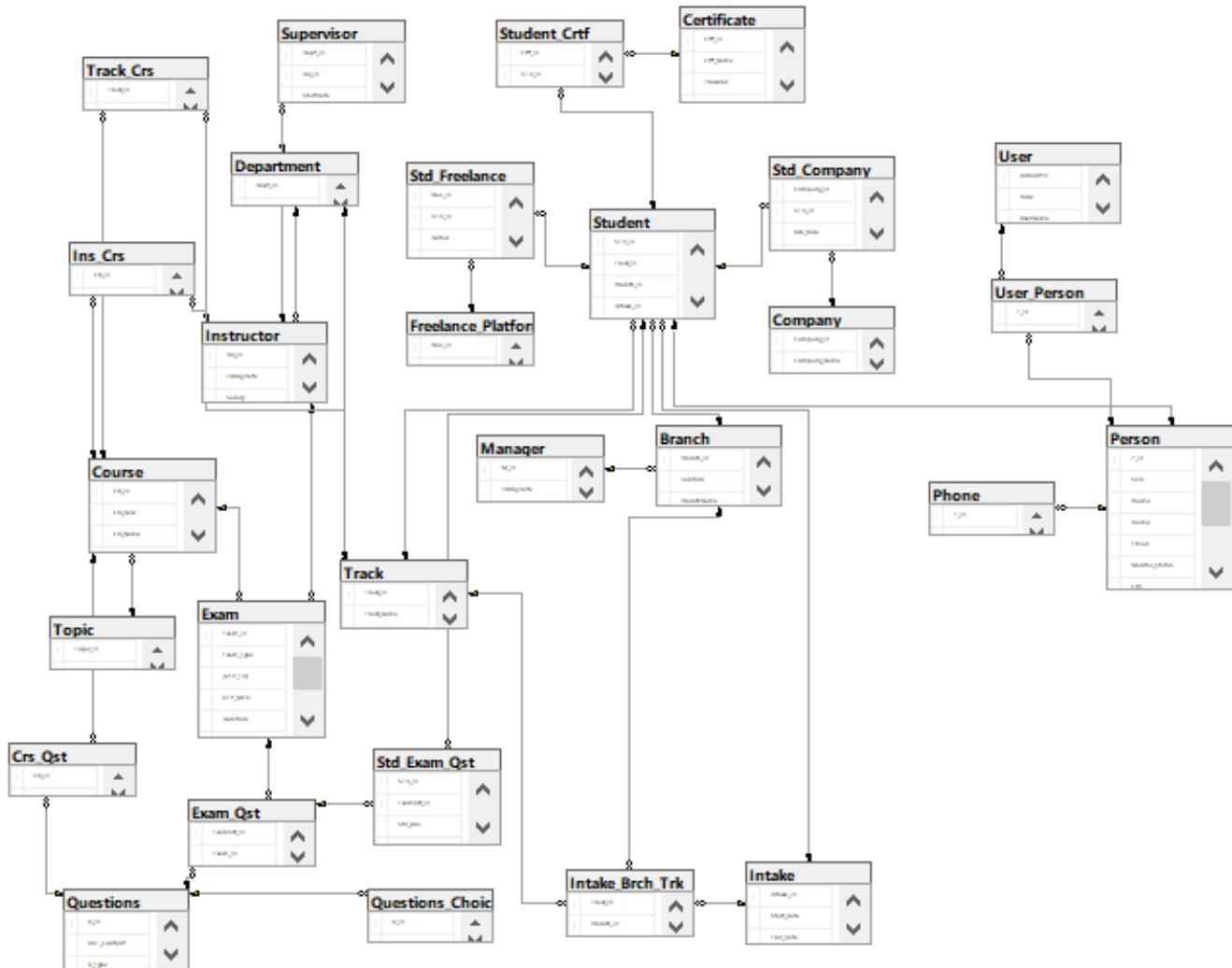
For a higher-quality view of the diagram, [click here](#).

# Mapping



For a higher-quality view of the diagram, [click here](#).

# Database Design



```
CREATE TABLE [dbo].[Branch](
[Branch_ID] [int] IDENTITY(1,1) NOT NULL,
[Location] [nvarchar](255) NOT NULL,
[BranchName] [nvarchar](255) NOT NULL,
[M_ID] [int] NOT NULL,
PRIMARY KEY CLUSTERED

/***** Object: Table [dbo].[Certificate] *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO

CREATE TABLE [dbo].[Certificate](
[Crtf_ID] [int] IDENTITY(1,1) NOT NULL,
[Crtf_Name] [nvarchar](255) NOT NULL,
[Provider] [nvarchar](255) NOT NULL,
[Field] [nvarchar](255) NULL,
[Crtf_URL] [nvarchar](255) NULL,
PRIMARY KEY CLUSTERED

/***** Object: Table [dbo].[Company] *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO

CREATE TABLE [dbo].[Company](
[Company_ID] [int] IDENTITY(1,1) NOT NULL,
[Company_Name] [nvarchar](255) NOT NULL,
[Scope] [nvarchar](255) NULL,
PRIMARY KEY CLUSTERED
(
```

# Data Generation

## ➤ Purpose:

- To populate the system with realistic test data for development, testing, and reporting.

## ➤ Tools Used:

- **Microsoft Excel** for generating sample data structures and formatting
- **Redgate SQL Data Generator** for bulk data creation and inserting into SQL Server
- Manual SQL Scripts for custom records (e.g., True/False and MCQ questions)

## ➤ Generated Data Includes:

- Students, Instructors, Courses, Topics
- Questions & Choices (MCQ and T/F)
- Exams & Student Answers
- Departments, Tracks, and Branches



Chat GPT



Excel



Redgate

**Data Generation**

# Stored Procedures



## ➤ Purpose:

- Encapsulate database logic to handle core operations securely and efficiently.

## ➤ Main Categories:

- **CRUD Operations:**

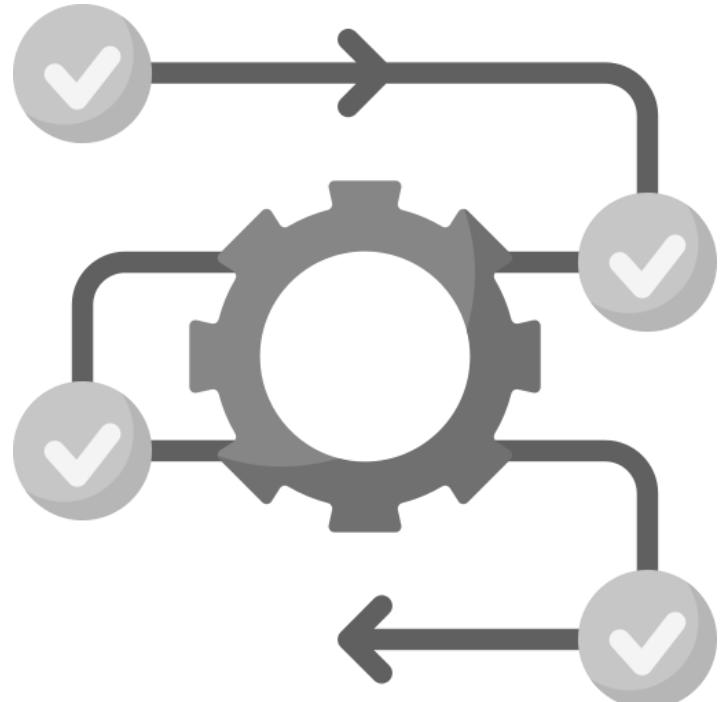
- Insert, update, delete, and retrieve records for key entities: Person, Student, Instructor, Course, Topic, Exam, etc.

- **Exam Management:**

- GenerateExam: Generates exam questions from the question bank
  - Exam\_ans: Records student answers
  - Exam\_Correction: Compares student answers to correct ones and calculates grades

- **Validation & Error Handling:**

- Each SP includes input validation and meaningful error messages
  - Use of TRY...CATCH, IF EXISTS, and custom messages for feedback



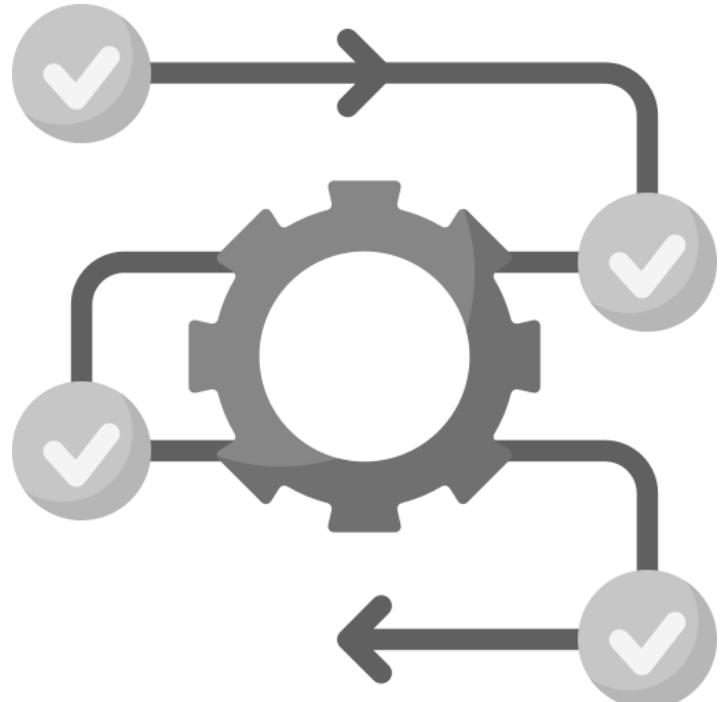
# Stored Procedures (Cont'd)

## ➤ Sample Procedures Implemented:

- Person\_Insert\_SP, Person\_Select\_SP , Topic\_Update\_SP, Topic\_Delete\_SP
- Get\_Exam\_Questions\_Choices\_Report (for SSRS)
- Get\_Student\_Grades\_Report (returns student score and result)
  - Insert, update, delete, and retrieve records for key entities: Person, Student, Instructor, Course, Topic, Exam, etc.

## ➤ Benefits:

- Improves performance
- Centralizes business logic
- Enhances data integrity and security



# Parameterized Dynamic SQL Stored Procedure



- ❑ Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## SELECT

```
CREATE PROC Person_Select_SP @P_ID int
as
BEGIN
    SET NOCOUNT ON;
    BEGIN TRY
        IF @P_ID IS NULL OR @P_ID <= 0
        BEGIN
            SELECT 'Invalid Person ID input.' AS Message;
            RETURN;
        END
        IF NOT EXISTS (SELECT 1 FROM Person WHERE [P_ID] = @P_ID)
        BEGIN
            SELECT 'Error: Person ID does not exist.' AS Message;
            RETURN;
        END
        select *
        from Person
        where P_ID = @P_ID
    END TRY
    BEGIN CATCH
        RAISERROR('An unexpected error occurred.',16,1)
    END CATCH
END
```

# Parameterized Dynamic SQL Stored Procedure



- ❑ Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## INSERT

```
CREATE PROC Person_Insert_SP @SSN INT,
    @FName nvarchar(max),
    @LName nvarchar(max),
    @Email nvarchar(max),
    @Marital nvarchar(max),
    @City nvarchar(max),
    @Street nvarchar(max),
    @Gender nvarchar(max),
    @BDate Date
as
BEGIN
    SET NOCOUNT ON;

    BEGIN TRY
        IF EXISTS (SELECT 1 FROM Person WHERE SSN = @SSN)
        BEGIN
            RAISERROR('Error: SSN already exists.',16,1);
            RETURN;
        END

        INSERT INTO Person ([SSN],[Fname],[Lname],[Email],[Marital_Status],[City],[Street],[Gender],[Bdate])
        values (@SSN, @FName, @LName, @Email, @Marital, @City, @Street, @Gender, @BDate);

        DECLARE @NEWID INT = SCOPE_IDENTITY();

        SELECT 'Inserted successfully. New Person ID is ' + CAST(@NEWID AS NVARCHAR) AS Message;
    END TRY
    BEGIN CATCH
        SELECT 'Error: ' + ERROR_MESSAGE() AS Message;
        RETURN;
    END CATCH
END;
```

# Parameterized Dynamic SQL Stored Procedure



- Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## UPDATE

```
|CREATE PROC Topic_Update_SP @Topic_ID INT,
|                                @Topic_Name nvarchar(max)
|
|as
|BEGIN
|    SET NOCOUNT ON;
|    BEGIN TRY
|        IF @Topic_ID IS NULL OR @Topic_ID <= 0
|        BEGIN
|            SELECT 'Invalid Topic ID.' AS Message;
|            RETURN;
|        END
|        IF NOT EXISTS (SELECT 1 FROM Topic WHERE Topic_ID = @Topic_ID)
|        BEGIN
|            SELECT 'No Topic with ID ' + CAST(@Topic_ID AS nvarchar) AS Message;
|            RETURN;
|        END
|
|        UPDATE Topic
|        set Topic_Name = @Topic_Name
|        where Topic_ID = @Topic_ID
|
|        SELECT 'Topic updated successfully.' AS Message;
|        RETURN;
|    END TRY
|
|    BEGIN CATCH
|        SELECT 'Error: ' + ERROR_MESSAGE() AS Message;
|        RETURN;
|    END CATCH
|
|END
```

# Parameterized Dynamic SQL Stored Procedure

- ❑ Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## DELETE

```
|CREATE PROC Topic_Delete_SP @Topic_ID int
|as
|BEGIN
|    SET NOCOUNT ON;
|    BEGIN TRY
|        IF @Topic_ID IS NULL OR @Topic_ID <= 0
|        BEGIN
|            SELECT 'Error: Invalid Topic ID input.' AS Message;
|            RETURN;
|        END
|        IF NOT EXISTS (SELECT 1 FROM Topic WHERE Topic_ID = @Topic_ID)
|        BEGIN
|            SELECT 'Error: Topic ID does not exist.' AS Message;
|            RETURN;
|        END
|        DELETE FROM Topic
|        where Topic_ID = @Topic_ID;
|        SELECT 'Topic deleted successfully.' AS Message;
|    END TRY
|    BEGIN CATCH
|        SELECT 'Error: ' + ERROR_MESSAGE() AS Message;
|        RETURN;
|    END CATCH
|
|END
```

# Parameterized Dynamic SQL Stored Procedure

- Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## Exam Generation

```
create PROCEDURE [dbo].[GenerateExam]
    @Crs_ID INT,
    @Exam_Type VARCHAR(50),
    @Duration INT,
    @Exam_Date DATE,
    @Ins_ID INT,
    @Exam_ID INT OUTPUT
AS
BEGIN
    SET NOCOUNT ON;

    DECLARE @InstructorName NVARCHAR(100) = '';
    DECLARE @CourseName NVARCHAR(100) = '';
    DECLARE @ValidCourses NVARCHAR(MAX) = '';
    DECLARE @QTY_TF INT = 4;
    DECLARE @QTY_MCQ INT = 4;

    BEGIN TRY
        -- التحقق من وجود المدرس
        IF NOT EXISTS (SELECT 1 FROM Instructor WHERE Ins_ID = @Ins_ID)
        BEGIN
            DECLARE @InstructorList NVARCHAR(MAX);
            SELECT @InstructorList = STRING_AGG(CAST(Ins_ID AS NVARCHAR(10)), ', ')
            FROM Instructor;

            RAISERROR('Error: Instructor with ID %d does not exist. Available instructors: %s', 16, 1, @Ins_ID, @InstructorList);
            RETURN -1;
        END

        SELECT @InstructorName = Fname + ' ' + Lname
        FROM Person
        WHERE P_ID = @Ins_ID;

        -- التتحقق من وجود الكورس
        IF NOT EXISTS (SELECT 1 FROM Course WHERE Crs_ID = @Crs_ID)
        BEGIN
            DECLARE @SampleCourses NVARCHAR(1000);
            SELECT TOP 10 @SampleCourses = STRING_AGG(CONVERT(NVARCHAR(10), Crs_ID) + ' - ' + Crs_Name, ', ')
            FROM Course;

            RAISERROR('Error: Course with ID %d does not exist. Sample courses: %s', 16, 1, @Crs_ID, @SampleCourses);
            RETURN -1;
        END
    END TRY
    --
```

```
    SELECT @CourseName = Crs_Name FROM Course WHERE Crs_ID = @Crs_ID;
    -- التتحقق من الربط بين المدرس والكورس
    IF NOT EXISTS (SELECT 1 FROM Ins_Crs WHERE Ins_ID = @Ins_ID AND Crs_ID = @Crs_ID)
    BEGIN
        SELECT @ValidCourses = STRING_AGG(CONVERT(NVARCHAR(10), c.Crs_ID) + ' - ' + c.Crs_Name, ', ')
        FROM Ins_Crs ic
        JOIN Course c ON ic.Crs_ID = c.Crs_ID
        WHERE ic.Ins_ID = @Ins_ID;

        RAISERROR('Error: Instructor %d (%s) is not assigned to course %d (%s). This instructor teaches: %s', 16, 1, @Ins_ID, @InstructorName, @Crs_ID, @CourseName, @ValidCourses);
        RETURN -1;
    END

    -- التتحقق من توافر الأسئلة
    DECLARE @AvailableTF INT, @AvailableMCQ INT;

    SELECT @AvailableTF = COUNT(*)
    FROM Questions q
    INNER JOIN Crs_Qst cq ON q.Q_ID = cq.Q_ID
    WHERE cq.Crs_ID = @Crs_ID AND q.Q_Type = 'T/F';

    SELECT @AvailableMCQ = COUNT(*)
    FROM Questions q
    INNER JOIN Crs_Qst cq ON q.Q_ID = cq.Q_ID
    WHERE cq.Crs_ID = @Crs_ID AND q.Q_Type = 'MCQ';

    IF @AvailableTF < @QTY_TF OR @AvailableMCQ < @QTY_MCQ
    BEGIN
        RAISERROR('Error: Not enough questions for course %d (%s). Available: %d T/F, %d MCQ', 16, 1, @Crs_ID, @CourseName, @AvailableTF, @AvailableMCQ);
        RETURN -1;
    END

    BEGIN TRANSACTION;
    -- تعيين رقم الاختبار
    SELECT @Exam_ID = ISNULL(MAX(Exam_ID), 0) + 1 FROM Exam;
    -- دخال الاختبار
    INSERT INTO Exam (Exam_ID, Exam_Type, [QTY_T/F], QTY_MCQ, Duration, Date, Ins_ID, Crs_ID)
    VALUES (@Exam_ID, @Exam_type, @QTY_TF, @QTY_MCQ, @Duration, @Exam_Date, @Ins_ID, @Crs_ID);
    --
```

```
-- اختبار ودخول الأسئلة
INSERT INTO Exam_Qst (Exam_ID, Q_ID)
SELECT @Exam_ID, Q_ID
FROM Questions q
INNER JOIN Crs_Qst cq ON q.Q_ID = cq.Q_ID
WHERE cq.Crs_ID = @Crs_ID AND q.Q_Type = 'T/F'
ORDER BY NEWID();

UNION ALL

SELECT TOP (4) q.Q_ID
FROM Questions q
INNER JOIN Crs_Qst cq ON q.Q_ID = cq.Q_ID
WHERE cq.Crs_ID = @Crs_ID AND q.Q_Type = 'MCQ'
ORDER BY NEWID();
) AS SelectedQuestions;

COMMIT TRANSACTION;

PRINT '*** EXAM GENERATED SUCCESSFULLY ***';
PRINT 'Exam ID: ' + CAST(@Exam_ID AS NVARCHAR);
PRINT 'Course: ' + @CourseName + ' (ID: ' + CAST(@Crs_ID AS NVARCHAR) + ')';
PRINT 'Instructor: ' + @InstructorName + ' (ID: ' + CAST(@Ins_ID AS NVARCHAR) + ')';
PRINT 'Type: ' + @Exam_Type;
PRINT 'Date: ' + CONVERT(NVARCHAR(10), @Exam_Date, 120);
PRINT 'Questions: 4 T/F, 4 MCQ';

RETURN 0;
END TRY
BEGIN CATCH
    IF @@TRANCOUNT > 0
        ROLLBACK TRANSACTION;

    DECLARE @ErrorMessage NVARCHAR(4000) = ERROR_MESSAGE();
    RAISERROR('Error generating exam: %s', 16, 1, @ErrorMessage);
    RETURN -1;
END CATCH
END
```

# Parameterized Dynamic SQL Stored Procedure

- Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## Exam Answers

```
CREATE PROC [dbo].[Exam_ans]
    @Std_ID INT,
    @Exam_ID INT,
    @Ans1 NVARCHAR(MAX),
    @Ans2 NVARCHAR(MAX),
    @Ans3 NVARCHAR(MAX),
    @Ans4 NVARCHAR(MAX),
    @Ans5 NVARCHAR(MAX),
    @Ans6 NVARCHAR(MAX),
    @Ans7 NVARCHAR(MAX),
    @Ans8 NVARCHAR(MAX)
AS
BEGIN
    SET NOCOUNT ON;

    -- جدول مؤقت للتجميع الأسئلة مع إجابات الطالب
    CREATE TABLE #t (
        incr INT IDENTITY(1,1),
        ExamQst_ID INT,
        STD_ID INT,
        Std_Ans NVARCHAR(MAX)
    );

    -- جلب الأسئلة المرتبطة بالامتحان
    INSERT INTO #t (ExamQst_ID, STD_ID)
    SELECT ExamQst_ID, @Std_ID
    FROM Exam_Qst
    WHERE Exam_ID = @Exam_ID;
```

```
-- التحقق من أن عدد الأسئلة = 8
IF (SELECT COUNT(*) FROM #t) <> 8
BEGIN
    RAISERROR('Error: Exam must contain exactly 8 questions.', 16, 1);
    RETURN;
END

-- تعيين الإجابات بناءً على ترتيب الأسئلة
UPDATE #t SET Std_Ans = @Ans1 WHERE incr = 1;
UPDATE #t SET Std_Ans = @Ans2 WHERE incr = 2;
UPDATE #t SET Std_Ans = @Ans3 WHERE incr = 3;
UPDATE #t SET Std_Ans = @Ans4 WHERE incr = 4;
UPDATE #t SET Std_Ans = @Ans5 WHERE incr = 5;
UPDATE #t SET Std_Ans = @Ans6 WHERE incr = 6;
UPDATE #t SET Std_Ans = @Ans7 WHERE incr = 7;
UPDATE #t SET Std_Ans = @Ans8 WHERE incr = 8;

-- إدخال البيانات إلى جدول الإجابات
INSERT INTO Std_Exam_Qst (ExamQst_ID, STD_ID, Std_Ans)
SELECT ExamQst_ID, STD_ID, Std_Ans
FROM #t;

-- تنظيف الجدول المؤقت
DROP TABLE #t;
```

# Parameterized Dynamic SQL Stored Procedure

- Takes input parameters, dynamically constructs an SQL query, executes it, and handles errors using TRY...CATCH.

## Exam Correction

```
Create PROC [dbo].[Exam_Correction]
    @Std_ID INT,
    @Exam_ID INT
AS
BEGIN
    -- Check if student exists
    IF NOT EXISTS (SELECT 1 FROM Student WHERE STD_ID = @Std_ID)
    BEGIN
        SELECT 'There is no student with that number.' AS Message
        RETURN
    END

    -- Check if exam exists
    IF NOT EXISTS (SELECT 1 FROM Exam WHERE Exam_ID = @Exam_ID)
    BEGIN
        SELECT 'There is no exam with that number.' AS Message
        RETURN
    END

    -- Check if student took this exam
    IF NOT EXISTS (
        SELECT 1
        FROM Std_Exam_Qst qse
        JOIN Exam_Qst qe ON qse.ExamQst_ID = qe.ExamQst_ID
        WHERE qe.Exam_ID = @Exam_ID AND qse.STD_ID = @Std_ID
    )
)
```

```
    BEGIN
        SELECT 'This student did not take this exam.' AS Message
        RETURN
    END

    -- Update Grades for this student and this exam only
    UPDATE qse
    SET Grade = CASE
        WHEN qse.Std_Ans = qse.Correct_Ans THEN 1
        ELSE 0
    END
    FROM Std_Exam_Qst qse
    JOIN Exam_Qst qe ON qse.ExamQst_ID = qe.ExamQst_ID
    WHERE qse.STD_ID = @Std_ID AND qe.Exam_ID = @Exam_ID;

    -- Return only Exam_ID and Percentage
    SELECT
        @Exam_ID AS Exam_ID,
        CONCAT(CAST(SUM(qse.Grade) * 100.0 / COUNT(*) AS DECIMAL(5,2)), '%') AS Percentage
    FROM Std_Exam_Qst qse
    JOIN Exam_Qst qe ON qse.ExamQst_ID = qe.ExamQst_ID
    WHERE qse.STD_ID = @Std_ID AND qe.Exam_ID = @Exam_ID;
)
```

# Reporting (SSRS)



## ➤ Purpose of Reporting:

- Transform raw data into actionable insights to support academic and administrative decision-making.

## ➤ Tool Used:

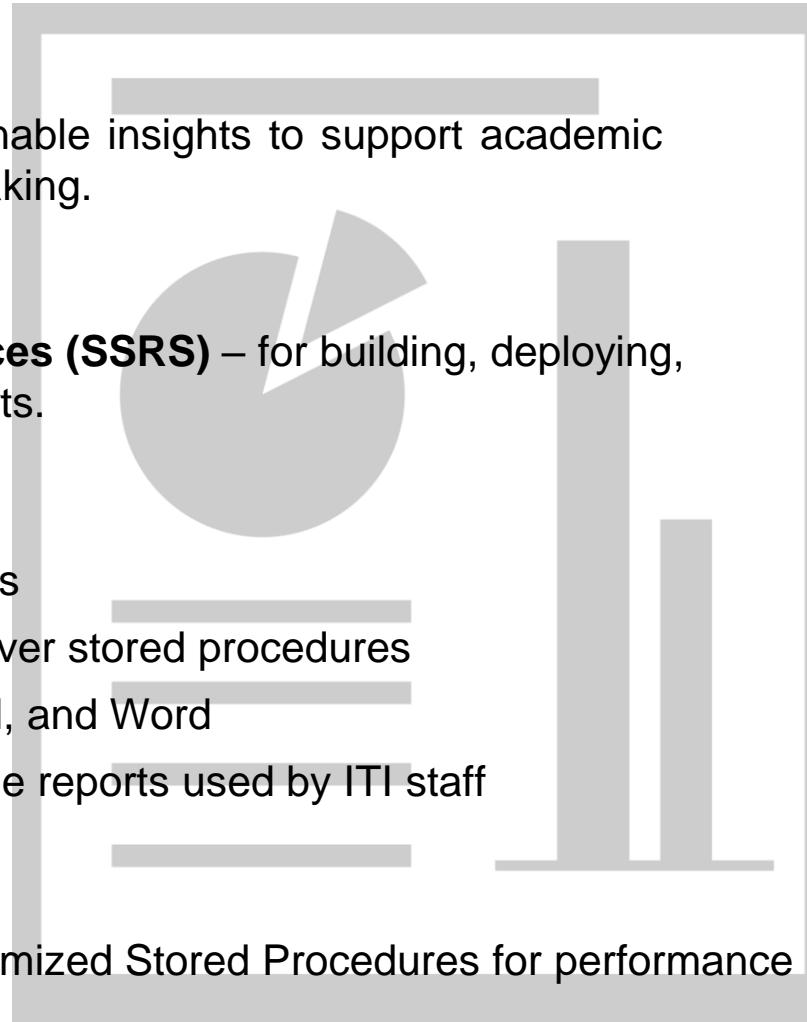
- **SQL Server Reporting Services (SSRS)** – for building, deploying, and managing paginated reports.

## ➤ Why SSRS?

- Supports parameterized reports
- Easily integrates with SQL Server stored procedures
- Allows exporting to PDF, Excel, and Word
- Suitable for structured, printable reports used by ITI staff

## ➤ Report Data Source:

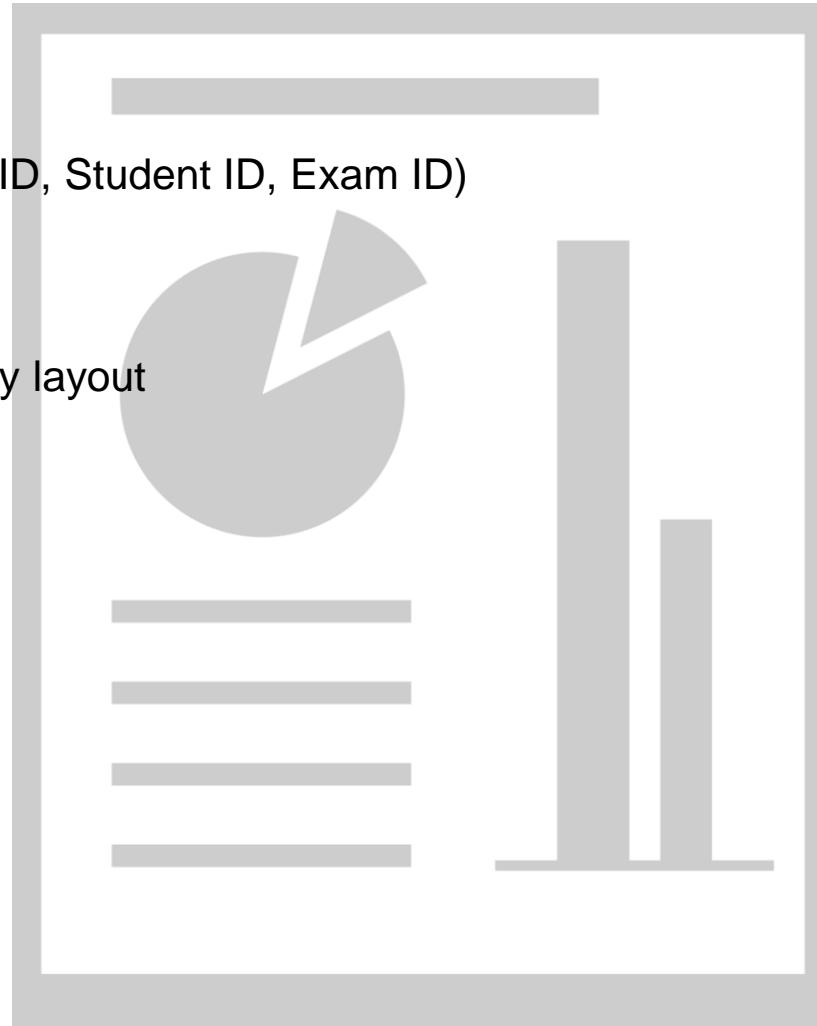
- All reports are powered by optimized Stored Procedures for performance and reusability.



# Reporting (SSRS)

## ➤ Key Features Implemented:

- Parameters (e.g., Department ID, Student ID, Exam ID)
- Drill-down and grouped data
- Dynamic data refresh
- Page formatting and print-ready layout



# Student Details By Department SP & SSRS Report



## Student Details By Department

Department : alex

STD ID	Full Name	Address	Email	Gender	Date Of Birth	Track Name	Intake Type	Branch Name	Military Status
1588	Omar Adel	MohandessinSt Suez	omar.adel588@gmail.com	Male	4/20/2005 12:00:00 AM	User Experience	Military	Sohag Branch	Completed
1589	Yasmin Hassan	HeliopolisSt Giza	yasmin.hassan589@gmail.co m	Female	10/3/2001 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted
1591	Karim Mostafa	ElHaramSt Alexandria	karim.mostafa591@gmail.co m	Male	12/6/2004 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted
1587	Mahmoud Hassan	NasrCitySt Mansoura	mahmoud.hassan587@gmail. com	Male	11/8/2002 12:00:00 AM	User Experience	Military	Sohag Branch	Completed
1586	Hassan Adel	AbbasElAkkadSt Tanta	hassan.adel586@gmail.com	Male	10/3/1997 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted
1595	Ali Omar	AbbasElAkkadSt Port Said	ali.omar595@gmail.com	Male	12/14/1997 12:00:00 AM	User Experience	Military	Sohag Branch	Completed
1596	Yasmin Maher	NasrCitySt Port Said	yasmin.maher596@gmail.co m	Female	9/10/2000 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted
1597	Mohamed Tawfik	TahrirSt Port Said	mohamed.tawfik597@gmail.c om	Male	6/29/2003 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted

```

CREATE Proc [dbo].[Std_Details] @Dept_ID int
as
IF EXISTS (
    SELECT 1
    FROM Student s
    JOIN Track t ON s.Track_ID = t.Track_ID
    JOIN Department d ON t.Dept_ID = d.Dept_ID
    JOIN Person P ON s.STD_ID = P.P_ID
    JOIN Intake ON s.Intake_ID = Intake.Intake_ID
    JOIN Branch B ON s.Branch_ID = B.Branch_ID
    WHERE t.Dept_ID = @Dept_ID
)
BEGIN
    SELECT
        s.STD_ID,
        CONCAT(p.Fname, ' ', p.Lname) AS FullName,
        CONCAT(p.Street, ' ', p.City) AS Address,
        P.Email,
        P.Gender,
        P.Bdate AS DateOfBirth,
        t.Track_Name,
        Intake.[Type] as Intake_Type,
        B.BranchName,
        s.MilitaryStatus
    FROM Student s
    JOIN Track t ON s.Track_ID = t.Track_ID
    JOIN Department d ON t.Dept_ID = d.Dept_ID
    JOIN Person P ON s.STD_ID = P.P_ID
    JOIN Intake ON s.Intake_ID = Intake.Intake_ID
    JOIN Branch B ON s.Branch_ID = B.Branch_ID
    WHERE t.Dept_ID = @Dept_ID
END
ELSE
BEGIN
    PRINT 'The department is not found'
END

```

# Student Grades SP & SSRS Report



## Student Grades

Student\_Name : Mahmoud Ibrahim

STD ID	Full Name	Crs Name	Total Questions	Correct Answers	Percentage
3	Mahmoud Ibrahim	OS-301	1	6	60.00%
3	Mahmoud Ibrahim	PC-101	1	1	10.00%
3	Mahmoud Ibrahim	UX-201	1	0	0.00%

## INTENSIVE CODE CAMP

```
CREATE PROC [dbo].[Get_Student_Grades_Report]
@Std_ID INT
AS
BEGIN
    SET NOCOUNT ON;

    IF NOT EXISTS (SELECT 1 FROM Student WHERE STD_ID = @Std_ID)
    BEGIN
        PRINT 'Error: Student not found.';
        RETURN;
    END

    SELECT
        s.STD_ID,
        CONCAT(p.Fname, ' ', p.Lname) AS FullName,
        c.Crs_Name,
        COUNT(seq.Grade) AS Total_Questions,
        SUM(seq.Grade) AS Correct_Answers,
        CONCAT(CAST(SUM(seq.Grade) * 10.0 / COUNT(seq.Grade) AS DECIMAL(5,2)), '%') AS Percentage
    FROM Student s
    JOIN Person p ON s.STD_ID = p.P_ID
    JOIN Std_Exam_Qst seq ON s.STD_ID = seq.STD_ID
    JOIN Exam_Qst eq ON seq.ExamQst_ID = eq.ExamQst_ID
    JOIN Exam e ON eq.Exam_ID = e.Exam_ID
    JOIN Course c ON e.Crs_ID = c.Crs_ID
    WHERE s.STD_ID = @Std_ID
    GROUP BY s.STD_ID, p.Fname, p.Lname, c.Crs_Name
END
```

# Instructor Courses & Number of Student SP & SSRS Report



## Instructor Courses By ID

Instructor\_Name : Mahmoud Ibrahim

Ins ID	Instructor Name	Crs Name	Student Count
3	Mahmoud Ibrahim	CN-501	139
3	Mahmoud Ibrahim	DPE-201	155

```
CREATE PROC [dbo].[Get_Instructor_Courses_And_StudentCount]
    @Ins_ID INT
AS
BEGIN
    SET NOCOUNT ON;
    -- التحقق من وجود المحاضر
    IF NOT EXISTS (SELECT 1 FROM Instructor WHERE Ins_ID = @Ins_ID)
    BEGIN
        PRINT 'Error: Instructor not found.';
        RETURN;
    END

    SELECT
        i.Ins_ID,
        CONCAT(p.Fname, ' ', p.Lname) AS Instructor_Name,
        c.Crs_Name,
        COUNT(DISTINCT s.STD_ID) AS Student_Count
    FROM Instructor i
    JOIN Person p ON i.Ins_ID = p.P_ID
    JOIN Ins_Crs ic ON i.Ins_ID = ic.Ins_ID
    JOIN Course c ON ic.Crs_ID = c.Crs_ID
    JOIN Track_Crs tc ON c.Crs_ID = tc.Crs_ID
    JOIN Track t ON tc.Track_ID = t.Track_ID
    JOIN Student s ON s.Track_ID = t.Track_ID
    WHERE i.Ins_ID = @Ins_ID
    GROUP BY i.Ins_ID, p.Fname, p.Lname, c.Crs_Name
END
```

# Courses By Topic SP & SSRS Report



## INTENSIVE CODE CAMP

### Get Courses By Topic

Topic_ID	Topic Name	Crs Name
11	Game Engine Development	DPE-501
11	Game Engine Development	DS-401
11	Game Engine Development	GE-201
11	Game Engine Development	DMT-401
11	Game Engine Development	IOT-301
11	Game Engine Development	FE-401

```
CREATE PROC [dbo].[Get_Courses_By_Topic]
@Topic_ID INT
AS
BEGIN
    SET NOCOUNT ON;

    IF NOT EXISTS (SELECT 1 FROM Topic WHERE Topic_ID = @Topic_ID)
    BEGIN
        PRINT 'Error: Topic not found.';
        RETURN;
    END

    SELECT
        t.Topic_ID,
        t.Topic_Name,
        c.Crs_Name
    FROM Course c
    INNER JOIN Topic t ON c.Topic_ID = t.Topic_ID
    WHERE t.Topic_ID = @Topic_ID;
END
```

# Exam Questions & Choices SP & SSRS Report



Information Technology Institute

## The Exam

Exam\_Number :127

Q: Malware is a physical threat to hardware.	_____
FALSE	
TRUE	
Q: Data breaches can be prevented by firewalls.	_____
FALSE	
TRUE	
Q: Antivirus software is not part of cybersecurity.	_____
FALSE	
TRUE	
Q: A strong password policy is unnecessary.	_____
FALSE	
TRUE	
Q: Which practice improves web security?	_____
Allowing all CORS requests	Storing plain text passwords
Disabling firewalls	Using HTTPS
Q: What is a common web application vulnerability?	_____
File compression	Low resolution
High bandwidth	SQL Injection

```
CREATE PROC [dbo].[Get_Exam_Questions_Choices_Report]
@Exam_ID INT
AS
BEGIN
    SET NOCOUNT ON;

    IF NOT EXISTS (SELECT 1 FROM Exam WHERE Exam_ID = @Exam_ID)
    BEGIN
        PRINT 'Error: Exam not found.';
        RETURN;
    END

    SELECT
        cw.Exam_ID,
        cw.QST_Content AS Question,
        MAX(CASE WHEN cw.RowNum = 1 THEN cw.Choice END) AS Choice1,
        MAX(CASE WHEN cw.RowNum = 2 THEN cw.Choice END) AS Choice2,
        MAX(CASE WHEN cw.RowNum = 3 THEN cw.Choice END) AS Choice3,
        MAX(CASE WHEN cw.RowNum = 4 THEN cw.Choice END) AS Choice4
    FROM (
        SELECT
            e.Exam_ID,
            q.QST_Content,
            qc.Choice,
            ROW_NUMBER() OVER (PARTITION BY q.Q_ID ORDER BY qc.Choice) AS RowNum,
            q.Q_ID
        FROM Exam e
        INNER JOIN Exam_Qst eq ON e.Exam_ID = eq.Exam_ID
        INNER JOIN Questions q ON eq.Q_ID = q.Q_ID
        INNER JOIN Questions_Choices qc ON q.Q_ID = qc.Q_ID
        WHERE e.Exam_ID = @Exam_ID
    ) AS cw
    GROUP BY cw.Exam_ID, cw.QST_Content, cw.Q_ID
    ORDER BY cw.Q_ID;
END
```

# Student Answers SSRS Report



Information  
Technology  
Institute

## INTENSIVE CODE CAMP

### Student Answers By Exam

Exam ID: 127

Student Name: Nour Reda

Question	Student Answer
A strong password policy is unnecessary.	True
Antivirus software is not part of cybersecurity.	False
Data breaches can be prevented by firewalls.	B
Malware is a physical threat to hardware.	A
What is the goal of cybersecurity?	C
Which practice improves web security?	False
What is a common web application vulnerability?	True
Which practice improves web security?	D

```
CREATE PROC [dbo].[Get_Student_Answers_Report]
    @Exam_ID INT,
    @STD_ID INT
AS
BEGIN
    SET NOCOUNT ON;

    IF NOT EXISTS (SELECT 1 FROM Exam WHERE Exam_ID = @Exam_ID)
    BEGIN
        PRINT 'Error: Exam not found.';
        RETURN;
    END

    IF NOT EXISTS (SELECT 1 FROM Student WHERE STD_ID = @STD_ID)
    BEGIN
        PRINT 'Error: Student not found.';
        RETURN;
    END

    IF NOT EXISTS (
        SELECT 1
        FROM Std_Exam_Qst qse
        JOIN Exam_Qst eq ON qse.ExamQst_ID = eq.ExamQst_ID
        WHERE eq.Exam_ID = @Exam_ID AND qse.STD_ID = @STD_ID
    )
    BEGIN
        PRINT 'Error: This student did not take this exam.';
        RETURN;
    END

    SELECT
        eq.Exam_ID,
        s.STD_ID,
        q.QST_Content AS Question,
        seq.Std_Ans AS Student_Answer
    FROM Exam_Qst eq
    JOIN Questions q ON eq.Q_ID = q.Q_ID
    JOIN Std_Exam_Qst seq ON eq.ExamQst_ID = seq.ExamQst_ID
    JOIN Student s ON seq.STD_ID = s.STD_ID
    WHERE eq.Exam_ID = @Exam_ID AND s.STD_ID = @STD_ID
END
```

# SSRS Reports in Power BI



## ➤ Purpose:

- Combine the strengths of SSRS (pixel-perfect, print-ready reports) with Power BI's interactivity and analytics capabilities.

## ➤ Integration Approach:

- SSRS reports were first developed and tested using **SQL Server Report Builder**.
- Reports were deployed to **Report Server (SSRS)**.
- Power BI was used to reference these reports for a complete view of exam data.

## ➤ Challenges Faced:

- Power BI integration with SSRS requires Power BI Report Server or Power BI Service (Pro) for full embedding.
- Due to the absence of a paid service, SSRS reports were accessed via URL links or external visuals from the report server.

# SSRS Reports in Power BI



## ➤ Use Case in Project:

- Links to SSRS reports were included in Power BI dashboards.
- Users could navigate to detailed printable reports for exams, students, and instructors from within Power BI.

## ➤ Value Added:

- Combines summary analytics with detailed printable reports
- Provides flexibility for different user needs (managers vs instructors)
- Enhances reporting experience with both **visual storytelling** and **structured documents**

# Topic Courses SSRS Report in Power BI

The screenshot displays a Power BI report interface. On the left, there is a vertical navigation pane with a red header containing the logo of the Information Technology Institute (ITI) and a list of topic IDs from 4 to 20. Topic ID 16 is highlighted with a dark red square. The main content area has a red header with the text "INTENSIVE CODE CAMP". Below this, a section titled "Get Courses By Topic" contains a table with three columns: Topic\_ID, Topic Name, and Crs Name. The table shows data for Topic ID 16, which is IoT Development, with courses CN-401, OS-401, and FE-101.

Topic_ID	Topic Name	Crs Name
16	IoT Development	CN-401 OS-401 FE-101

# Exam Questions & Choices SSRS Report in Power BI

The screenshot displays a Power BI report interface. At the top, there is a navigation bar with icons for Export, Back, Forward, and Open report. Below the navigation bar, the report title is "Information Technology Institute". The main content area is titled "The Exam". A sidebar on the left contains the ITI logo and a list of Exam IDs from 1 to 17, with Exam ID 2 selected. The main content area shows five exam questions, each with two options: FALSE and TRUE.

Exam Question	Options
Q: Encryption helps in securing communication.	FALSE TRUE
Q: Cybersecurity involves only hardware protection.	FALSE TRUE
Q: Antivirus software is not part of cybersecurity.	FALSE TRUE
Q: Cybersecurity includes protecting networks and data.	FALSE TRUE
Q: Data breaches can be prevented by firewalls.	...

# Instructor Courses SSRS Report in Power BI

The screenshot displays a Power BI report interface. On the left, there is a navigation pane with a red 'iti' logo and the text 'Information Technology Institute'. Below this is a dropdown menu labeled 'Ins\_ID' with a list of numerical values from 59 to 75. To the right of the navigation pane is the main report area. At the top of the report area is a header bar with 'Export', 'Page 1 of 1', and 'Open report' buttons. The main content of the report is titled 'Instructor Courses By ID' in red text. Below the title, it says 'Instructor\_Name : Samir Helmy'. A table follows, showing the data for two courses taught by Samir Helmy:

Ins ID	Instructor Name	Crs Name	Student Count
75	Samir Helmy	BA-201	143
75	Samir Helmy	PC-501	129

# Student Answers by Exam SSRS Report in Power BI

The screenshot displays a Power BI report interface. On the left, there is a navigation pane with two sections: 'Exam\_ID' and 'STD\_ID'. The 'Exam\_ID' section contains a list of IDs from 121 to 1000, with '127' selected. The 'STD\_ID' section contains a list of student IDs from 1 to 8, with '(Blank)' selected. The main content area is titled 'Student Answers By Exam' and shows details for 'Exam ID: 127' and 'Student Name: Nour Reda'. A table lists the questions and student answers:

Question	Student Answer
A strong password policy is unnecessary.	True
Antivirus software is not part of cybersecurity.	False
Data breaches can be prevented by firewalls.	B
Malware is a physical threat to hardware.	A
What is the goal of cybersecurity?	C
Which practice improves web security?	False
What is a common web application vulnerability?	True
Which practice improves web security?	D

# Student Details by Department SSRS Report in Power BI

The screenshot displays a Power BI report interface. On the left, there is a sidebar with the logo of 'Information Technology Institute' and a dropdown menu for 'Dept\_ID' containing options from 1 to 7, with option 5 selected. The main area shows a table titled 'Student Details By Department' for the department 'alex'. The table has the following data:

STD ID	Full Name	Address	Email	Gender	Date Of Birth	Track Name	Intake Type	Branch Name	Military Status
1587	Mahmoud Hassan	NasrCitySt Mansoura	mahmoud.hassan587@gmail.com	Male	11/8/2002 12:00:00 AM	User Experience	Military	Sohag Branch	Completed
1588	Omar Adel	MohandessinSt Suez	omar.adel588@gmail.com	Male	4/20/2005 12:00:00 AM	User Experience	Military	Sohag Branch	Completed
1589	Yasmin Hassan	HeliopolisSt Giza	yasmin.hassan589@gmail.com	Female	10/3/2001 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted
1591	Karim Mostafa	ElHaramSt Alexandria	karim.mostafa591@gmail.com	Male	12/6/2004 12:00:00 AM	User Experience	Military	Sohag Branch	Exempted
1592	Mostafa Ezzat	TahrirSt Tanta	mostafa.ezzat592@gmail.com	Male	12/31/1989 12:00:00 AM	User Experience	Military	Sohag Branch	Completed
1594	Laila Gamal	NasrCitySt Mansoura	laila.gamal584@gmail.com	Female	2/7/1997 12:00:00 AM	User Experience	Military	Sohag Branch	Completed

# Student Grades SSRS Report in Power BI



STD\_ID

15

16

17

18

19

20

21

22

23

24

25

26

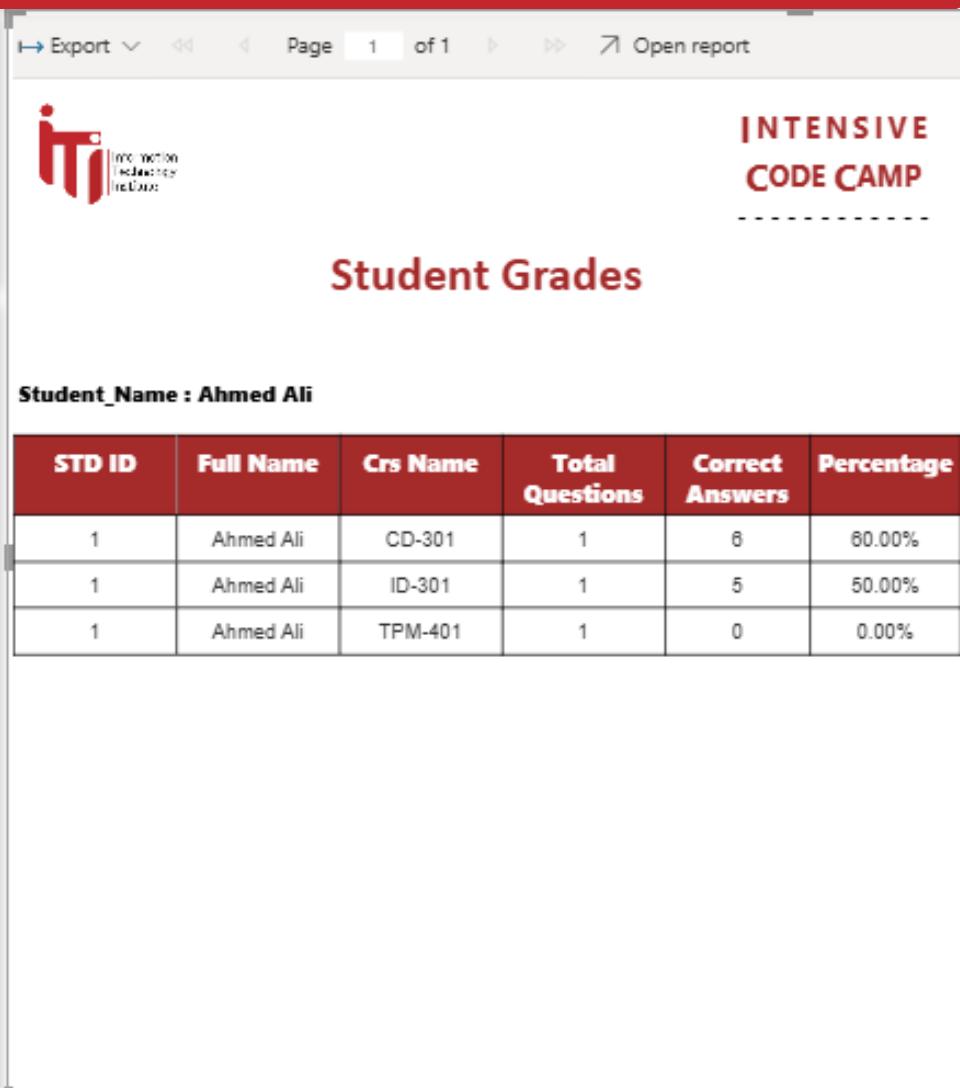
27

28

30

31

33



The screenshot shows a Microsoft SQL Server Reporting Services (SSRS) report titled "Student Grades". The report header includes the ITI logo and the text "INTENSIVE CODE CAMP". The main content displays student grades for "Ahmed Ali" across three courses: CD-301, ID-301, and TPM-401. The report has a table with columns: STD ID, Full Name, Crs Name, Total Questions, Correct Answers, and Percentage. The data is as follows:

STD ID	Full Name	Crs Name	Total Questions	Correct Answers	Percentage
1	Ahmed Ali	CD-301	1	0	0.00%
1	Ahmed Ali	ID-301	1	5	50.00%
1	Ahmed Ali	TPM-401	1	0	0.00%

# Data Integration (SSIS)



## ➤ Objective:

- To extract data from the transactional database and load it into a structured Data Warehouse for reporting and analysis.

## ➤ Tool Used:

- **SQL Server Integration Services (SSIS)** — for ETL (Extract, Transform, Load) processes.

## ➤ ETL Process Overview:

- **Extract:**
  - Source tables from the operational database (e.g., Students, Courses, Exams, Departments).
- **Transform:**
  - Data cleansing (e.g., null handling, type conversion)
  - Business logic implementation (e.g., mapping keys, standardizing formats)
  - Creating surrogate keys and time dimensions
- **Load:**
  - Inserted cleaned and structured data into dimension and fact tables in the data warehouse.

TM

# Data Integration (SSIS)

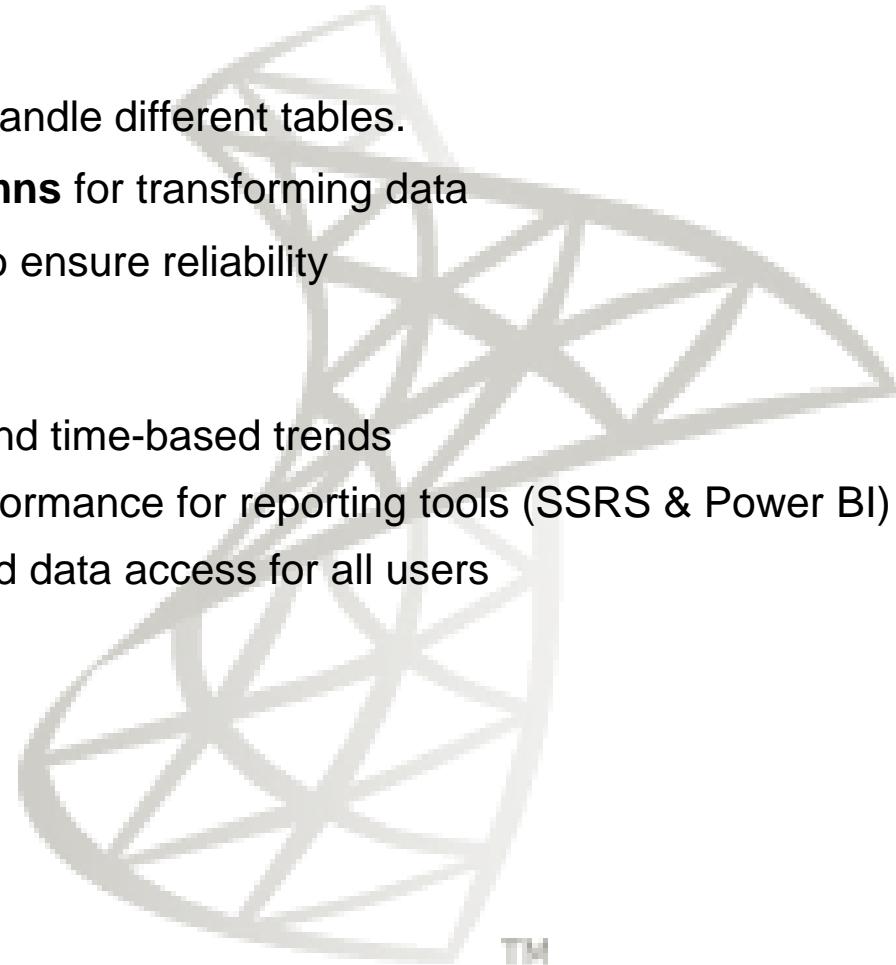


## ➤ Package Features:

- Multiple Data Flow Tasks to handle different tables.
- **Lookups** and **Derived Columns** for transforming data
- Error Handling and Logging to ensure reliability

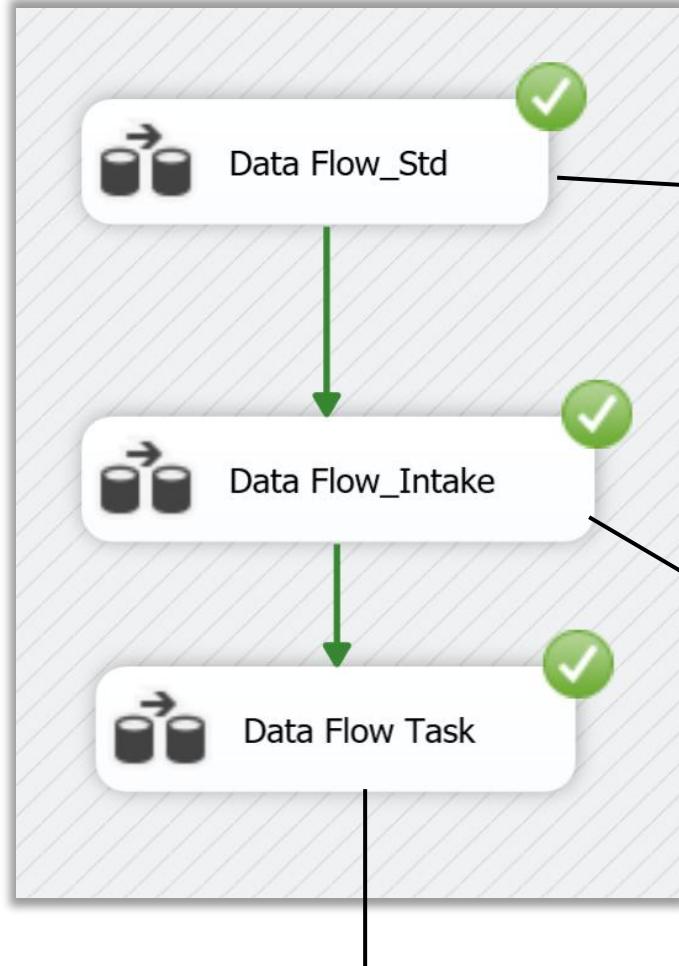
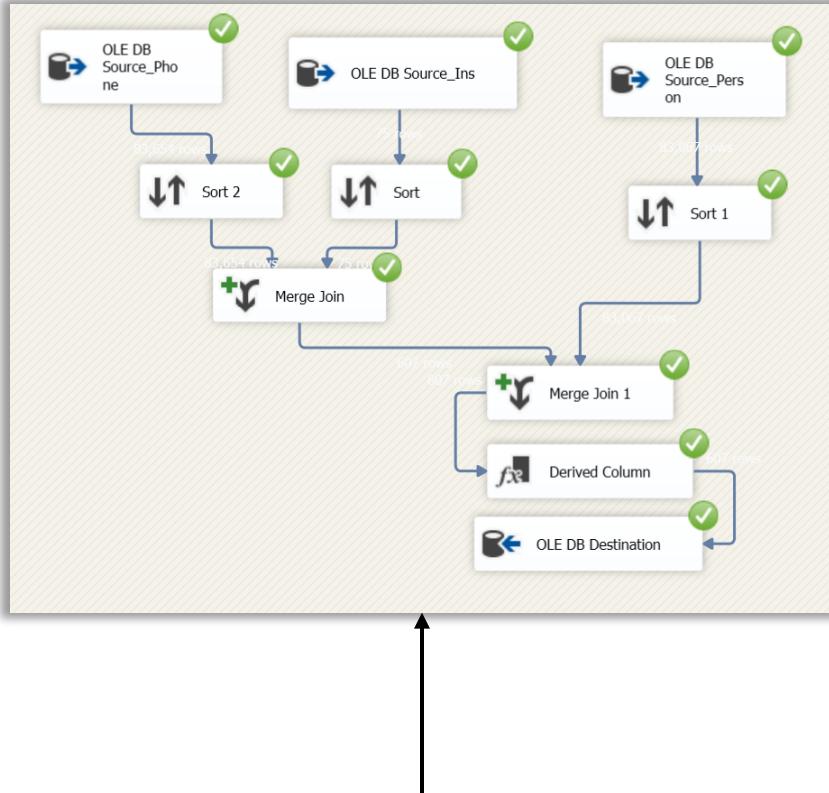
## ➤ Benefits:

- Supports historical analysis and time-based trends
- Ensures consistency and performance for reporting tools (SSRS & Power BI)
- Enables centralized, optimized data access for all users

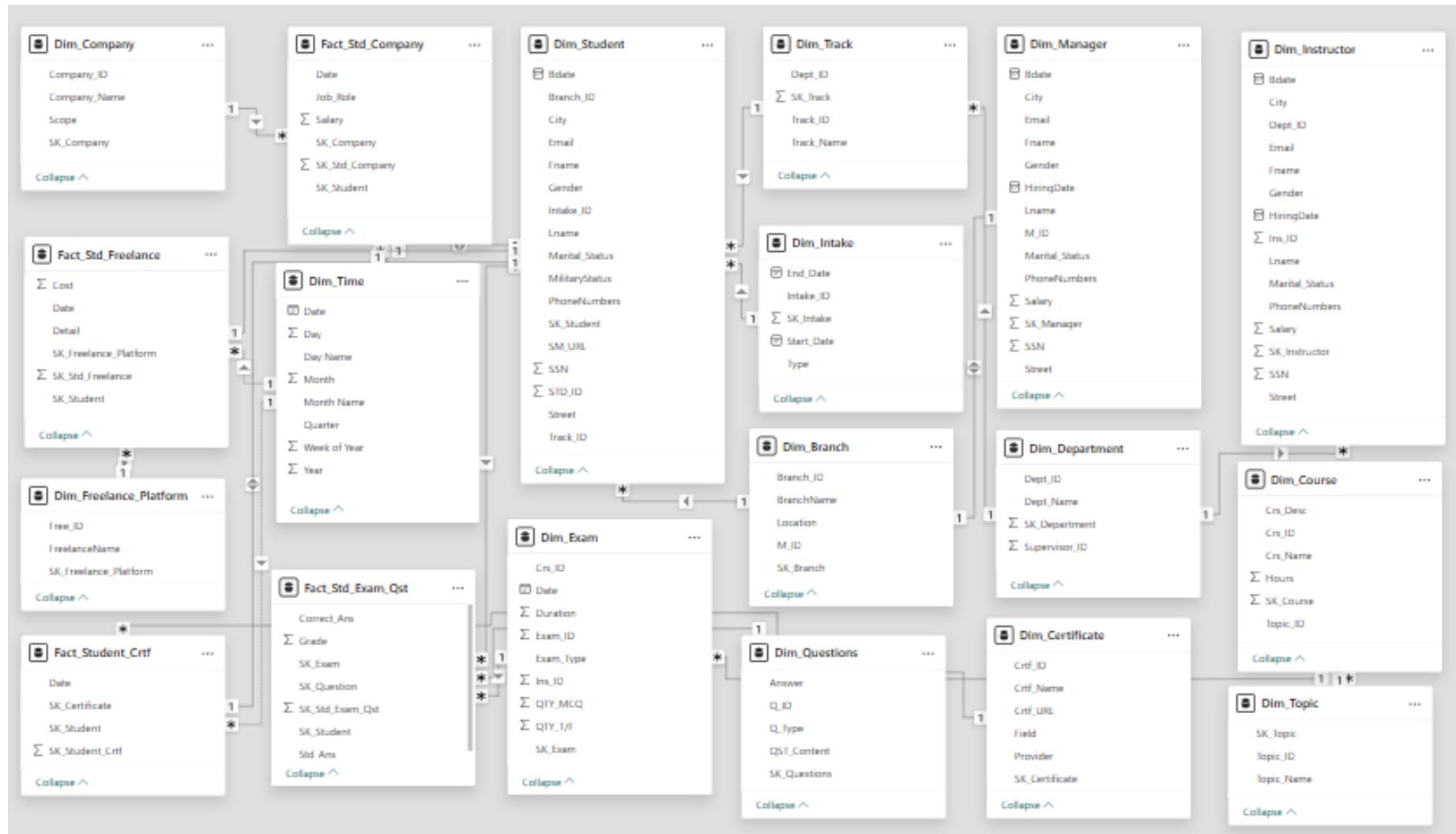


TM

# Data Integration (SSIS)



# Data Modeling



# Data Analysis & Visualization (Dashboards)



## ➤ Purpose:

- Provide insightful and interactive visual summaries to support data-driven decisions for students' performance and system usage.

## ➤ Tool Used:

- **Power BI Desktop** — used to build dynamic dashboards based on the examination system data.

## ➤ Data Source:

- SQL Server database (Galaxy Schema model)
- Data extracted through optimized queries

## ➤ Visualization Features:

- Slicers for filtering by Department, Track, Course, Exam, or Instructor
- Drillthrough support for deeper insights
- Measures and KPIs using DAX (e.g., student count, top performers, pass rates)



# Instructor Details Dashboard



BranchName

Dept\_Name

Instructors Details

Courses Details

Certificate Details

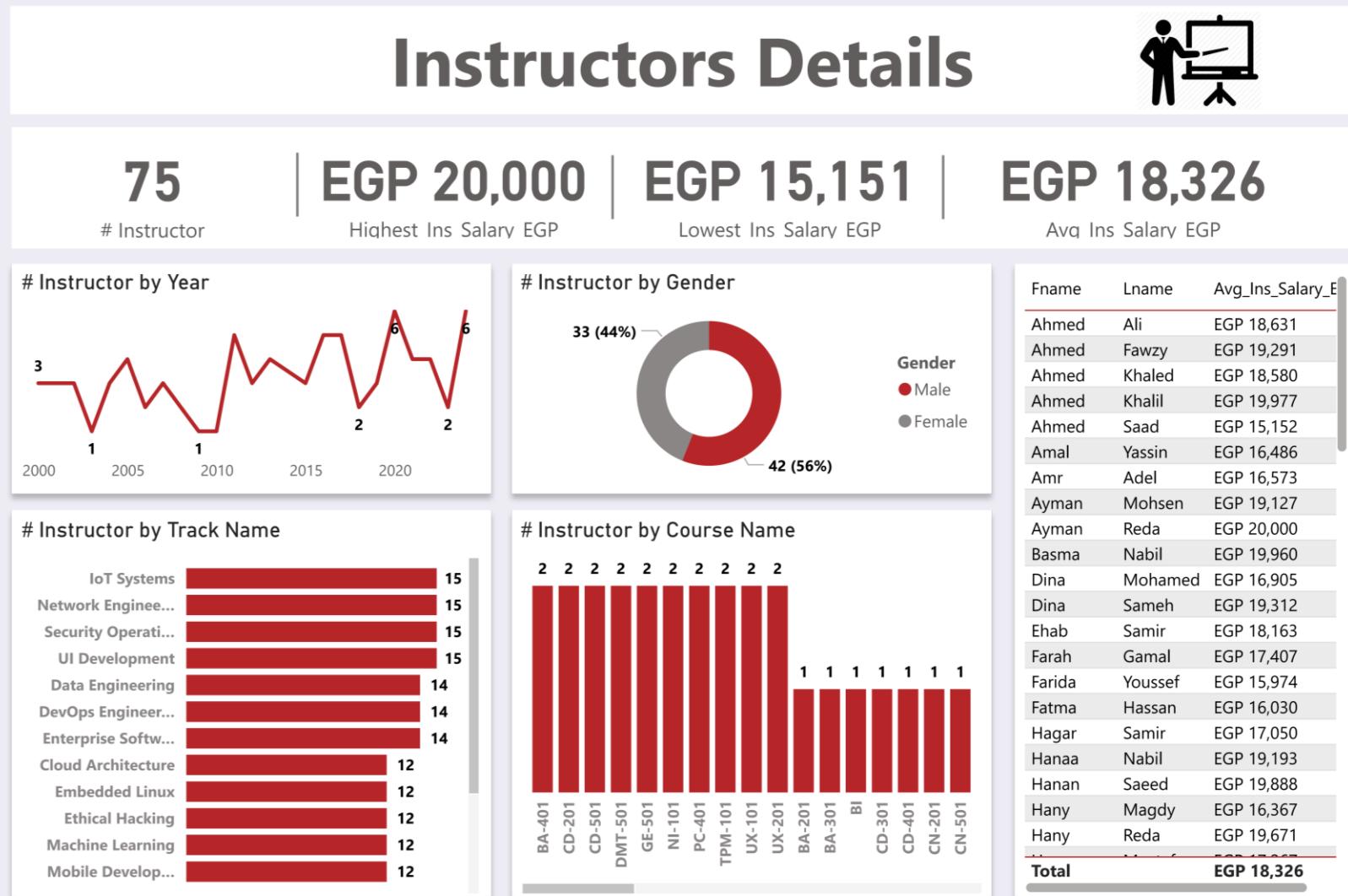
Students Details

Students Info Details

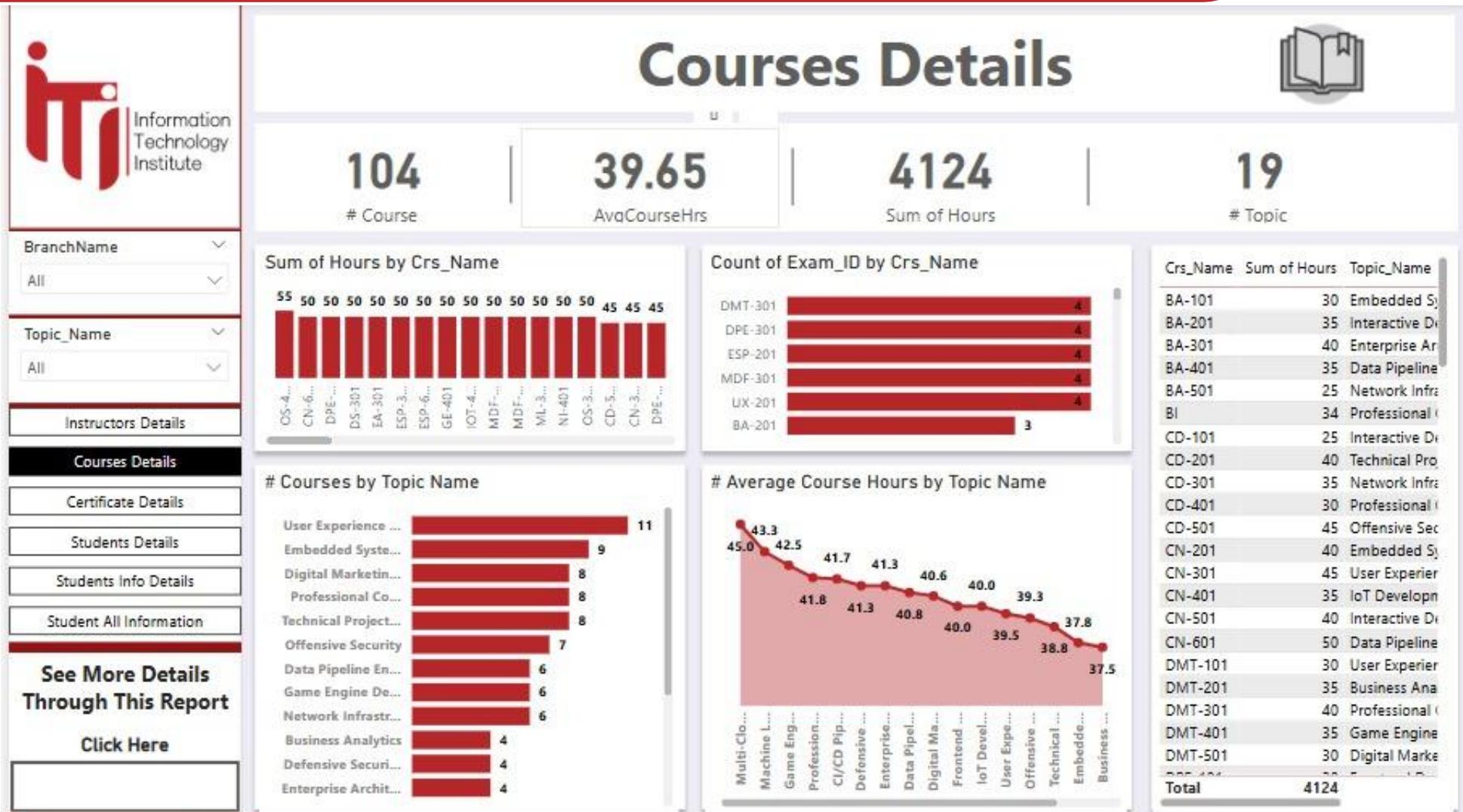
Student All Information

**See More Details  
Through This Report**

**Click Here**



# Courses Details Dashboard



# Certificate Details Dashboard



BranchName  
All

Track\_Name  
All

Instructors Details

Courses Details

Certificate Details

Students Details

Students Info Details

Student All Information

**See More Details  
Through This Report**

**Click Here**

## Certificate Details



15

# Certificate

1001

Total Certifications

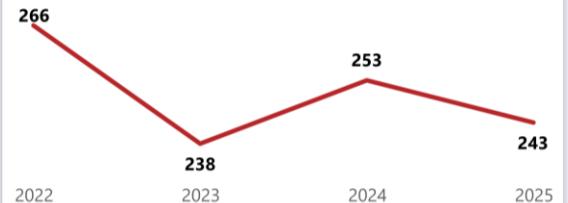
1001

Students with Certification

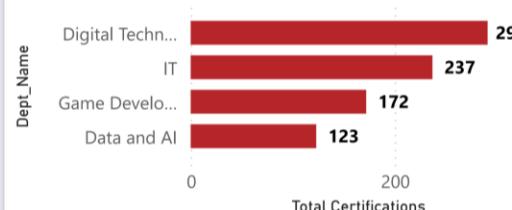
42.60

Certification %

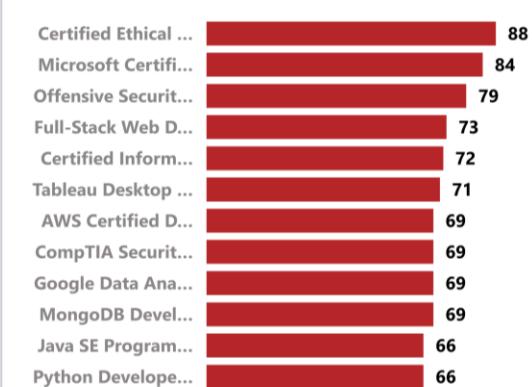
### Total Certifications by Year



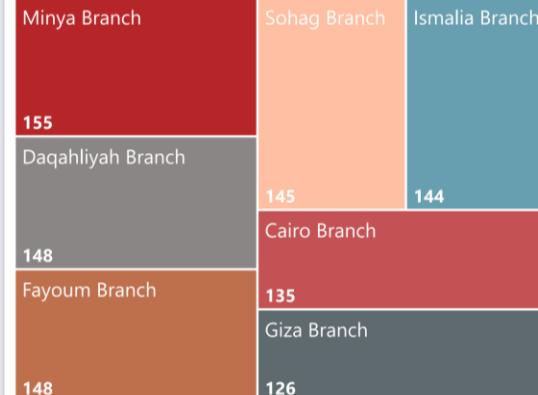
### Total Certifications by Dept\_Name



### Total Certificates by the Provider



### Total Certificates by the Branch



Crtf\_Name

- AWS Certified Data Analytics - Specialty
- Certified Ethical Hacker (CEH)
- Certified Information Systems Security Professional (CISSP)
- CompTIA Security+
- Full-Stack Web Development Certificate
- Google Data Analytics Professional Certificate
- Java SE Programmer Certification (OCPJP)
- Microsoft Certified: Azure Developer Associate
- Microsoft Certified: Power BI Data Analyst
- MongoDB Developer Certification
- Offensive Security Certified Professional (OSCP)
- Oracle Database Administrator Certified Associate
- Python Developer Certification (PCEP)
- Tableau Desktop Specialist
- Total

# Students Details Dashboard



# Students Info Details Dashboard



BranchName  
All

Dept\_Name  
All

Instructors Details

Courses Details

Certificate Details

Students Details

Students Info Details

Student All Information

**See More Details  
Through This Report**

**Click Here**

## Students Info Details



**2350**

Count of STD\_ID

**1001**

Students with Certification

**1000**

# Std Freelance Jobs

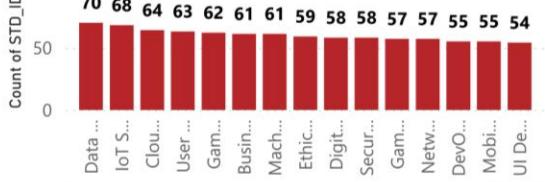
**1000**

# Students in Companies

### Count of STD\_ID by Track\_Name



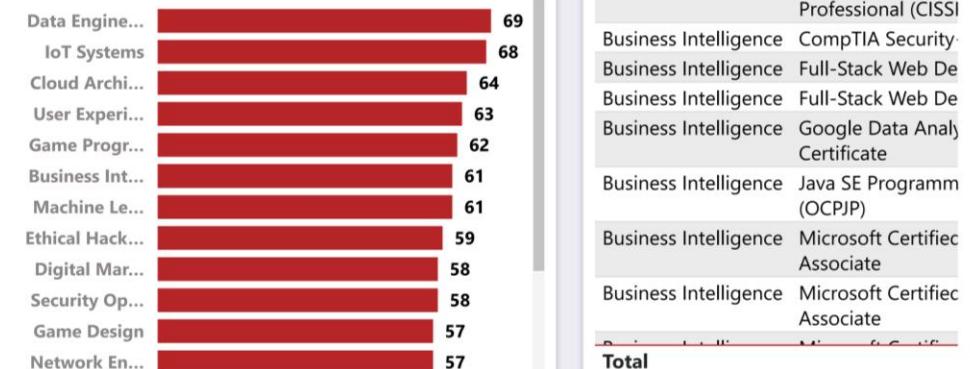
### Count of STD\_ID by Track\_Name with Certificates



### Count of STD by Track Name with Freelance



### Count of STD by Track Name With Company



Track\_Name      Crtf\_Name

Business Intelligence	Certified Data Analyst (CISSI)
Business Intelligence	AWS Certified Data Analyst
Business Intelligence	AWS Certified Data Engineer
Business Intelligence	Certified Ethical Hacker
Business Intelligence	Certified Ethical Hacker (CISSI)
Business Intelligence	Certified Information Security Professional (CISSI)
Business Intelligence	Certified Information Security Professional (CISSI)
Business Intelligence	Certified Information Security Professional (CISSI)
Business Intelligence	Certified Information Security Professional (CISSI)
Business Intelligence	CompTIA Security+
Business Intelligence	Full-Stack Web Development
Business Intelligence	Full-Stack Web Development
Business Intelligence	Google Data Analytics Certificate
Business Intelligence	Java SE Programm (OCPJP)
Business Intelligence	Microsoft Certified Associate
Business Intelligence	Microsoft Certified Associate

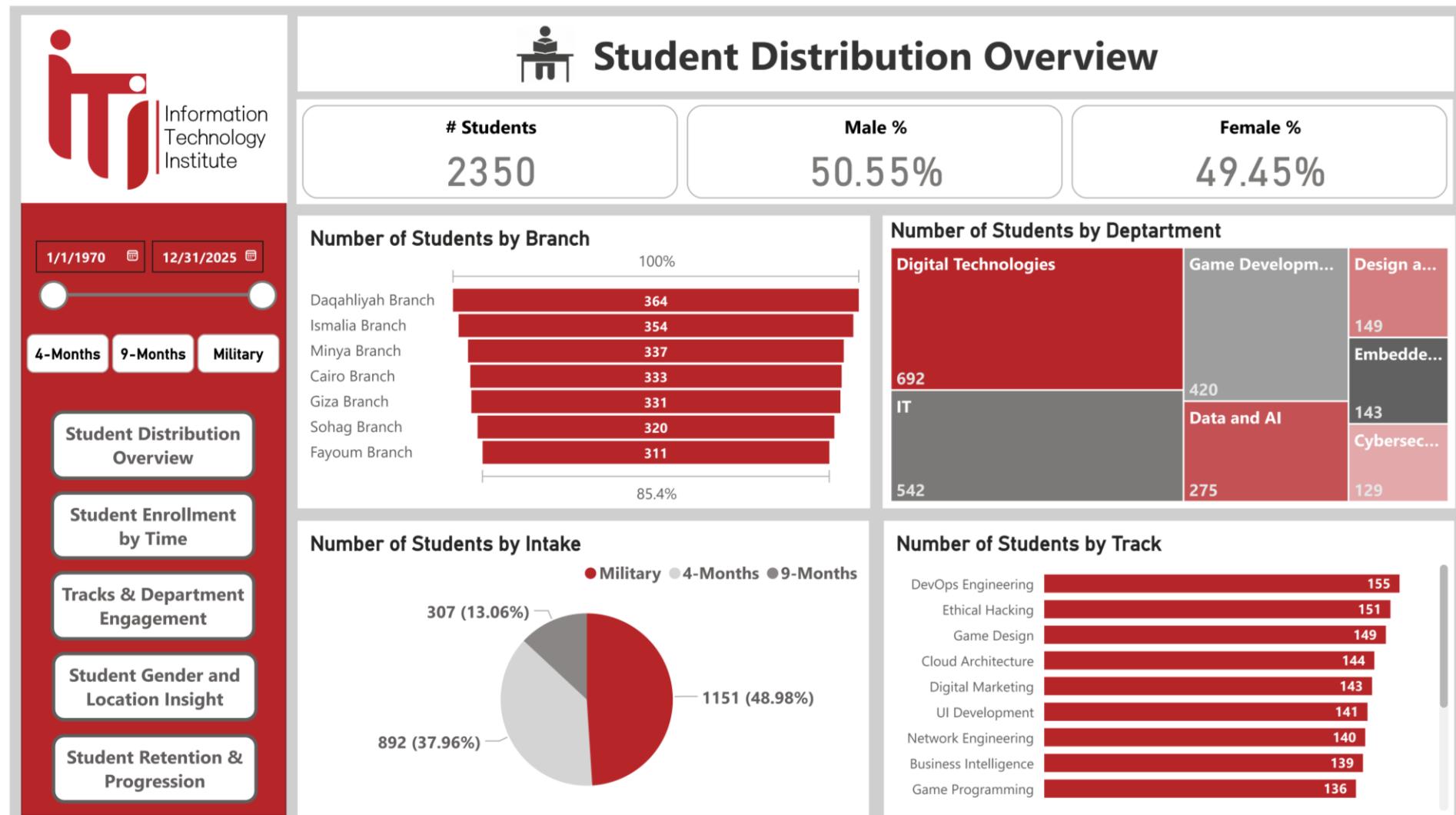
Total

# Student Details DrillThrough

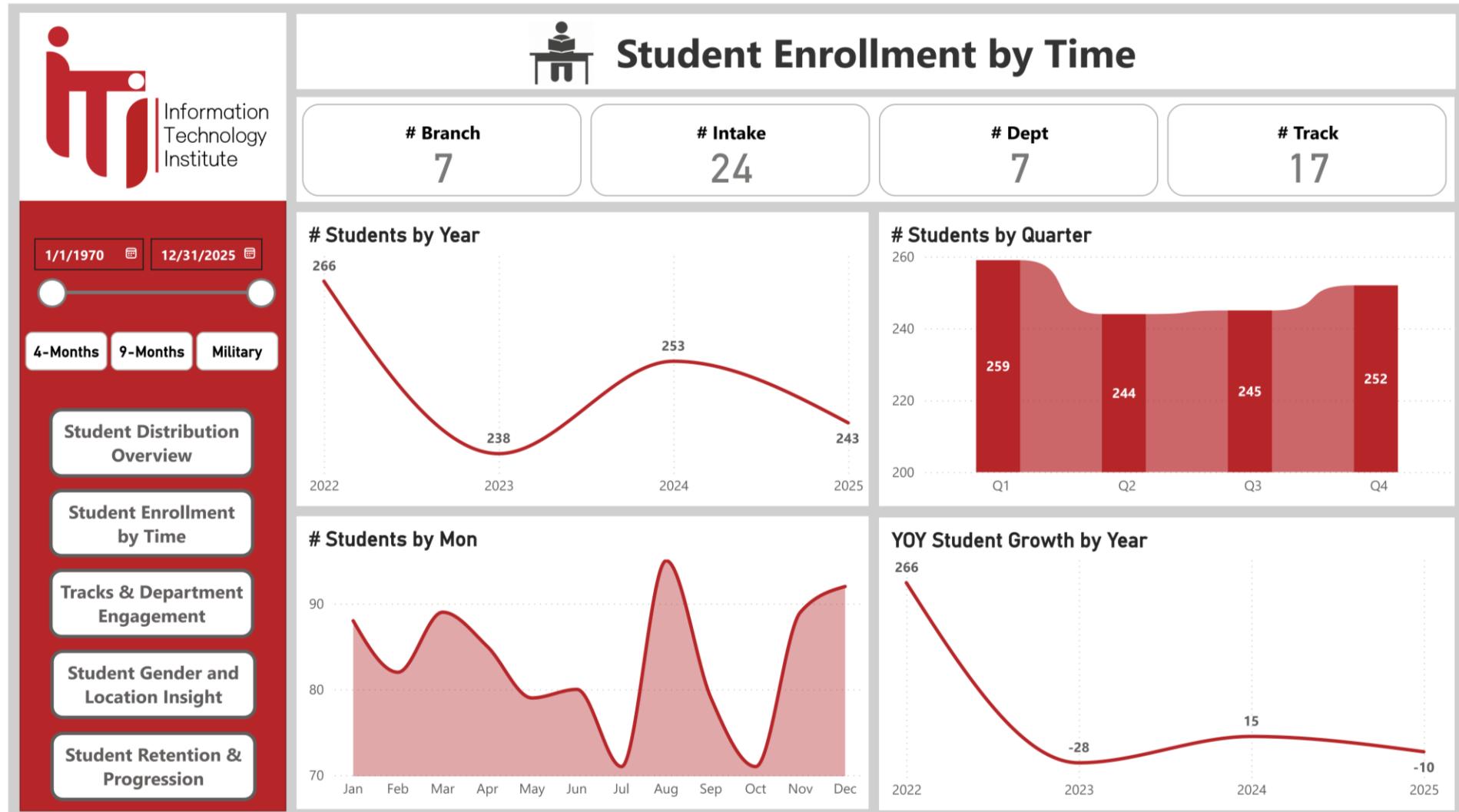
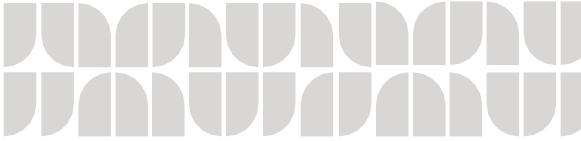


STD_ID	Fname	Lname	Gender	Bdate	Email	Marital_Status	MilitaryStatus	Street	City	SM_URL	BranchName	Dept_Name	Trad
1	Ahmed	Ali	Male	Thursday, March 22, 2001	ahmed.ali@gmail.com	Married	Completed	AbbasElAkkadSt	Cairo	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
2	Mostafa	Hassan	Male	Thursday, May 12, 1994	mostafa.hassan@gmail.com	Married	Postponed	ElHaramSt	Giza	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
3	Mahmoud	Ibrahim	Male	Monday, July 26, 1999	mahmoud.ibrahim@gmail.com	Married	Exempted	ElTahrirSt	Alexandria	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
5	Fatma	Hassan	Female	Saturday, November 15, 1980	fatma.hassan@gmail.com	Married	Exempted	RamsisSt	Mansoura	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
6	Omar	Khaled	Male	Tuesday, April 18, 2000	omar.khaled@gmail.com	Divorced	Completed	EINasrSt	Assiut	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
7	Salma	Youssef	Female	Tuesday, September 09, 1997	salma.youssef@gmail.com	Single	Completed	ElThawraSt	Suez	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
8	Tarek	Nasser	Male	Thursday, January 23, 1975	tarek.nasser@gmail.com	Divorced	Completed	EINasrSt	Luxor	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
9	Hanan	Saeed	Female	Sunday, December 02, 1979	hanan.saeed@gmail.com	Divorced	Exempted	ElGeishSt	PortSaid	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
10	Karim	Mostafa	Male	Wednesday, August 14, 1996	karim.mostafa@gmail.com	Single	Completed	AbbasElAkkadSt	Giza	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
11	Rania	Adel	Female	Saturday, June 19, 1982	rania.adel@gmail.com	Married	Postponed	EINasrSt	Alexandria	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
12	Nour	Hisham	Female	Saturday, March 25, 1995	nour.hisham@gmail.com	Married	Exempted	ElThawraSt	Cairo	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
13	Ehab	Samir	Male	Sunday, July 05, 1998	ehab.samir@gmail.com	Single	Postponed	ElGeishSt	Tanta	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
14	Mona	Reda	Female	Tuesday, February 14, 1978	mona.reda@gmail.com	Single	Postponed	ElTahrirSt	Mansoura	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
15	Sherif	Gamal	Male	Tuesday, October 30, 1973	sherif.gamal@gmail.com	Divorced	Completed	RamsisSt	Assiut	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
16	Hossam	Farid	Male	Saturday, November 27, 1999	hossam.farid@gmail.com	Divorced	Exempted	ElThawraSt	Suez	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
17	Dina	Sameh	Female	Wednesday, January 09, 2002	dina.sameh@gmail.com	Divorced	Exempted	AbbasElAkkadSt	Luxor	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
18	Ahmed	Khalil	Male	Thursday, May 15, 1997	ahmed.khalil@gmail.com	Single	Exempted	EINasrSt	PortSaid	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
19	Laila	Fathy	Female	Saturday, August 08, 1981	laila.fathy@gmail.com	Married	Postponed	ElHaramSt	Cairo	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
20	Amr	Adel	Male	Wednesday, June 21, 2000	amr.adel@gmail.com	Divorced	Postponed	ElGeishSt	Alexandria	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
21	Nada	Mostafa	Female	Sunday, October 13, 1996	nada.mostafa@gmail.com	Divorced	Exempted	RamsisSt	Giza	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
22	Samir	Helmy	Male	Saturday, September 17, 1977	samir.helmy@gmail.com	Divorced	Completed	EINasrSt	Tanta	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
23	Basma	Nabil	Female	Friday, April 30, 1976	basma.nabil@gmail.com	Married	Exempted	ElThawraSt	Mansoura	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
24	Khaled	Mohsen	Male	Tuesday, December 12, 1995	khaled.mohsen@gmail.com	Divorced	Exempted	ElHaramSt	Assiut	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
25	Rasha	Saad	Female	Saturday, February 28, 1998	rasha.saad@gmail.com	Divorced	Exempted	ElTahrirSt	Suez	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
26	Youssef	Tamer	Male	Tuesday, July 08, 1997	youssef.tamer@gmail.com	Single	Postponed	AbbasElAkkadSt	Luxor	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
27	Hany	Reda	Male	Friday, May 20, 1983	hany.reda@gmail.com	Married	Postponed	ElGeishSt	PortSaid	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
28	Mariam	Hatem	Female	Thursday, September 02, 1999	mariam.hatem@gmail.com	Single	Postponed	EINasrSt	Cairo	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
30	Ibrahim	Adel	Male	Saturday, May 18, 2002	ibrahim.adel@gmail.com	Married	Completed	RamsisSt	Cairo	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
31	Sara	Mahmoud	Female	Thursday, November 25, 1999	sara.mahmoud@gmail.com	Single	Postponed	AbbasElAkkadSt	Giza	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
33	Amal	Yassin	Female	Friday, March 21, 1975	amal.yassin@gmail.com	Divorced	Completed	ElGeishSt	Tanta	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
34	Nader	Hisham	Male	Monday, September 14, 1998	nader.hisham@gmail.com	Single	Completed	EINasrSt	Mansoura	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
35	Rami	Khaled	Male	Sunday, January 30, 2000	rami.khaled@gmail.com	Divorced	Exempted	ElThawraSt	Assiut	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
36	Mona	Hossam	Female	Saturday, August 19, 1978	mona.hossam@gmail.com	Divorced	Completed	RamsisSt	Suez	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus
37	Ahmed	Saad	Male	Monday, April 07, 1997	ahmed.saad@gmail.com	Single	Completed	ElHaramSt	Luxor	<a href="#">Edit</a>	Minya Branch	Data and AI	Bus

# Student Distribution Overview Dashboard



# Student Enrollment by Time Dashboard



# Tracks & Department Engagement Dashboard





Information  
Technology  
Institute

1/1/1970  12/31/2025

4-Months 9-Months Military

**Student Distribution Overview**

**Student Enrollment by Time**

**Tracks & Department Engagement**

**Student Gender and Location Insight**

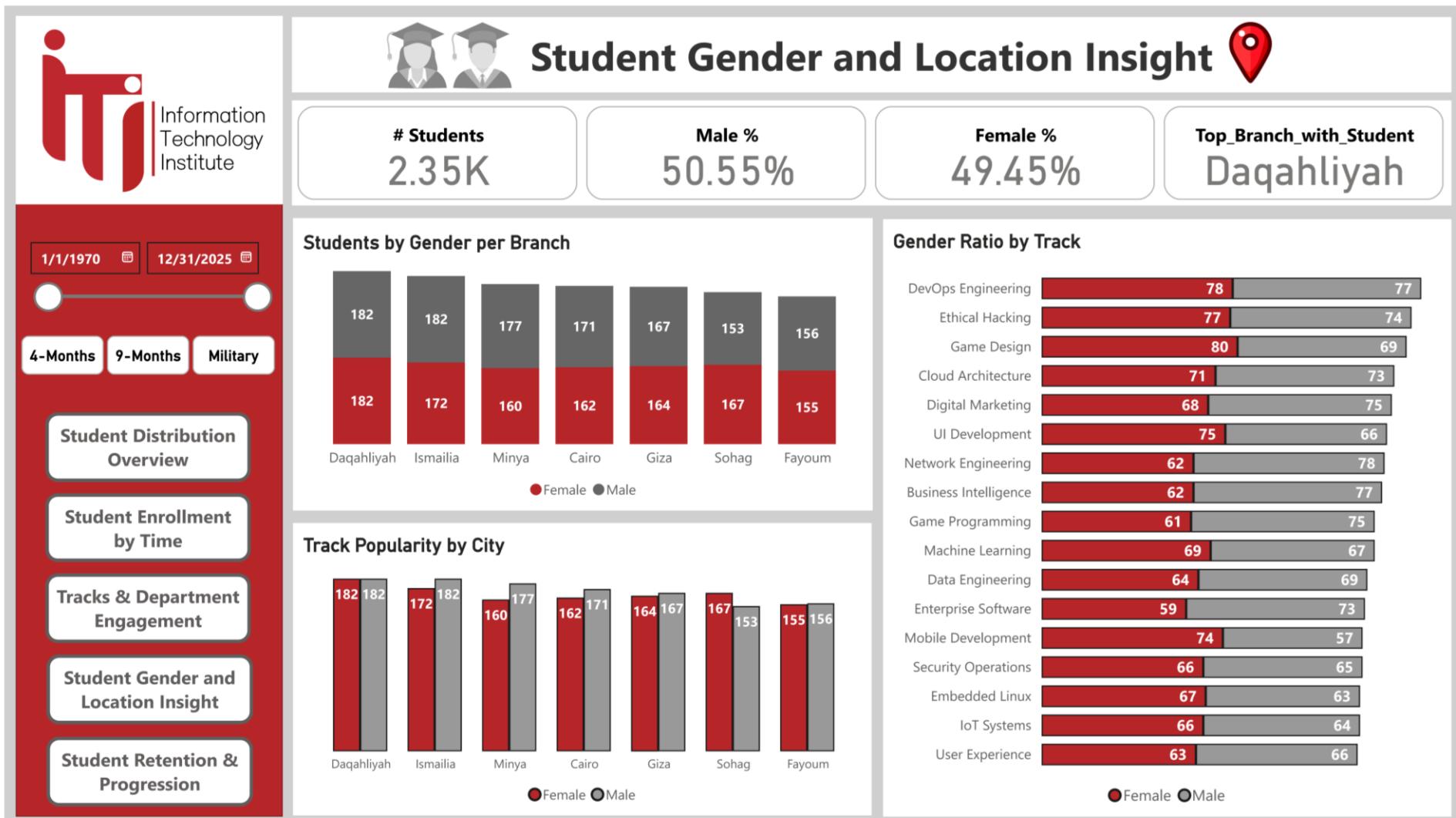
**Student Retention & Progression**

## Tracks & Department Engagement

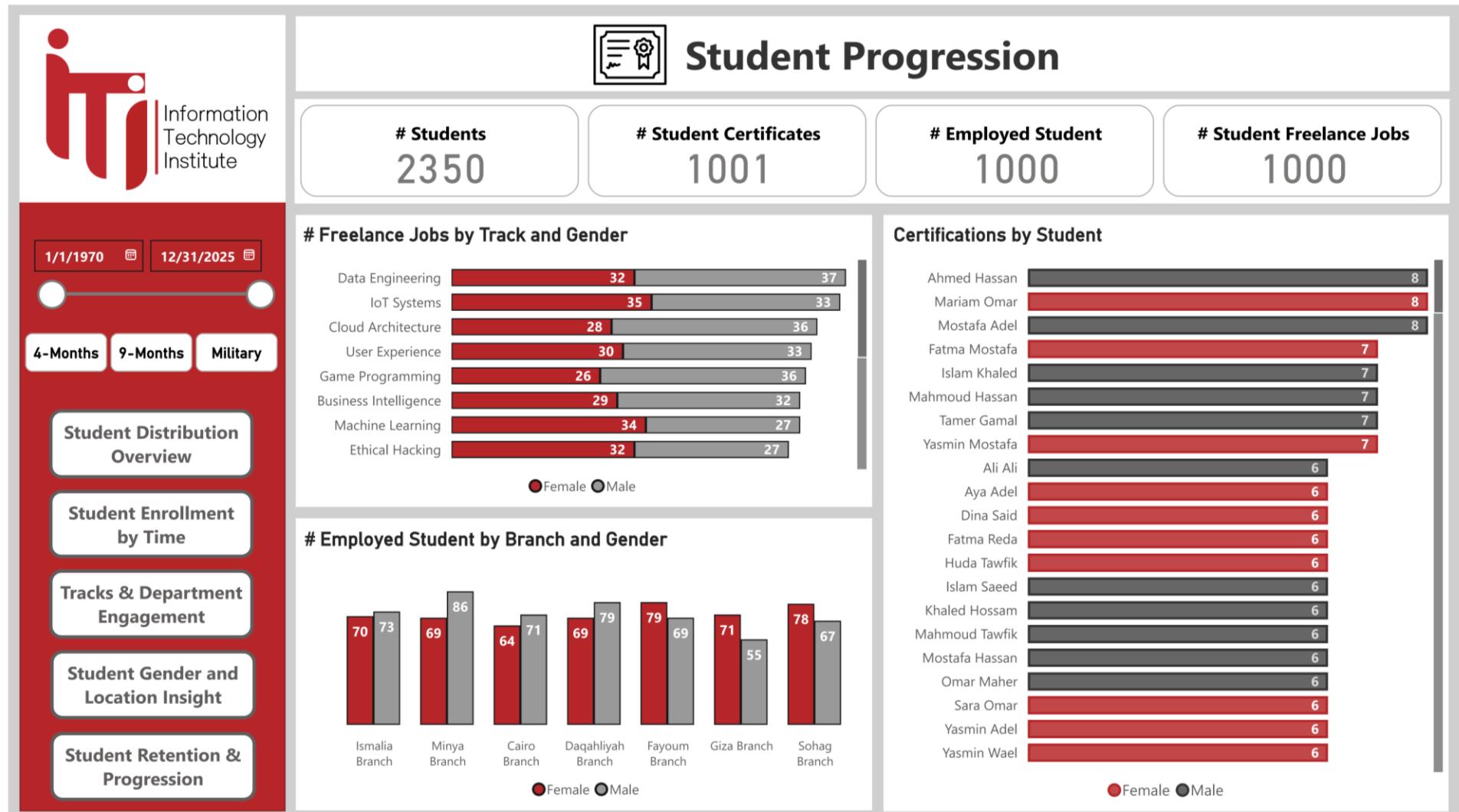
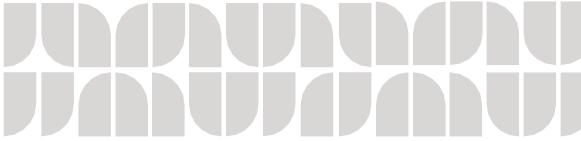
 # Track 17 # Dept 7 Top Track with Student DevOps Engineering Top Department with Student IT Overall Growth 1.35K

Number of Tracks by Department	Number of Students by Track	Number of Students by Department	Number of Students by Branch
Digital Technologies 5	DevOps Engineering 155	Digital Technologies 2.43M	Daqahliyah 364
IT 4	Ethical Hacking 151	IT 1.97M	Minya 337
Game Development 3	Game Design 149	Game Development 1.45M	Giza 331
Data and AI 2	Cloud Architecture 144	Data and AI 0.94M	Sohag 320
Cybersecurity 1	Digital Marketing 143	Design and UX 0.53M	Ismailia 354
Design and UX 1	UI Development 141	Embedded Systems 0.50M	Cairo 333
Embedded Systems 1	Network Engineering 140	Cybersecurity 0.47M	Fayoum 311

# Student Gender and Location Insight Dashboard



# Student Progression Dashboard



# Student Certificate Details DrillThrough



**Students Certificate Details**

FullName	AWS Certified Data Analytics - Specialty	Certified Ethical Hacker (CEH)	Certified Information Systems Security Professional (CISSP)	CompTIA Security+	Full-Stack Web Development Certificate	Google Data Analytics Professional Certificate	Java SE Programmer Certification (OCPJP)	Microsoft Certified: Azure Developer Associate	Microsoft Power BI
Ahmed Ali				1			1		
Ahmed Ezzat									
Ahmed Gamal						1			
Ahmed Hani								1	
Ahmed Hassan	1			1	1				1
Ahmed Helmy									
Ahmed Khaled				1					1
Ahmed Khalil				1					
Ahmed Magdy		2							
Ahmed Maher						1			
Ahmed Mahmoud							1		
Ahmed Mostafa	1	1		1			1		
Ahmed Omar									
Ahmed Saad			1						
Ahmed Sabry									
Ahmed Saeed								1	
Ahmed Said	1								
Ahmed Sayed									
Ahmed Tarek									1
Ahmed Tawfik				1				1	1
Ahmed Wael								1	
Ali Adel				2			1		
Ali Ali					3			1	
Ali Ezzat									
Ali Gamal							1		
Ali Hassan									
Ali Maher			1					1	
Ali Mostafa									
<b>Total</b>	<b>69</b>	<b>88</b>	<b>72</b>	<b>69</b>	<b>73</b>	<b>69</b>	<b>66</b>	<b>65</b>	

# Students Freelance Details DrillThrough



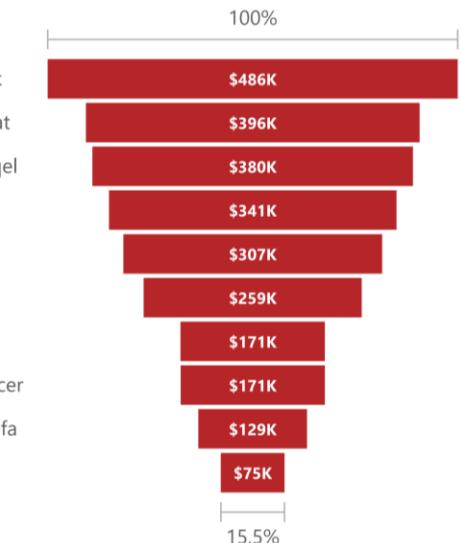
## Students Freelance Details

FullName	baqala	elhareefa	fiver	freelancer	guru	invato	kafeel	khamsat	mostaqel	upwork	Total
Ahmed Ali	\$501		\$1,533	\$2,199						\$4,172	\$4,730 <b>\$13,135</b>
Ahmed Ezzat			\$1,051								<b>\$1,051</b>
Ahmed Gamal				\$2,036						\$4,280	<b>\$6,316</b>
Ahmed Hani				\$3,865			\$3,547				<b>\$7,412</b>
Ahmed Hassan		\$2,452	\$1,557		\$2,735	\$3,145			\$3,994		\$9,623 <b>\$23,506</b>
Ahmed Helmy					\$2,160						<b>\$2,160</b>
Ahmed Khaled	\$666						\$3,326				<b>\$3,992</b>
Ahmed Khalil	\$575			\$2,266							<b>\$2,841</b>
Ahmed Magdy		\$1,095				\$5,680					<b>\$6,775</b>
Ahmed Maher									\$4,317		<b>\$4,317</b>
Ahmed Mahmoud			\$1,816				\$3,491				<b>\$5,307</b>
Ahmed Mostafa		\$1,322			\$2,383	\$2,990			\$3,727	\$4,238	<b>\$14,660</b>
Ahmed Omar					\$2,583						<b>\$2,583</b>
Ahmed Saad	\$650			\$2,086							<b>\$2,736</b>
Ahmed Sabry	\$865				\$2,546						<b>\$3,411</b>
Ahmed Saeed			\$1,578				\$3,269				<b>\$4,847</b>
Ahmed Said			\$2,389						\$4,699		<b>\$7,088</b>
Ahmed Sayed					\$2,671						<b>\$2,671</b>
Ahmed Tarek			\$1,697				\$3,383				<b>\$5,080</b>
Ahmed Tawfik						\$6,866	\$3,956				<b>\$10,822</b>
Ahmed Wael				\$3,939				\$3,691			<b>\$7,630</b>
Ali Adel								\$12,057			<b>\$12,057</b>
Ali Ali				\$2,092				\$3,707	\$4,478	\$14,134	<b>\$24,411</b>
Ali Ezzat					\$2,319						<b>\$2,319</b>
Ali Gamal	\$837		\$1,472					\$4,051			<b>\$6,360</b>

Track Name

## Business Intelligence

Sum of Cost by FreelanceName



# ITI System Details DrillThrough



Cairo

Daqahliyah

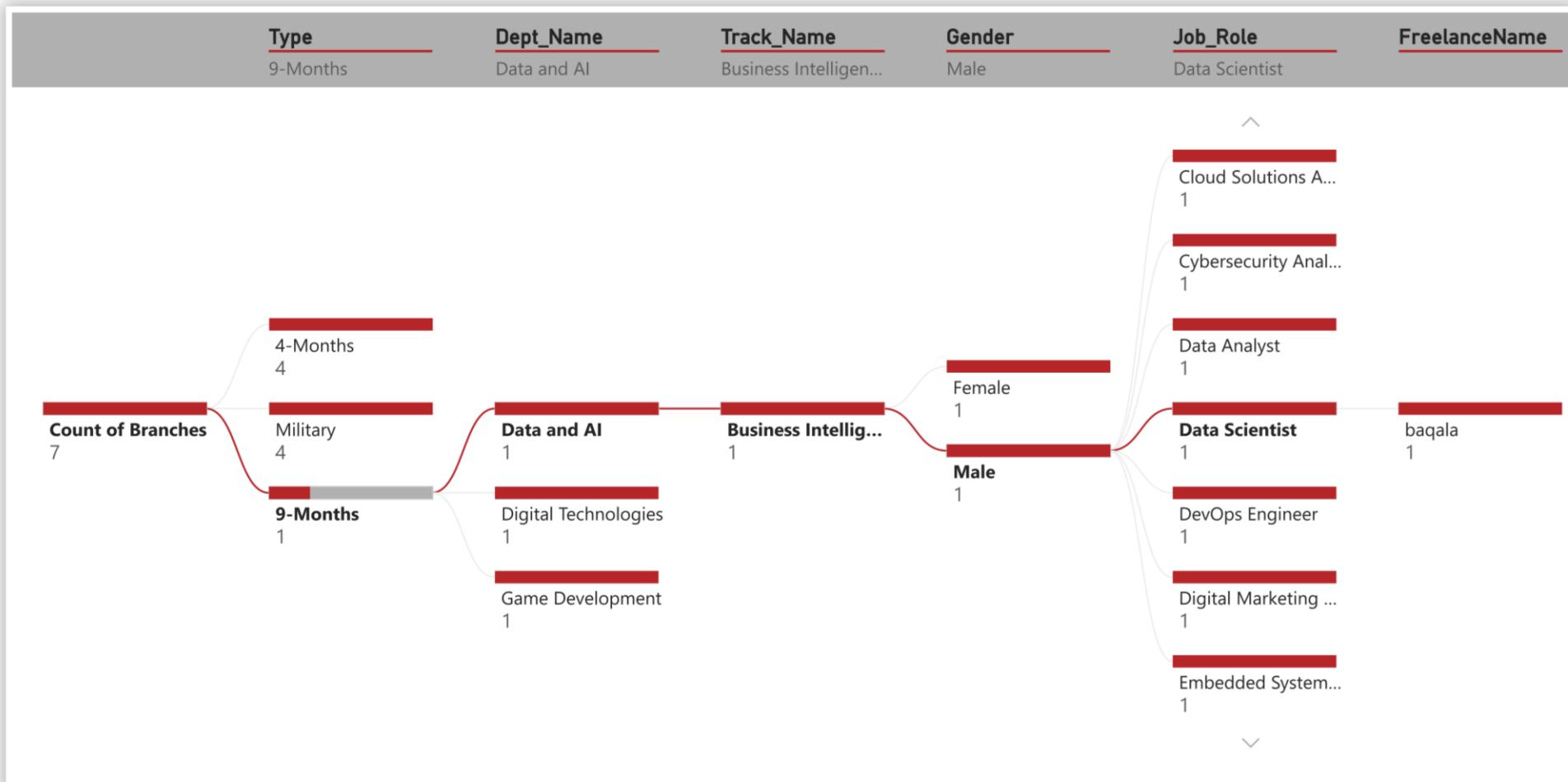
Fayoum

Giza

Ismailia

Minya

Sohag



# Student Employment Dashboard



## Student Employment

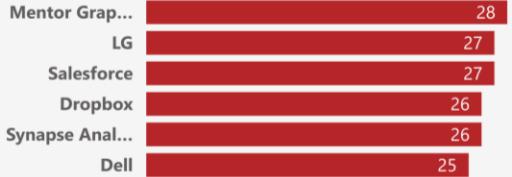


Number Job Roles by Scope



Scope	Count
International	51
Local	51

Companies by Number of Employed Students



Company	Students
Mentor Grap...	28
LG	27
Salesforce	27
Dropbox	26
Synapse Anal...	26
Dell	25

Number of Employed Students by Track



Track	Students
Data Enginee...	69
IoT Systems	68
Cloud Archit...	64
User Experie...	63
Game Progra...	62
Business Inte...	61

1000 # Students in Companies

13.27K Avg\_Std\_Salary

17.00K Highest\_Std\_Salary

Data Engineering Top Employed Track

Fname	Lname	Company_Name	Track_Name
Adel	Hamdy		Game Design
Ahmed	Adel		DevOps Engineering
Ahmed	Adel		Enterprise Software
Ahmed	Adel		Ethical Hacking
Ahmed	Adel		Game Programming
Ahmed	Adel		Mobile Development
Ahmed	Adel		UI Development
Ahmed	Ali		Cloud Architecture
Ahmed	Ali		Embedded Linux
Ahmed	Ali		Mobile Development
Ahmed	Ali		Network Engineering
Ahmed	Ali	Accenture	Business Intelligence
Ahmed	Ali	Dropbox	Business Intelligence
Ahmed	Ali	Huawei	Ethical Hacking
Ahmed	Ali	TCS	Machine Learning

inter...  
Local



# Freelance Financial Overview Dashboard

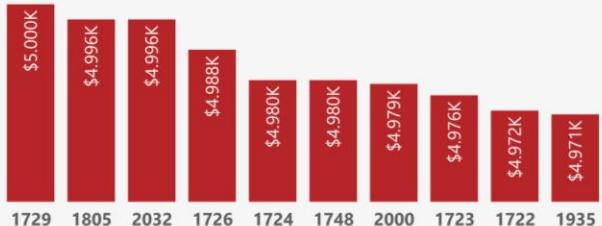


Information  
Technology  
Institute

## Freelance Financial Overview

# Freelance_Platform	Total Freelance Earnings	Highest_Freelance_Cost	Lowest_Freelance_Cost
10	2.72M	5.0K	501

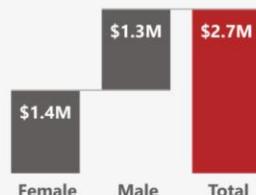
Total Student Earnings from Freelance Projects



Average Project Cost by Platform

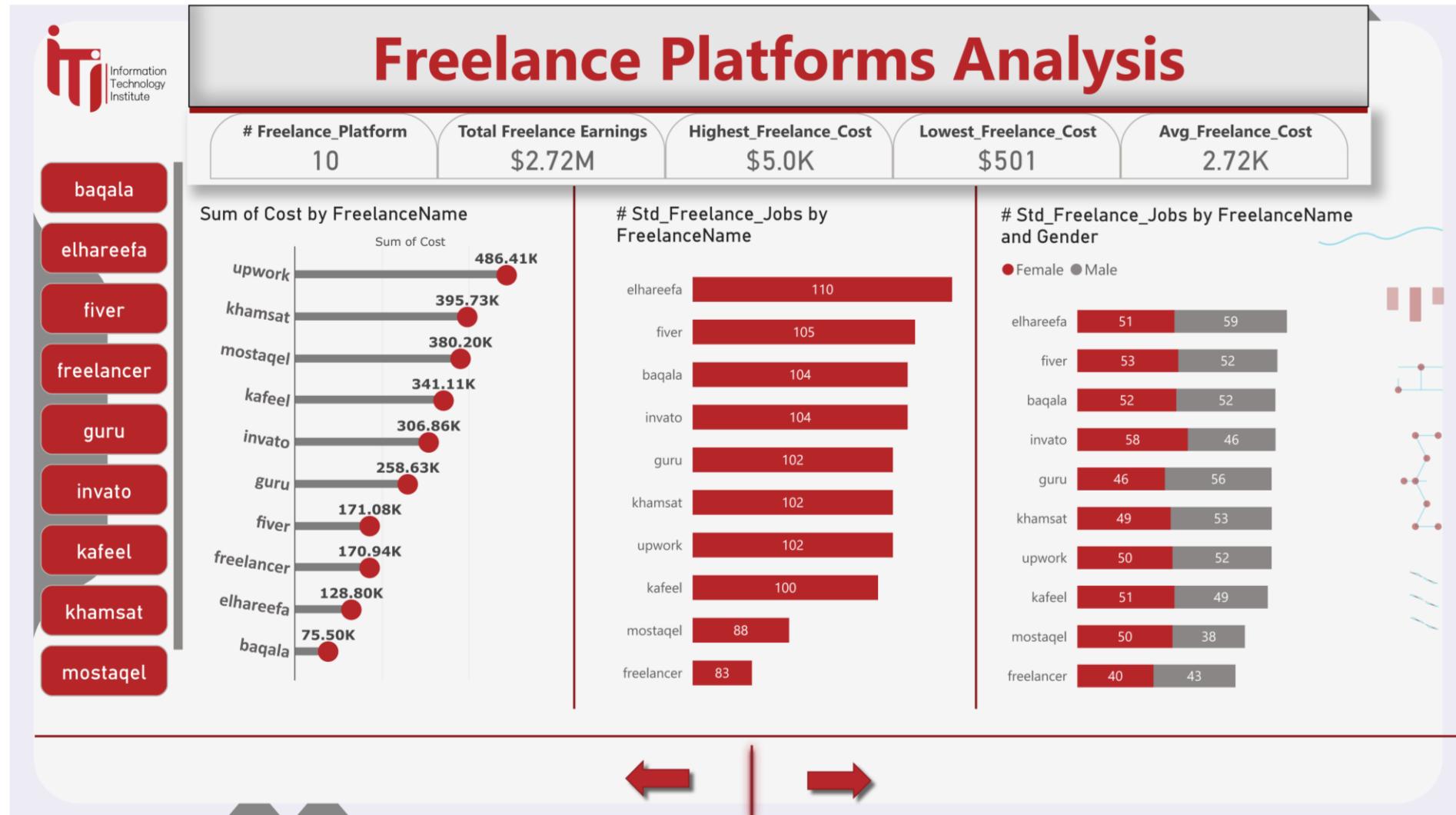


Number Job Roles by Scope

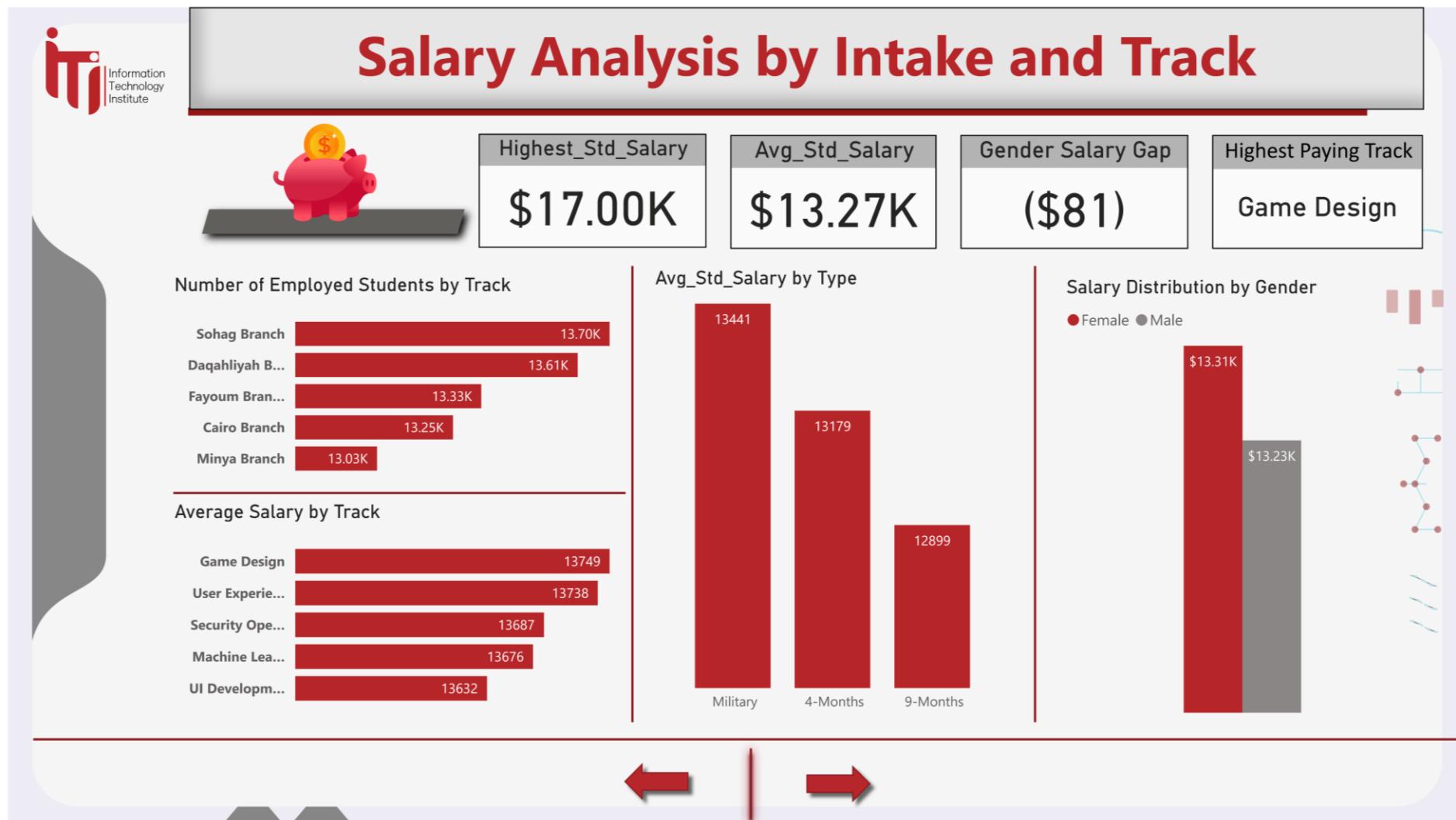


Fname	Lname	FreelanceName	Sum of Cost
Ahmed	Ali	baqala	\$501
Ahmed	Ali	fiver	\$1,533
Ahmed	Ali	freelancer	\$2,199
Ahmed	Ali	mostaqel	\$4,172
Ahmed	Ali	upwork	\$4,730
Ahmed	Ezzat	elhareefa	\$1,051
Ahmed	Gamal	freelancer	\$2,036
Ahmed	Gamal	mostaqel	\$4,280
Ahmed	Hani	freelancer	\$3,865
Ahmed	Hani	kafeel	\$3,547
Ahmed	Hassan	elhareefa	\$2,452
Ahmed	Hassan	fiver	\$1,557
Ahmed	Hassan	guru	\$2,735
Ahmed	Hassan	invato	\$3,145
Total			\$2,715,257

# Freelance Platforms Analysis Dashboard



# Salary Analysis by Intake and Track Dashboard



# Student Freelance Comparison Dashboard



- baqala
- elhareefa
- fiver
- freelancer
- guru
- invato
- kafeel
- khamsat
- mostaqel
- upwork
- Female
- Male

## Student Freelance Comparison



avg student earning

\$2.72K

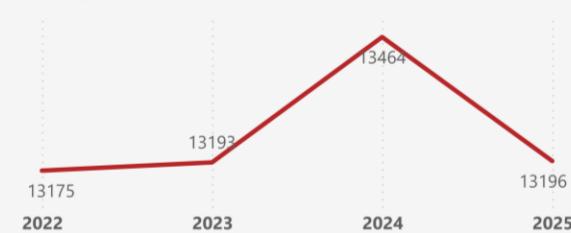
Highest\_Freelance\_Cost

5.0K

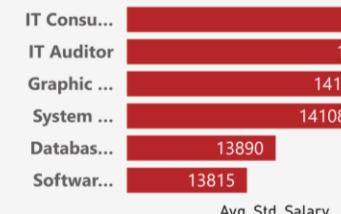
#Freelance Earning

\$2.72M

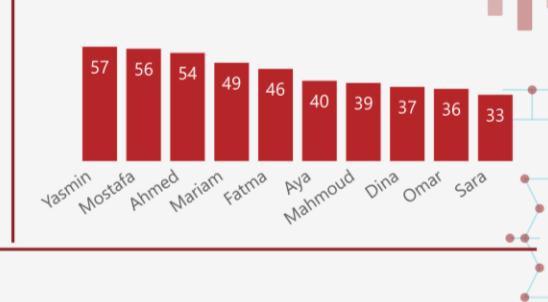
Salary Trend



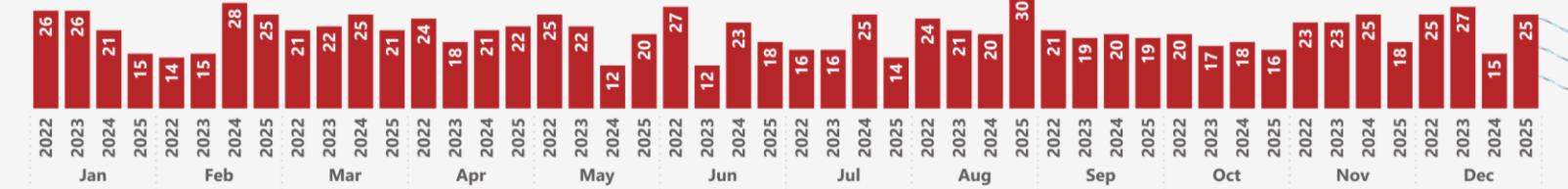
Avg Salary by Job Title



#Freelances by student



Number of freelance by month

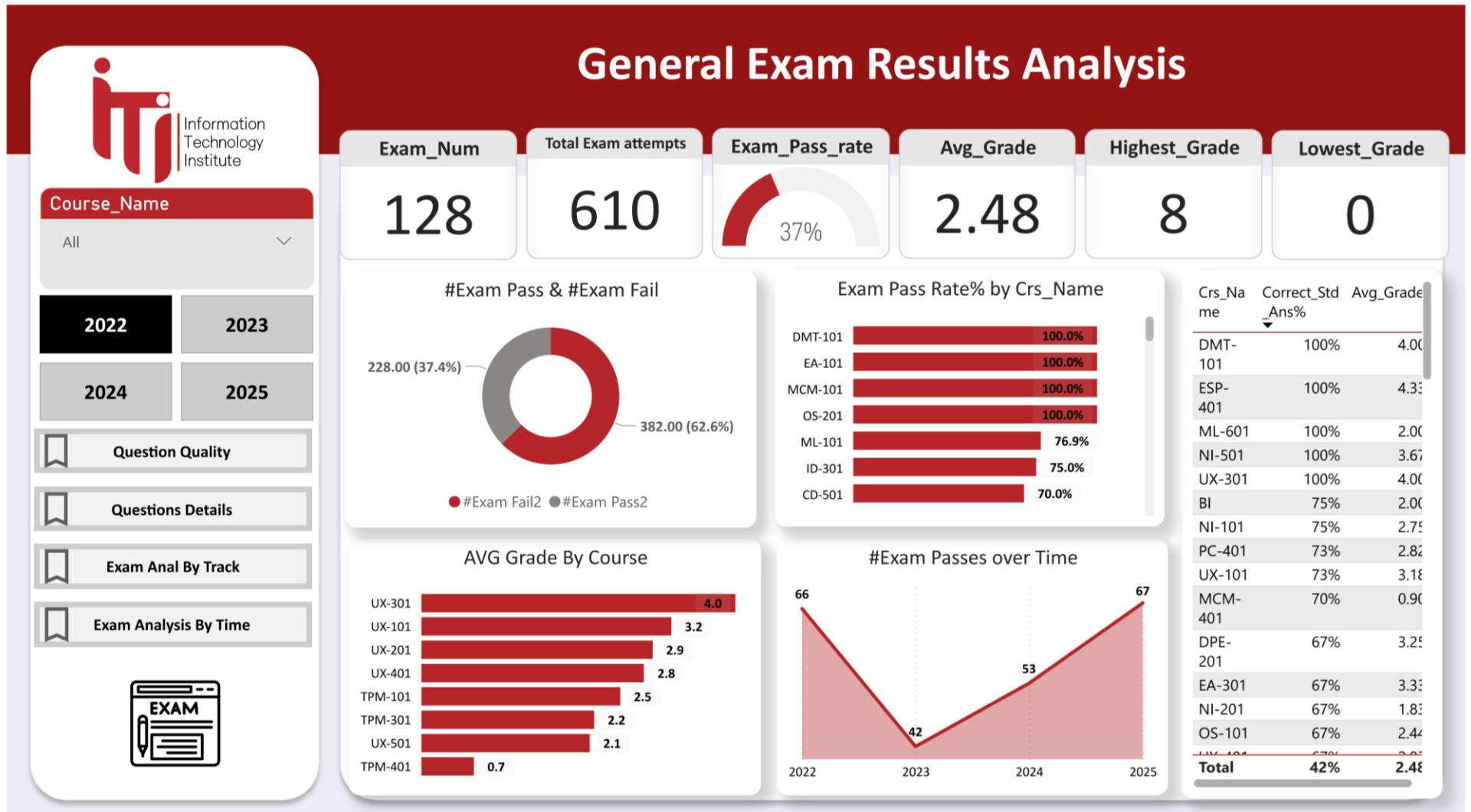


## Branches & Tracks Details DrillThrough

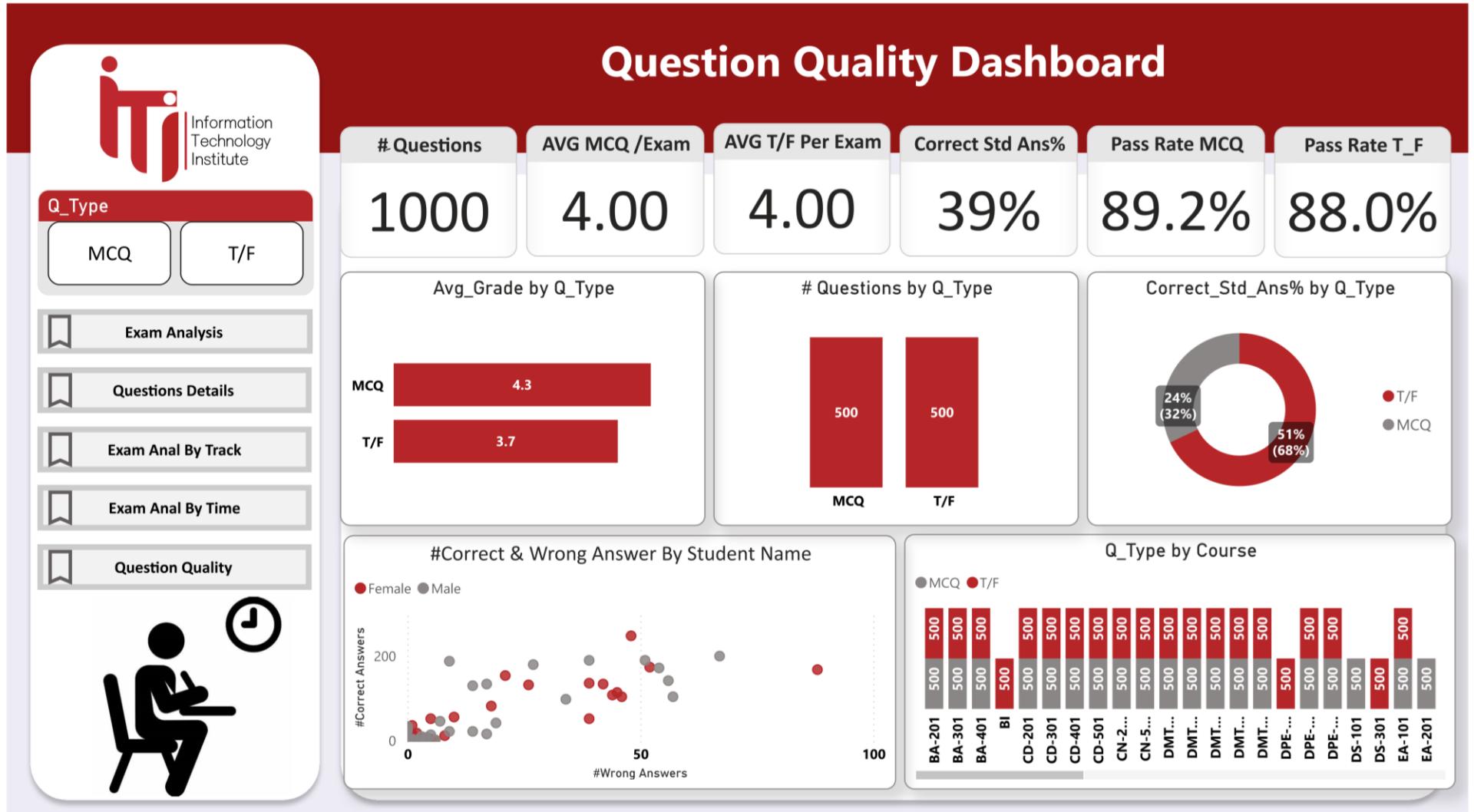


Track_Name	Cairo Branch	Daqahliyah Branch	Fayoum Branch	Sohag Branch	Total
Game Design		13,749.37			<b>13,749.37</b>
Game Programming		13,326.96	13,086.17		<b>13,280.35</b>
IoT Systems			13,010.96		<b>13,010.96</b>
Machine Learning			13,676.18		<b>13,676.18</b>
Mobile Development	13,125.42		13,901.43		<b>13,224.18</b>
Network Engineering	13,162.21				<b>13,162.21</b>
Security Operations	13,625.80			13,751.68	<b>13,686.57</b>
UI Development				13,632.43	<b>13,632.43</b>
User Experience				13,737.86	<b>13,737.86</b>
<b>Total</b>	<b>13,252.15</b>	<b>13,485.36</b>	<b>13,333.35</b>	<b>13,701.26</b>	<b>13,440.72</b>

# Question Quality Dashboard



# Question Quality Dashboard



# Question Details Dashboard



## Questions Details

Exam Anal By Time   Exam Analysis  
Exam Anal By Track   Question Quality

Year

All

### Top Challenging Questions

What does HTTPS stand for?

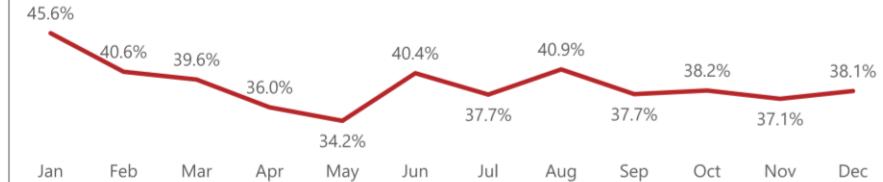
21.2%

Success\_Rate for Qst

Which practice improves web security?

22.1%

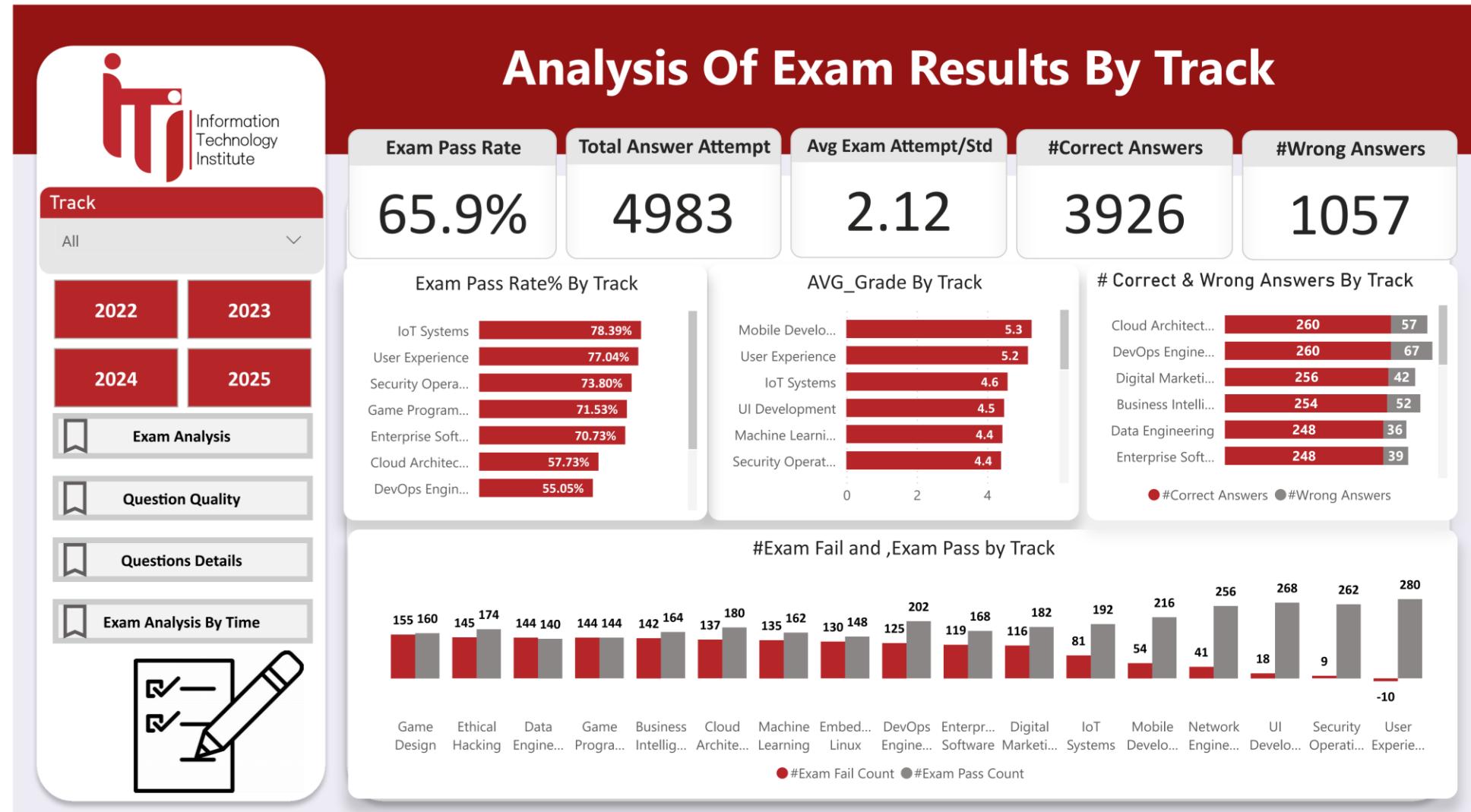
### Success\_Rate for Qst by Mon



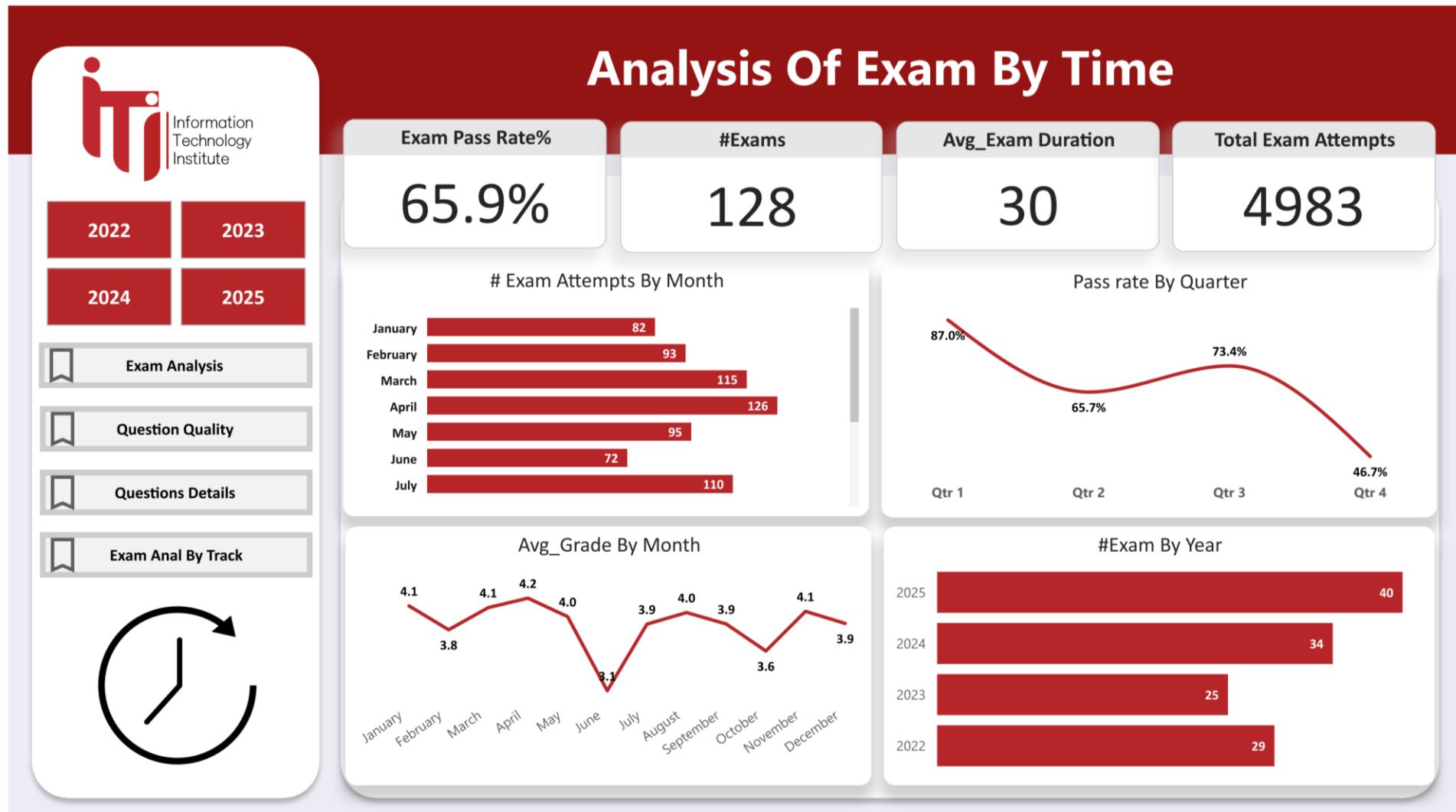
### Questions\_Details

QST_Content	Q_Type	Total Question Attempts	#Correct Answers	#Wrong Answers	Pass Rate T_F	Pass Rate MCQ	#Exam Fail	#Exam Pass Count
Which practice improves web security?	MCQ	1168	258	324	88.2%	186	396	
What does HTTPS stand for?	MCQ	868	184	250	88.9%	92	342	
What is a common web application vulnerability?	MCQ	828	240	174	90.3%	84	330	
What is the goal of cybersecurity?	MCQ	812	216	190	87.4%	108	298	
Which of the following is an example of multi-factor authentication?	MCQ	732	162	204	91.8%	82	284	
Encryption helps in securing communication.	T/F	644	280	42	87.3%	126	196	
Data breaches can be prevented by firewalls.	T/F	706	406	0	86.7%	165	188	
HTTPS provides more security than HTTP.	T/F	560	278	2	86.4%	104	176	
Cybersecurity involves only hardware protection.	T/F	582	266	25	86.9%	117	174	
Using strong passwords enhances account safety.	T/F	548	316	0	92.3%	100	174	
Malware is a physical threat to hardware.	T/F	556	290	0	90.6%	108	170	
Cybersecurity includes protecting networks and data.	T/F	598	286	13	87.6%	133	166	
Phishing attacks target software vulnerabilities.	T/F	506	242	11	87.0%	93	160	
<b>Total</b>		<b>10028</b>	<b>3926</b>	<b>1057</b>	<b>88.0%</b>	<b>1685</b>	<b>3298</b>	

# Analysis of Exam Results by Dashboard



# Analysis of Exam by Time Dashboard



# Thank You

