



Examination System

Power BI Development Track

Dec,2025

Agenda Overview

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ERD & Mapping

03

Database &
Stored Procedures

04

Reports (SSRS)

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Microsoft Azure

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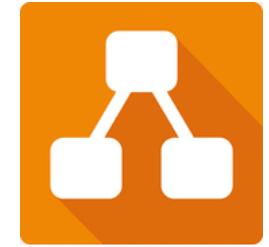
Website

09

What is Next

Our goal is to implement an Examination System that allows every member of the foundation to access their data easily. Instructors will be able to create exams and review student performance statistics, while students can enter exams and track their progress. In addition, the system will analyse the collected data and generate reports to monitor the progress of each branch across all intakes.

Tools used:



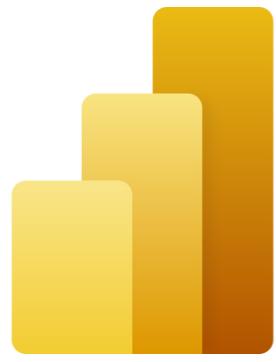
draw.io



Sql Server



Visual Studio



Power Bi



Python



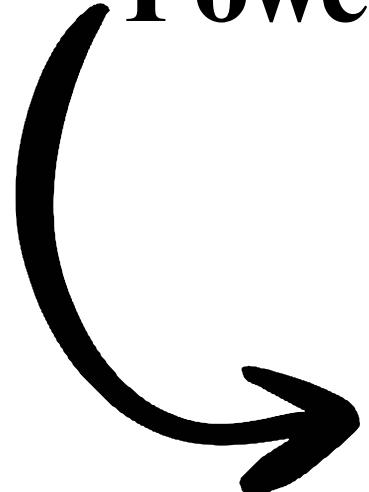
Microsoft Fabric



ChatGpt

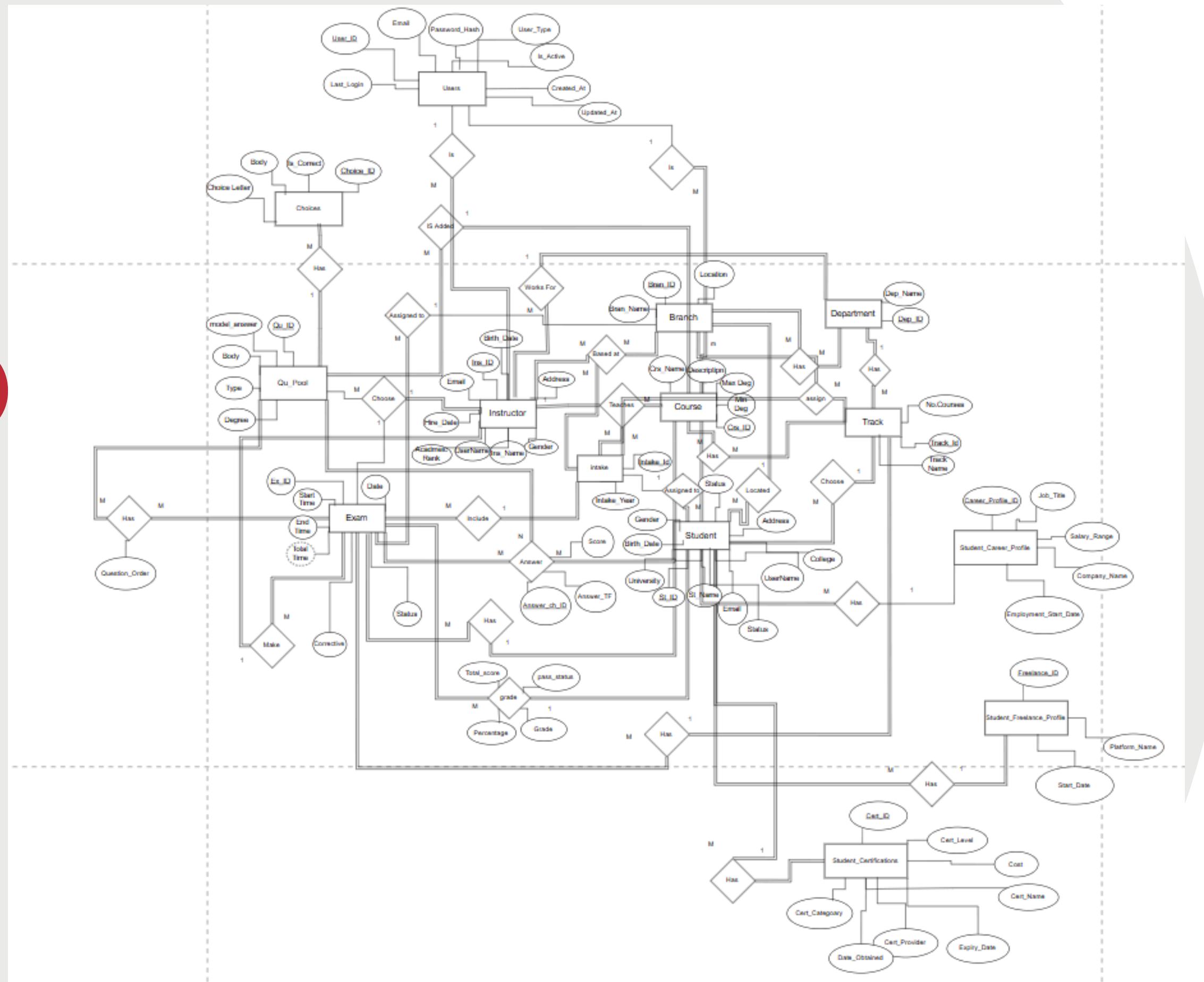


Microsoft Azure



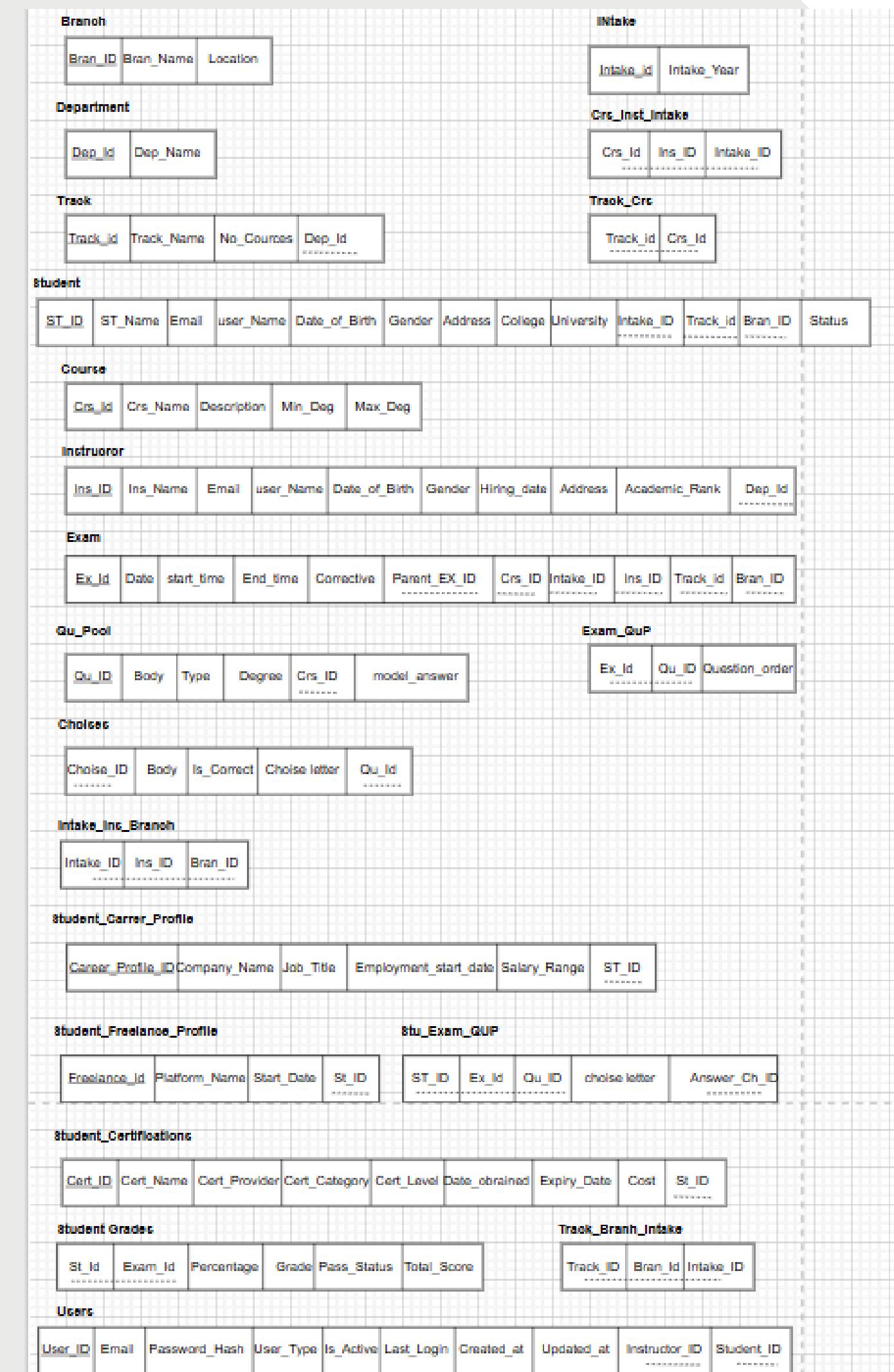


ERD





Mapping

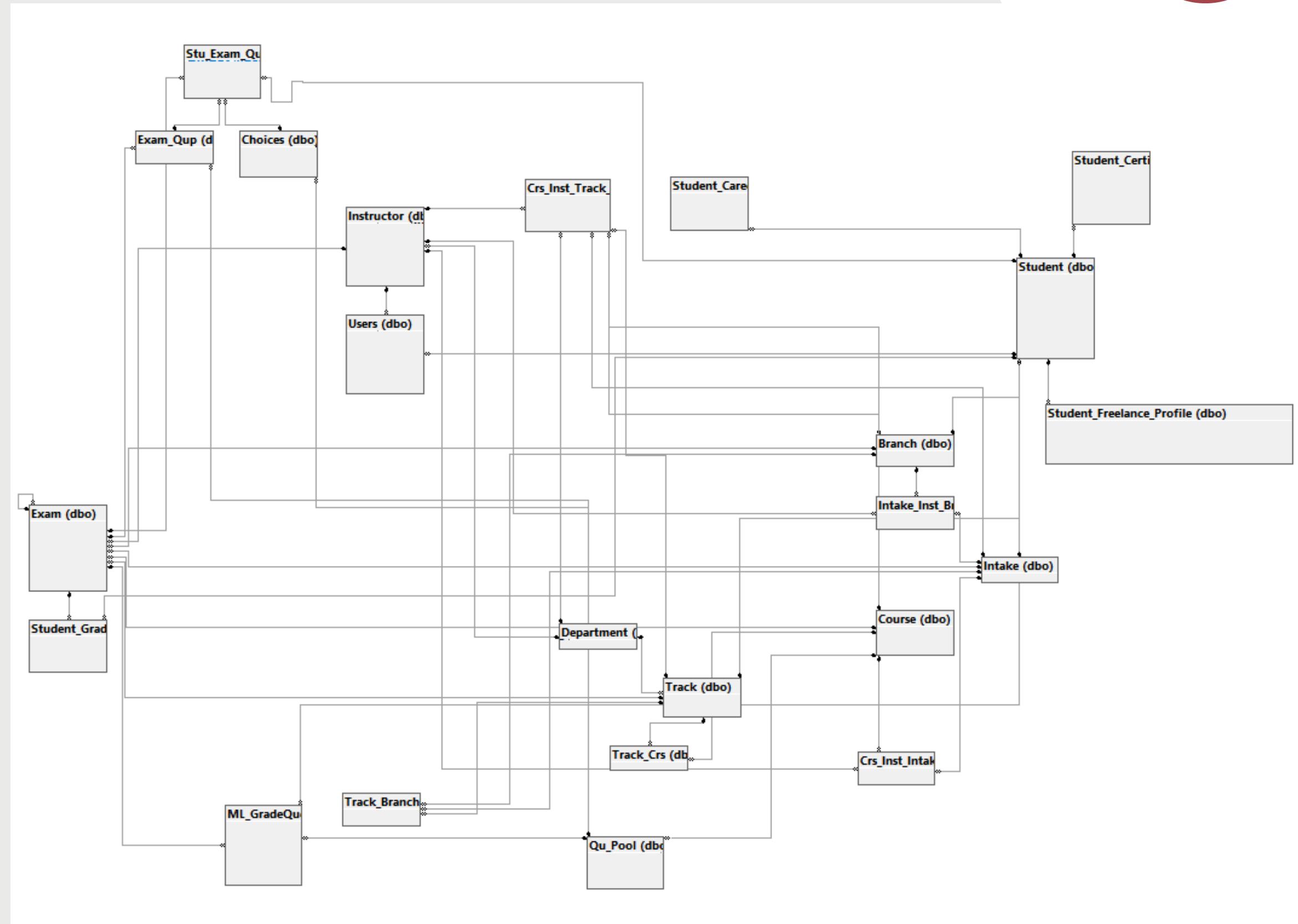




DataBase

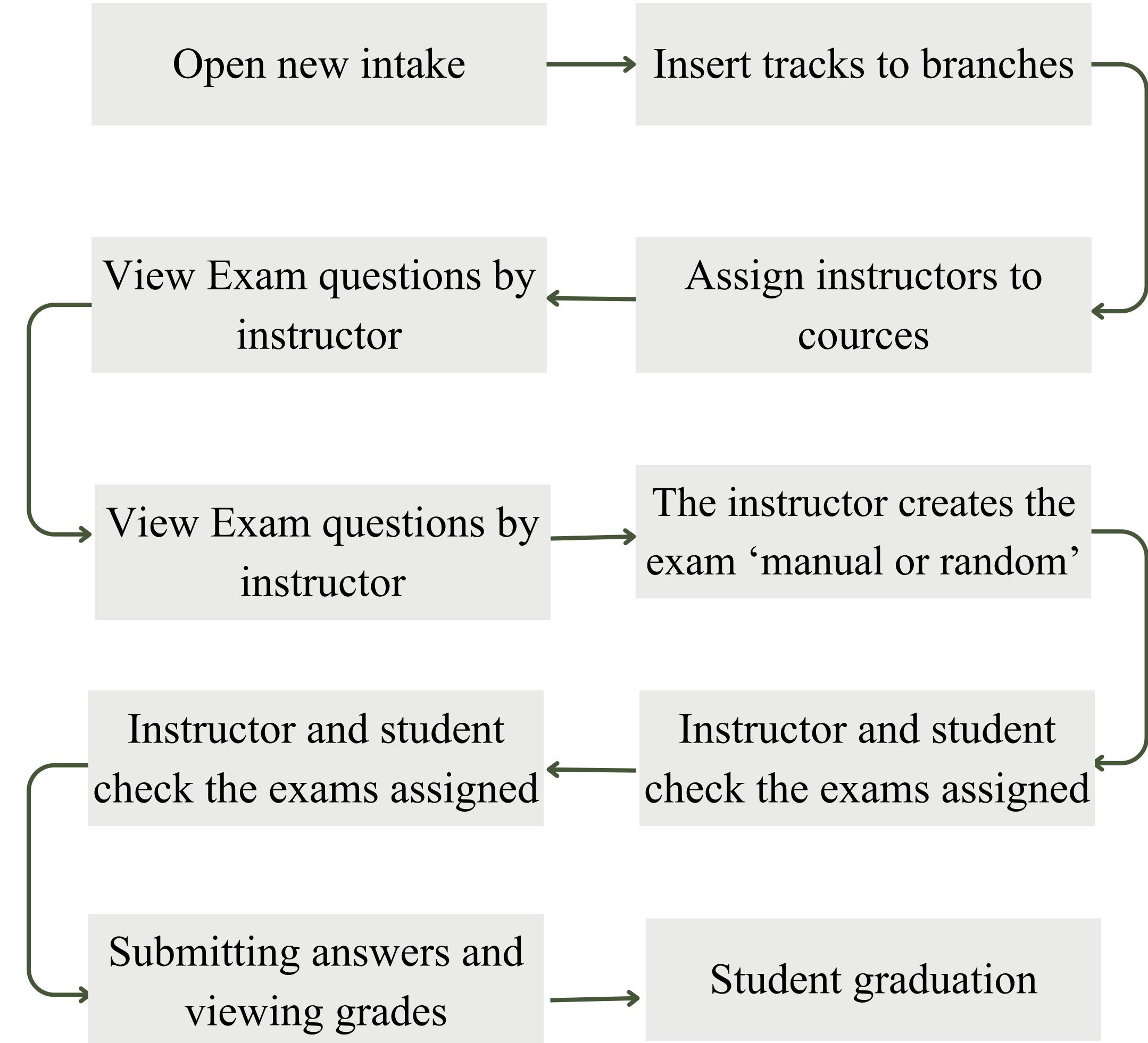
03

Using SQL Server to implement the DataBase. The data is put in tables using AI tools (Chat GPT, Gemini)

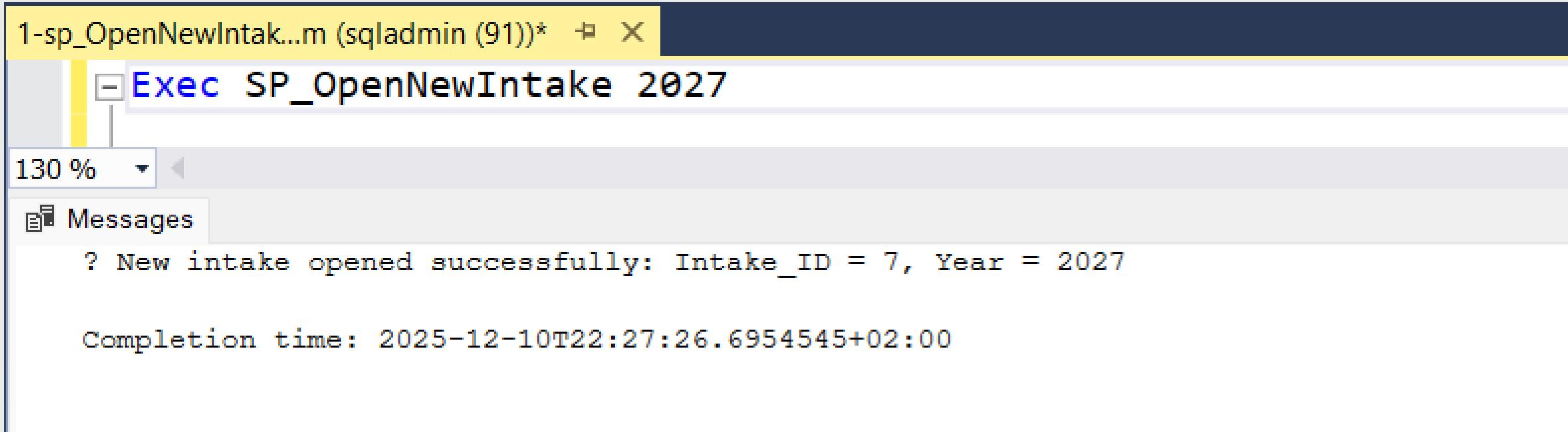


Stored Procedures

The process starts from inserting a new intake to the Student graduation

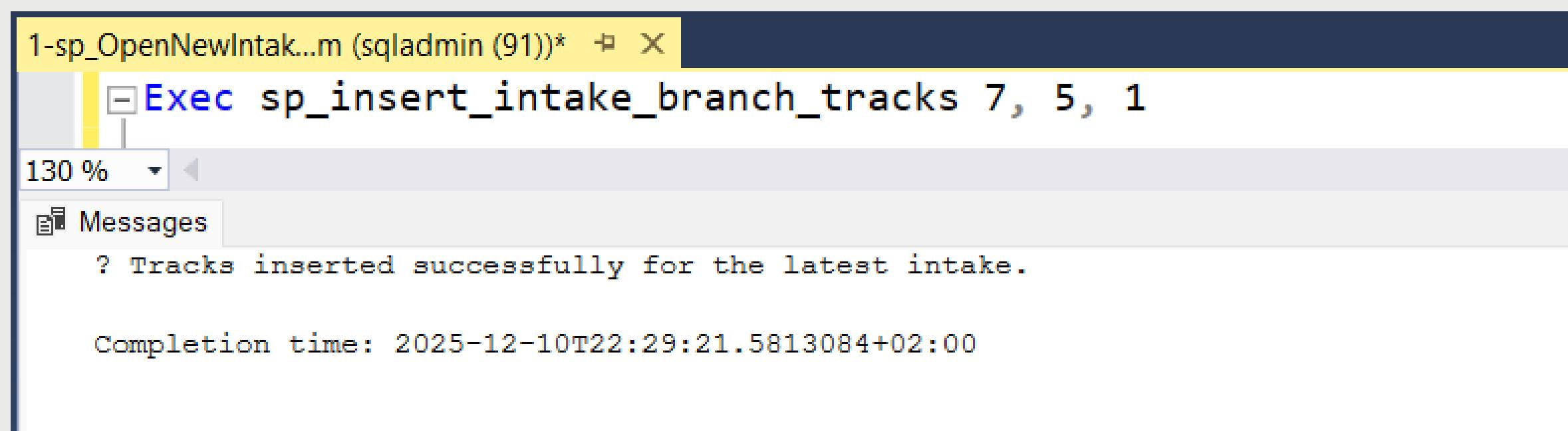


Open new intake ‘2027’



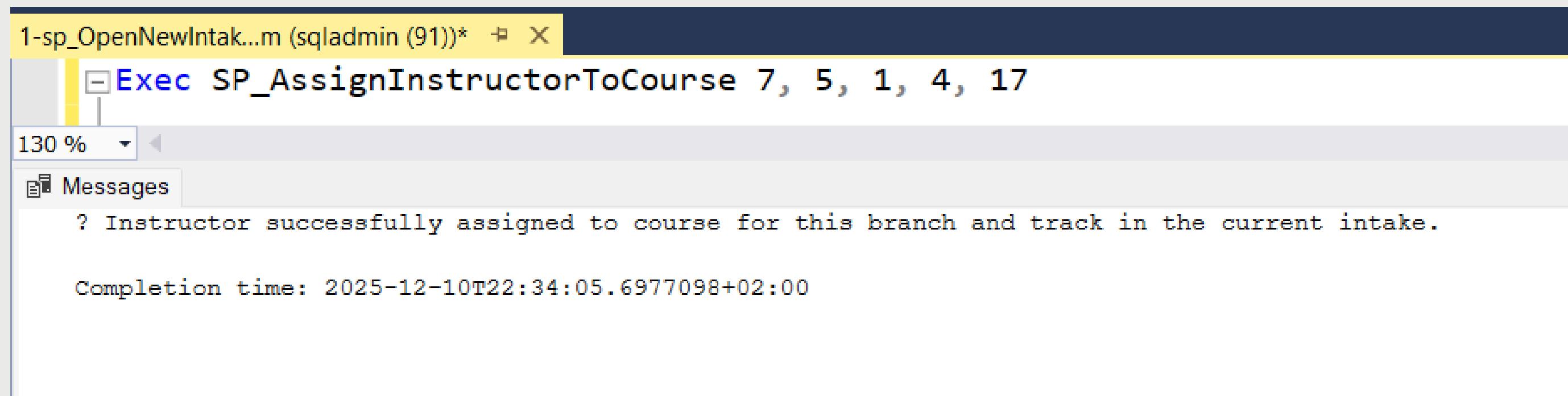
The screenshot shows a SQL Server Management Studio window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query pane contains the command 'Exec SP_OpenNewIntake 2027'. The results pane, titled 'Messages', displays the output: '? New intake opened successfully: Intake_ID = 7, Year = 2027' and 'Completion time: 2025-12-10T22:27:26.6954545+02:00'.

Insert new track ‘Power BI Development’ to a branch
‘Damanhour’ in intake ‘2027’



The screenshot shows a SQL Server Management Studio window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query pane contains the command 'Exec sp_insert_intake_branch_tracks 7, 5, 1'. The results pane, titled 'Messages', displays the output: '? Tracks inserted successfully for the latest intake.' and 'Completion time: 2025-12-10T22:29:21.5813084+02:00'.

Assign instructor ‘Amr Yossef’ to the course ‘Power Query’ in intake ‘2027’ for branch ‘Damanhour’ in track ‘Power BI development’



The screenshot shows a SQL Server Management Studio (SSMS) window. The title bar reads "1-sp_OpenNewIntak...m (sqladmin (91))". The main pane contains the T-SQL command:

```
Exec SP_AssignInstructorToCourse 7, 5, 1, 4, 17
```

The status bar at the bottom shows the completion time: "Completion time: 2025-12-10T22:34:05.6977098+02:00".

In the bottom left corner of the main pane, there is a small message box with the text "Instructor successfully assigned to course for this branch and track in the current intake." This message is preceded by a question mark icon.

The instructor views the available questions in the question pool to the course

Exec SP_ShowInstructorCourseQuestions 17 , 4				
	Qu_ID	Body	Type	Degree
1	76	What is the main challenge when implementing resource optimization in Power Query?	MCQ	5
2	77	What is the role of security protocols in Power Query workflows?	MCQ	5
3	78	profiling methods configuration is mandatory for Power Query deployment.	TF	5
4	79	Which component handles profiling methods in Power Query systems?	MCQ	5
5	80	Power Query includes built-in support for scalability patterns.	TF	5
6	81	How does deployment pipelines integration work in Power Query?	MCQ	5
7	82	Which strategy works best for debugging techniques in Power Query projects?	MCQ	5
8	83	How does Power Query implement deployment pipelines for better efficiency?	MCQ	5
9	84	What are the main steps to configure logging frameworks in Power Query?	TEXT	5
10	85	Which concept is fundamental to understanding monitoring solutions in Power Query?	MCQ	5
11	86	Which concept is fundamental to understanding API integration in Power Query?	MCQ	5
12	87	Describe how Power Query implements error handling for scalability.	TEXT	5
13	88	What is the best practice for error handling in Power Query development?	MCQ	5
14	89	What makes session handling important in Power Query development?	MCQ	5
15	90	How does Power Query handle state management compared to other technologies?	MCQ	5
16	91	profiling methods can be disabled in Power Query without affecting core functionality.	TF	5
17	92	How would you troubleshoot profiling methods issues in Power Query?	TEXT	5
18	93	What is the recommended approach for transaction control when working with Power Query?	MCQ	5
19	94	Which strategy works best for migration tools in Power Query projects?	MCQ	5
20	95	Power Query includes built-in support for resource optimization.	TF	5
21	96	What makes state management important in Power Query development?	MCQ	5
22	97	How does Power Query handle authentication flows compared to other technologies?	MCQ	5
23	98	Which concept is fundamental to understanding session handling in Power Query?	MCQ	5
24	99	How does Power Query handle transaction control compared to other technologies?	MCQ	5
25	100	What is the main benefit of using Power Query for data integration?	TF	5

The instructor creates the exam by choosing the questions manually

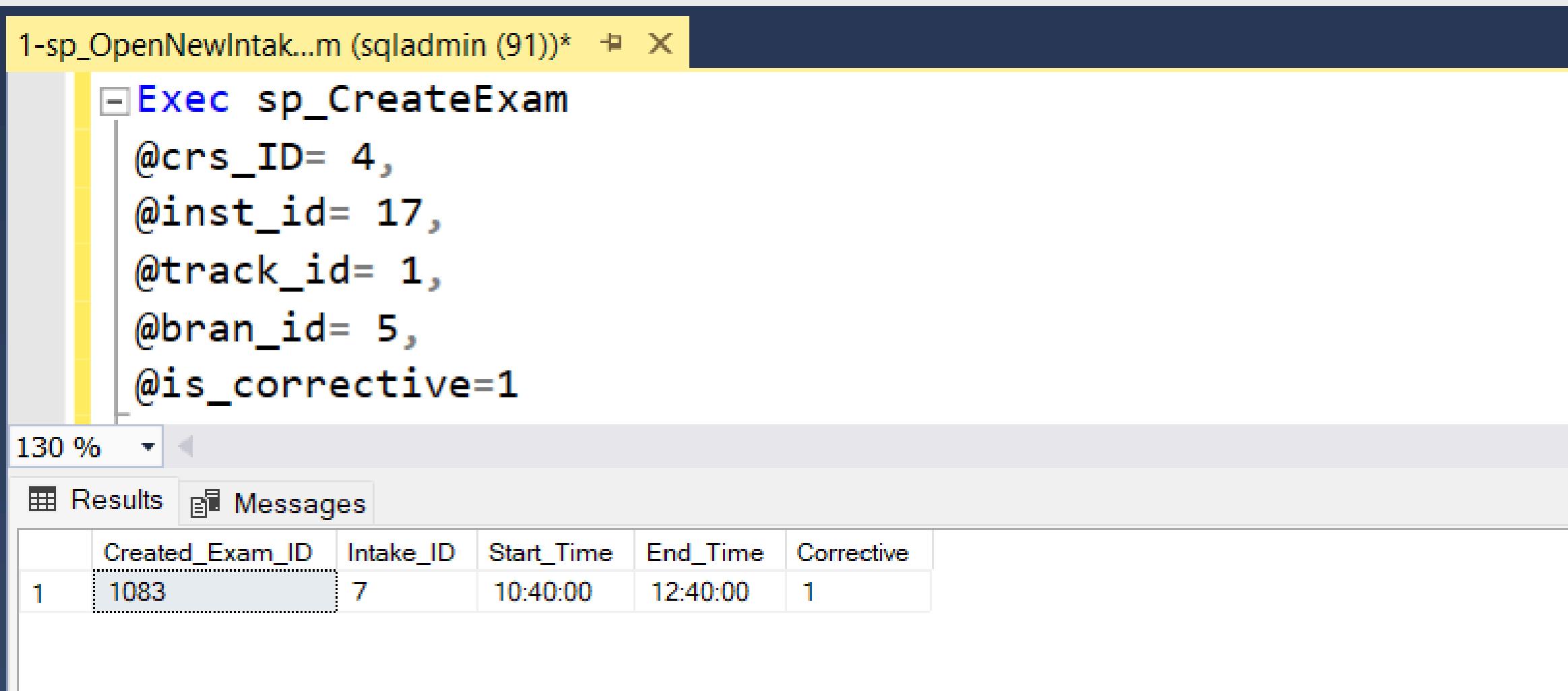
A screenshot of a SQL Server Management Studio (SSMS) window. The title bar shows the connection is to '1-sp_OpenNewIntak...m (sqladmin (91))'. The main area contains a T-SQL script:

```
Exec sp_CreateExam  
@crs_ID= 4,  
@inst_id= 17,  
@track_id= 1,  
@bran_id= 5,  
@questionlist='76, 77, 78, 79, 80, 81, 82, 83, 85 ,86, 88, 89, 90, 91, 93, 94, 95, 96, 97 ,98'
```

The 'Results' tab is selected at the bottom, showing the output of the executed query:

	Created_Exam_ID	Intake_ID	Start_Time	End_Time	Corrective
1	1082	7	11:10:00	13:10:00	0

Or the questions are chosen randomly



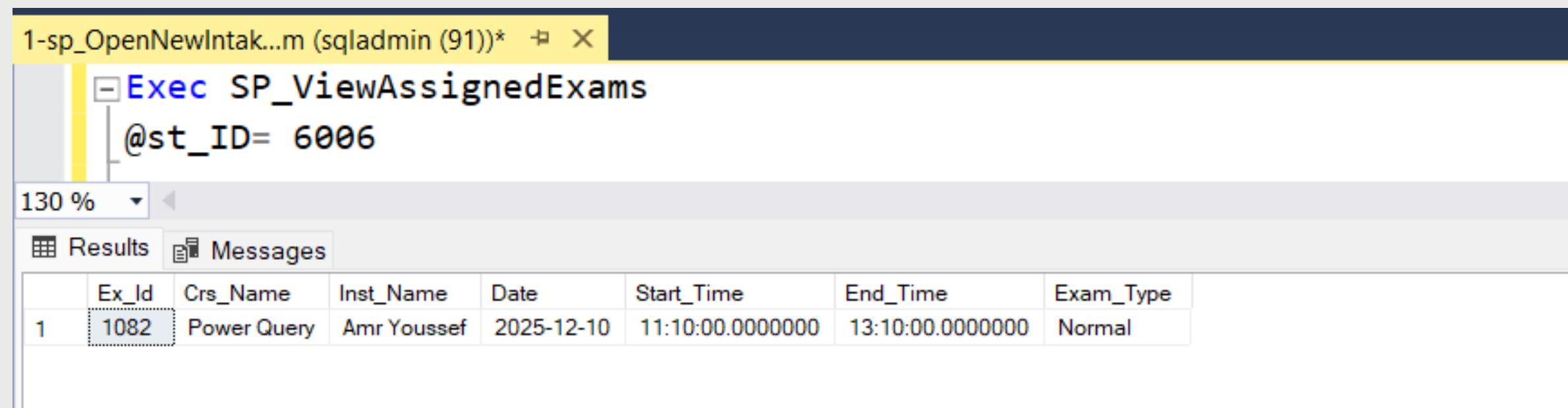
The screenshot shows a SQL query window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query executed is:

```
Exec sp_CreateExam  
    @crs_ID= 4,  
    @inst_id= 17,  
    @track_id= 1,  
    @bran_id= 5,  
    @is_corrective=1
```

The results pane shows a single row of data:

	Created_Exam_ID	Intake_ID	Start_Time	End_Time	Corrective
1	1083	7	10:40:00	12:40:00	1

Check the assigned exams to student 'Ali' that is accepted to this track



The screenshot shows a SQL query window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query executed is:

```
Exec SP_ViewAssignedExams  
    @st_ID= 6006
```

The results pane shows a single row of data:

	Ex_Id	Crs_Name	Inst_Name	Date	Start_Time	End_Time	Exam_Type
1	1082	Power Query	Amr Youssef	2025-12-10	11:10:00.0000000	13:10:00.0000000	Normal

Instructor checks the assigned exams to a student ‘Ali’

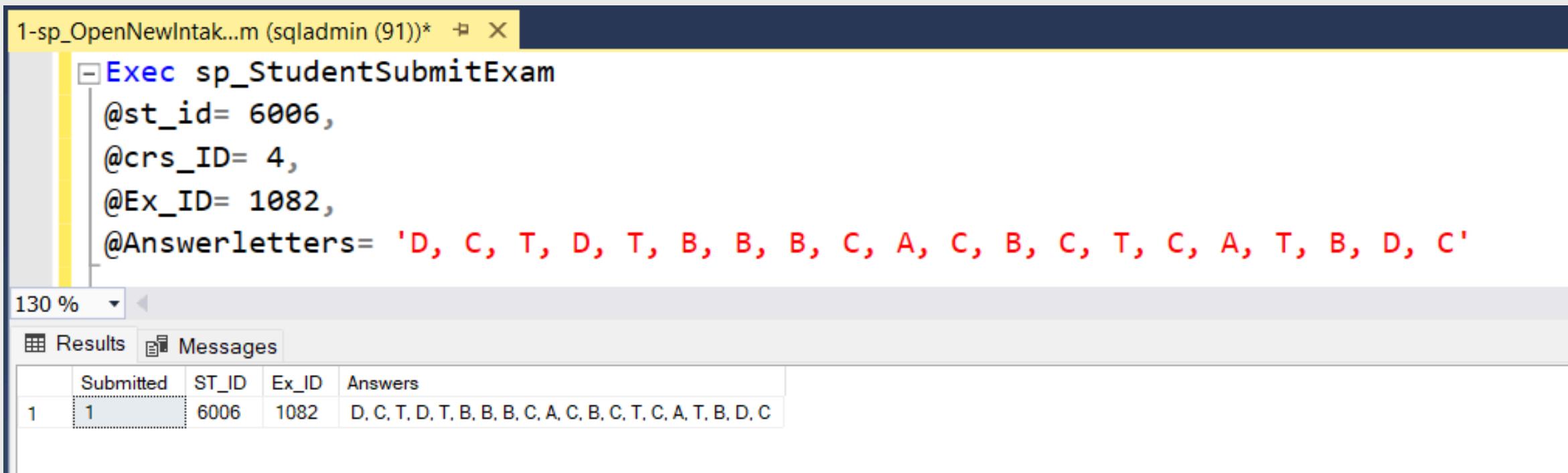
The screenshot shows a SQL Server Management Studio window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query pane contains the following T-SQL code:

```
Exec SP_ViewExamPaper  
@st_ID= 6006,  
@crs_id= 4,  
@EX_ID= 1082
```

The results pane displays a table of exam questions and answers. The table has columns: Question_order, choice_letter, Question_Body, and Answer_Body.

Question_order	choice_letter	Question_Body	Answer_Body
1	A	What is the main challenge when implementing resource optimization in Power Query?	Using manual solutions
2	B	What is the main challenge when implementing resource optimization in Power Query?	Implementing optimized approaches
3	C	What is the main challenge when implementing resource optimization in Power Query?	Applying proven techniques
4	D	What is the main challenge when implementing resource optimization in Power Query?	Leveraging built-in components
5	A	What is the role of security protocols in Power Query workflows?	Leveraging cloud-based modules
6	B	What is the role of security protocols in Power Query workflows?	Using manual tools
7	C	What is the role of security protocols in Power Query workflows?	Implementing custom approaches
8	D	What is the role of security protocols in Power Query workflows?	Applying proven best practices
9	F	profiling methods configuration is mandatory for Power Query deployment.	False
10	T	profiling methods configuration is mandatory for Power Query deployment.	True
11	A	Which component handles profiling methods in Power Query systems?	Implementing optimized approaches
12	B	Which component handles profiling methods in Power Query systems?	Leveraging cloud-based modules
13	C	Which component handles profiling methods in Power Query systems?	Applying recommended methodologies
14	D	Which component handles profiling methods in Power Query systems?	Using hybrid libraries
15	F	Power Query includes built-in support for scalability patterns.	False
16	T	Power Query includes built-in support for scalability patterns.	True
17	A	How does deployment pipelines integration work in Power Query?	Leveraging cloud-based features
18	B	How does deployment pipelines integration work in Power Query?	Applying industry techniques
19	C	How does deployment pipelines integration work in Power Query?	Using automated solutions
20	D	How does deployment pipelines integration work in Power Query?	Implementing custom strategies
21	A	Which strategy works best for debugging techniques in Power Query projects?	Implementing standard protocols
22	B	Which strategy works best for debugging techniques in Power Query projects?	Using automated libraries
23	C	Which strategy works best for debugging techniques in Power Query projects?	Applying industry best practices

The student ‘Ali’ submits his answers



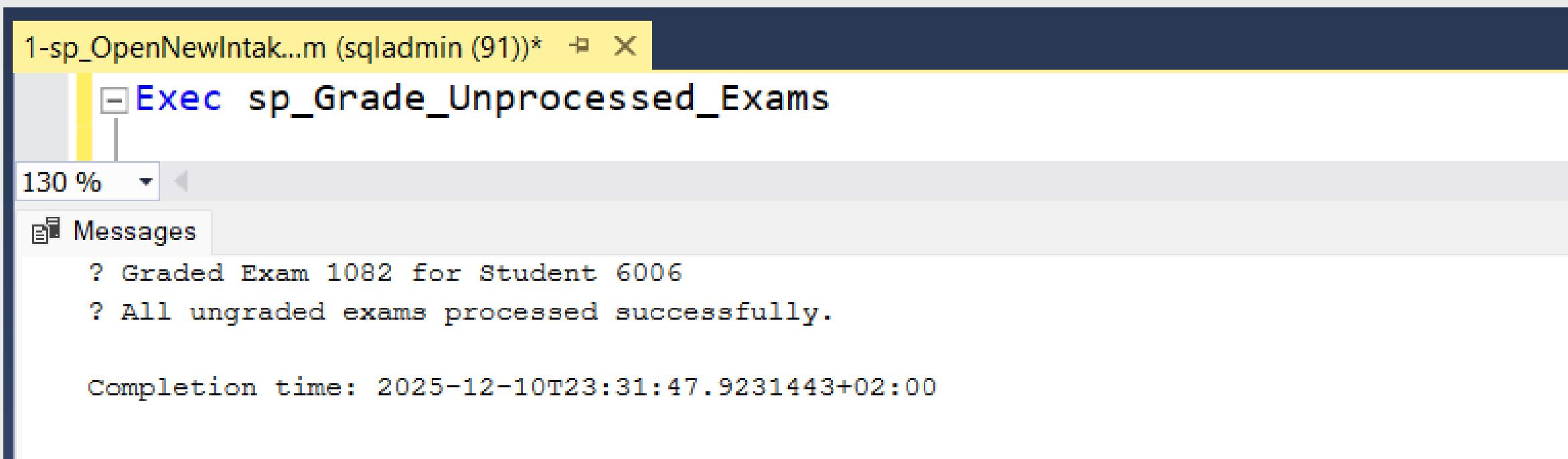
A screenshot of the SQL Server Management Studio (SSMS) interface. The title bar shows the connection is to '1-sp_OpenNewIntak...m (sqladmin (91))'. The query window contains the following T-SQL code:

```
Exec sp_StudentSubmitExam  
@st_id= 6006,  
@crs_ID= 4,  
@Ex_ID= 1082,  
@Answerletters= 'D, C, T, D, T, B, B, B, C, A, C, B, C, T, C, A, T, B, D, C'
```

The results pane shows a single row of data:

	Submitted	ST_ID	Ex_ID	Answers
1	1	6006	1082	D, C, T, D, T, B, B, B, C, A, C, B, C, T, C, A, T, B, D, C

Processing ungraded exams and checking them



A screenshot of the SQL Server Management Studio (SSMS) interface. The title bar shows the connection is to '1-sp_OpenNewIntak...m (sqladmin (91))'. The query window contains the following T-SQL code:

```
Exec sp_Grade_Unprocessed_Exams
```

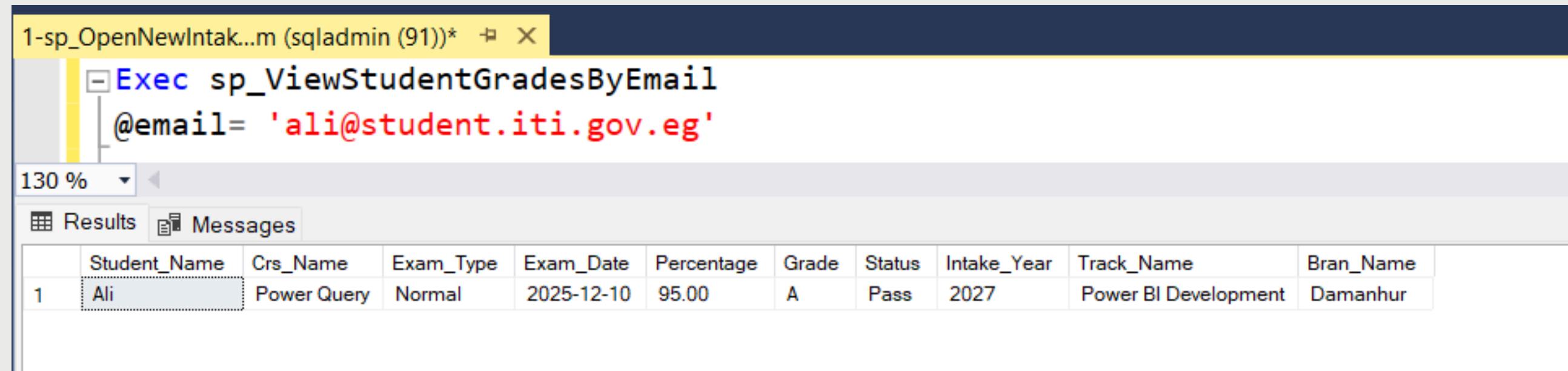
The messages pane displays the following output:

```
? Graded Exam 1082 for Student 6006  
? All ungraded exams processed successfully.
```

At the bottom, the completion time is shown as:

```
Completion time: 2025-12-10T23:31:47.9231443+02:00
```

Student ‘Ali’ views his grades after exams



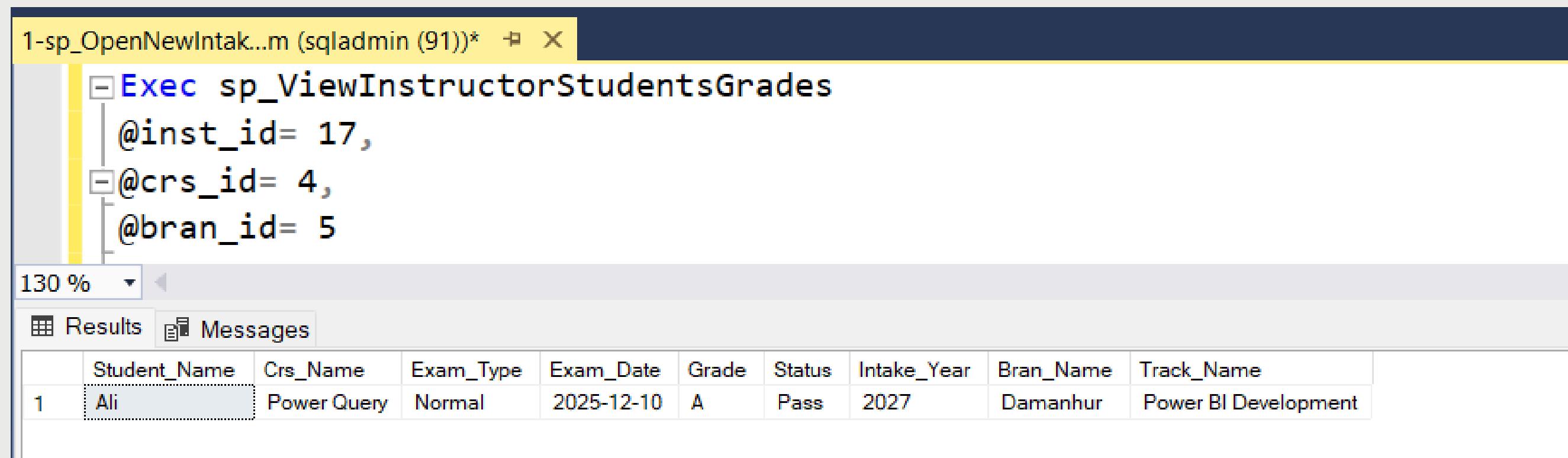
The screenshot shows a SQL Server Management Studio (SSMS) window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query pane contains the following T-SQL code:

```
Exec sp_ViewStudentGradesByEmail  
@email= 'ali@student.iti.gov.eg'
```

The results pane displays a single row of data in a table format:

	Student_Name	Crs_Name	Exam_Type	Exam_Date	Percentage	Grade	Status	Intake_Year	Track_Name	Bran_Name
1	Ali	Power Query	Normal	2025-12-10	95.00	A	Pass	2027	Power BI Development	Damanhur

Instructor ‘Amr Youssef’ views the grades of their students



The screenshot shows a SQL Server Management Studio (SSMS) window titled '1-sp_OpenNewIntak...m (sqladmin (91))*'. The query pane contains the following T-SQL code:

```
Exec sp_ViewInstructorStudentsGrades  
@inst_id= 17,  
@crs_id= 4,  
@bran_id= 5
```

The results pane displays a single row of data in a table format:

	Student_Name	Crs_Name	Exam_Type	Exam_Date	Grade	Status	Intake_Year	Bran_Name	Track_Name
1	Ali	Power Query	Normal	2025-12-10	A	Pass	2027	Damanhur	Power BI Development



SSRS in Visual Studio

04

The report that takes student ID and returns their grades

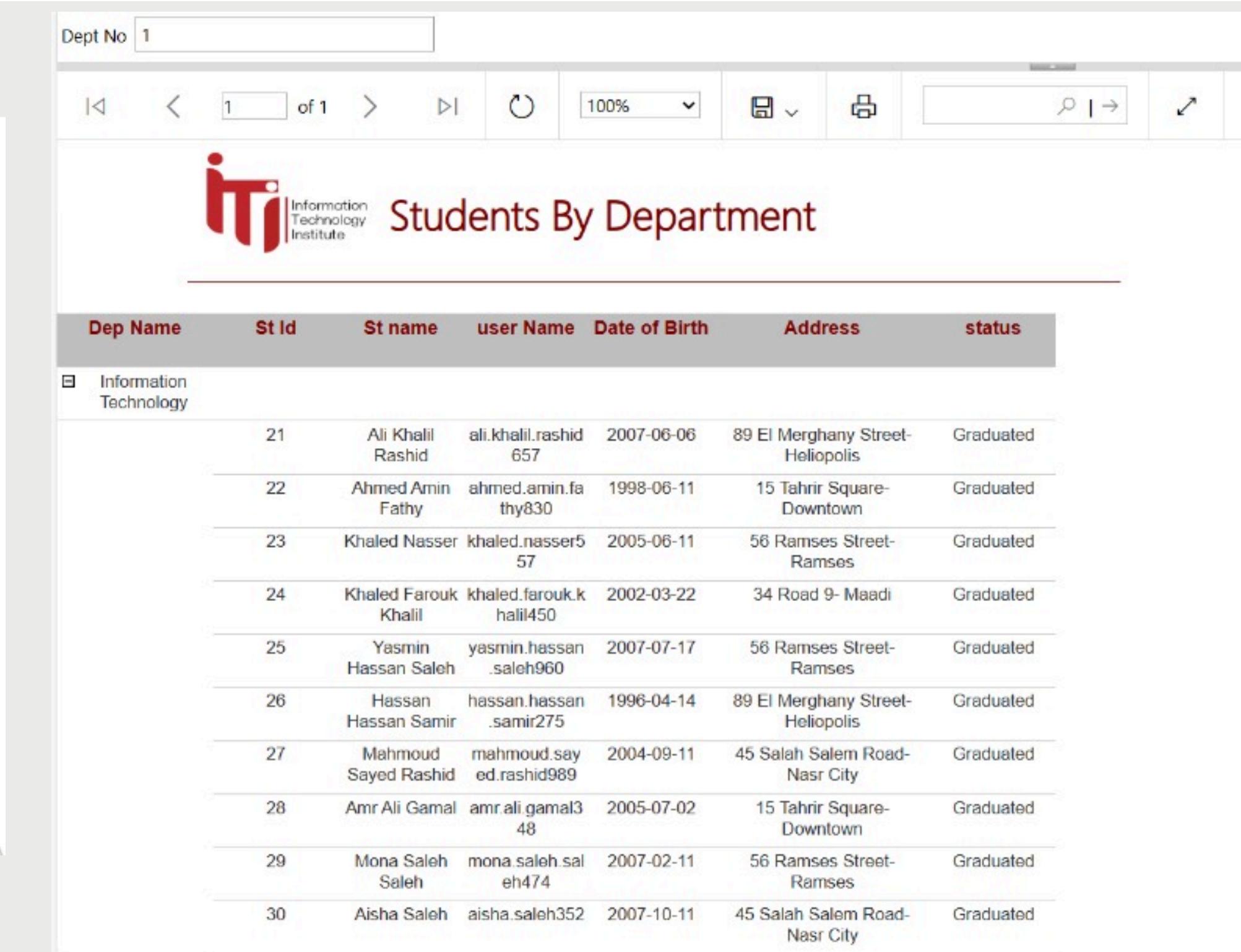
```
ALTER PROCEDURE [dbo].[SP_GetStudentGrades]
    @StudentID INT
AS BEGIN SELECT
    s.ST_Name, C.Crs_Name,
    SG.Grade, TOTAL_SCORE,
    CASE
        WHEN TOTAL_SCORE >= 90 THEN 'Excellent'
        WHEN TOTAL_SCORE >= 75 THEN 'Very Good'
        WHEN TOTAL_SCORE >= 60 THEN 'Good'
        ELSE 'Pass'
    END AS GradeStatus
    FROM Student S
    INNER JOIN Student_Grades SG ON S.St_Id = SG.St_Id
    INNER JOIN EXAM E ON SG.Ex_Id = E.Ex_Id
    INNER JOIN Course C ON E.Crs_Id = C.Crs_Id
    WHERE S.St_Id = @StudentID
END
```

The screenshot shows the SSRS report interface. At the top, there is a search bar labeled "Student ID" with the value "2". Below the search bar is a toolbar with navigation icons (back, forward, search, print, etc.) and a zoom level set to "100%". The main content area displays a report titled "Student Grades" with the ITI logo. The report header includes the student's name, "Hala Sayed Abdel Rahman". Below the header is a table with the following data:

Crs Name	TOTAL SCORE	Grade	Grade Status
Python for ML	95.00	A	Excellent
Math for ML	85.37	B	Very Good
Supervised Learning	85.94	B	Very Good
Unsupervised Learning	78.05	C	Very Good
Model Validation	71.72	C	Good
Feature Engineering	63.63	D	Good
Deep Learning Basics	70.99	C	Good

The report that takes the Department ID and returns the students in it.

```
ALTER PROCEDURE [dbo].[SP_GetStudentsByDepartment]
    @DeptNo INT
AS
BEGIN SELECT
    St_Id,
    d.Dep_ID,
    St_name,
    Date_of_Birth,
    user_Name,
    Address,
    Dep_Name,
    status
    FROM Student S
    INNER JOIN Track T ON s.Track_id = t.Track_id
    INNER JOIN Department D ON t.Dep_Id = d.Dep_Id
    WHERE D.Dep_Id = @DeptNo
END
```

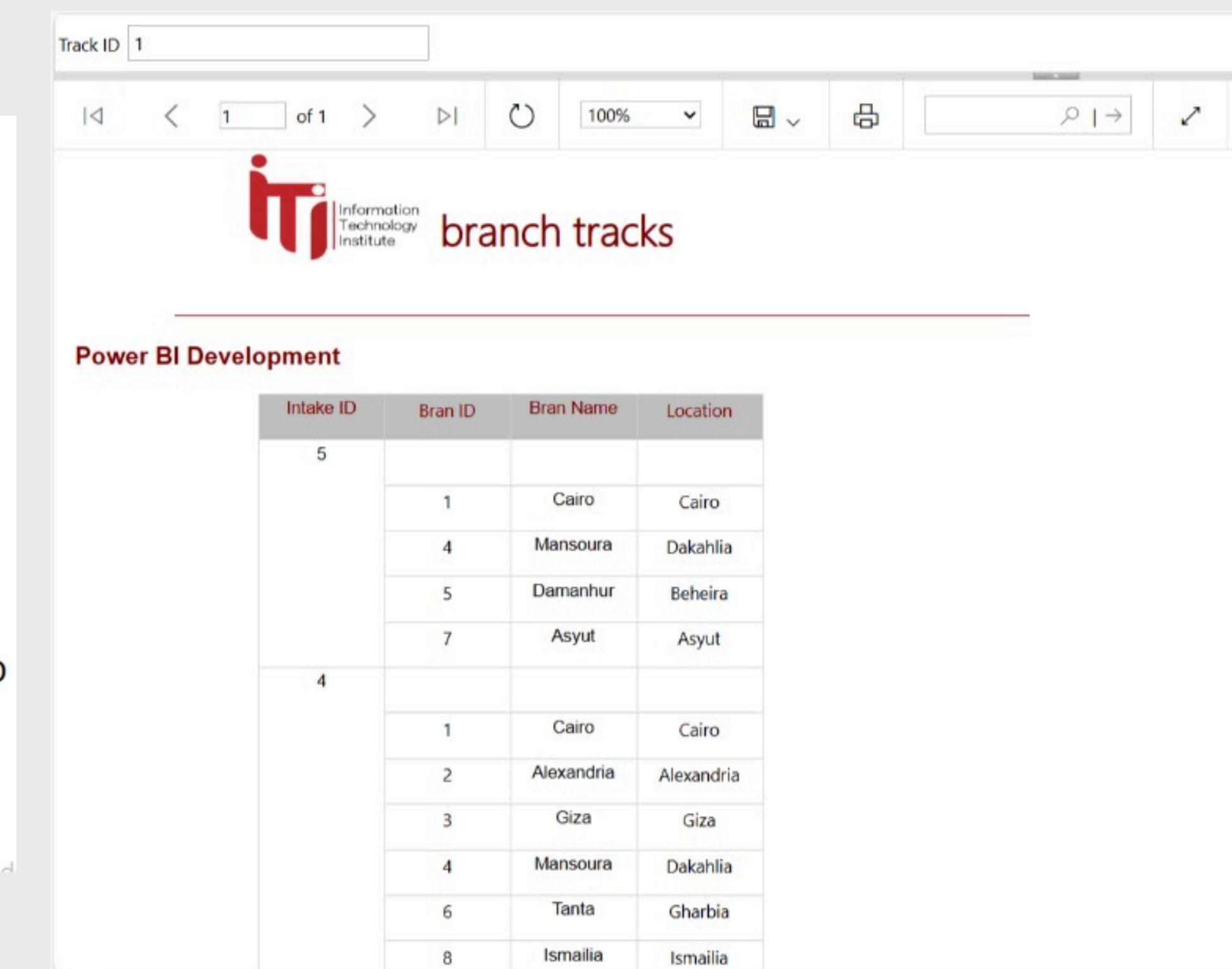


The screenshot shows a report viewer window titled "Students By Department". At the top, there is a search bar labeled "Dept No" with the value "1". Below the search bar is a toolbar with various icons for navigating through the report, including back, forward, and search symbols. The main content area features the ITI logo and the text "Information Technology Institute". The report is displayed in a tabular format with the following columns: Dep Name, St Id, St name, user Name, Date of Birth, Address, and status. The data is grouped under the heading "Information Technology". There are 30 rows of student information listed, each containing the student's ID, name, user name, date of birth, address, and graduation status.

Dep Name	St Id	St name	user Name	Date of Birth	Address	status
Information Technology						
	21	Ali Khalil Rashid	ali.khalil.rashid657	2007-06-06	89 El Merghany Street-Heliopolis	Graduated
	22	Ahmed Amin Fathy	ahmed.amin.fathy830	1998-06-11	15 Tahrir Square-Downtown	Graduated
	23	Khaled Nasser	khaled.nasser557	2005-06-11	56 Ramses Street-Ramses	Graduated
	24	Khaled Farouk Khalil	khaled.farouk.khalil450	2002-03-22	34 Road 9- Maadi	Graduated
	25	Yasmin Hassan Saleh	yasmin.hassan.saleh960	2007-07-17	56 Ramses Street-Ramses	Graduated
	26	Hassan Hassan Samir	hassan.hassan.samir275	1996-04-14	89 El Merghany Street-Heliopolis	Graduated
	27	Mahmoud Sayed Rashid	mahmoud.sayed.rashid989	2004-09-11	45 Salah Salem Road-Nasr City	Graduated
	28	Amr Ali Gamal	amr.ali.gamal348	2005-07-02	15 Tahrir Square-Downtown	Graduated
	29	Mona Saleh	mona.saleh.saleh474	2007-02-11	56 Ramses Street-Ramses	Graduated
	30	Aisha Saleh	aisha.saleh352	2007-10-11	45 Salah Salem Road-Nasr City	Graduated

The report that takes the track ID and returns the branches that has this track.

```
ALTER PROCEDURE [dbo].[Sp_GetBranchesByTrack]
@Track_ID INT
AS
BEGIN
SELECT
    TBI.Intake_ID,
    T.Track_ID,
    T.Track_Name,
    B.Bran_ID,
    B.Bran_Name,
    B.Location
FROM Track T
JOIN Track_Branch_Intake TBI ON T.Track_ID = TBI.Track_ID
JOIN Branch B ON TBI.Bran_ID = B.Bran_ID
WHERE T.Track_ID = @Track_ID
ORDER BY TBI.Intake_ID desc,B.Bran_Name asc ;
END
```



The screenshot shows a Microsoft Power BI report interface. At the top, there is a search bar labeled "Track ID" with the value "1". Below the search bar is a toolbar with various icons for navigation and printing. The main content area features the ITI logo and the text "branch tracks". A section titled "Power BI Development" contains a table with the following data:

Intake ID	Bran ID	Bran Name	Location
5	1	Cairo	Cairo
	4	Mansoura	Dakahlia
	5	Damanhur	Beheira
	7	Asyut	Asyut
4	1	Cairo	Cairo
	2	Alexandria	Alexandria
	3	Giza	Giza
	4	Mansoura	Dakahlia
	6	Tanta	Gharbia
	8	Ismailia	Ismailia

The report that takes the instructor ID and returns the courses that they teach.

```
ALTER PROCEDURE [dbo].[Sp_GetInstructorCourses]
@InstructorID INT
AS
BEGIN
    SELECT i.Inst_ID, i.Inst_Name ,Crs_Name ,COUNT(St_ID) AS No_Student
    FROM Student S
    join Crs_Inst_Track_Branch_Intake as CIT ON s.Intake_ID=CIT.Intake
    and s.Bran_ID=CIT.Bran_ID
    and s.Track_id =CIT.Track_ID
    JOIN Course as c on c.Crs_ID =CIT.Crs_ID
    join Instructor as i on i.Inst_ID= CIT.Inst_ID

    WHERE CIT.Inst_ID = @InstructorID
    group by I.Inst_ID,Crs_Name,I.Inst_Name,S.Intake_ID
```

The screenshot shows a Microsoft Power BI report interface. At the top, there is a search bar labeled "Instructor ID" with the value "4". Below the search bar is a navigation toolbar with icons for back, forward, search, and print. The main title of the report is "Instructor Course". On the left, there is a logo for "Information Technology Institute" (ITI) and the name "Dina Kamal". The report displays a table with three columns: "Intake ID", "Crs Name", and "No Students". The data is grouped by Intake ID, with four distinct groups labeled 1, 2, 3, and 4. Group 1 contains two rows: "Data Lakes" with 20 students and "SIEM & SOC" with 20 students. Group 2 contains two rows: "Animations" with 20 students and "Data Governance" with 20 students. Group 3 contains one row: "ETL with Airflow" with 20 students. Group 4 contains one row: "Python for Data" with 20 students.

Intake ID	Crs Name	No Students
1	Data Lakes	20
	SIEM & SOC	20
2	Animations	20
	Data Governance	20
3	ETL with Airflow	20
	SIEM & SOC	20
4	Python for Data	20
	ETL with Airflow	20

The report that takes the student ID and returns their certifications.

```
ALTER PROCEDURE [dbo].[Sp_GetStudentCEF]
    @Student_ID INT
AS
BEGIN SELECT
    s.Intake_ID ,
    S.St_ID,
    S.St_Name,
    T.Track_Name,
    B.Bran_Name,
    ISNULL(F.Platform_Name , 'No Freelance Info') AS Freelance_
    ISNULL(C.Cert_Name, 'No Certificate') AS Certificate_Name
FROM Student S
JOIN Branch B ON S.Bran_ID = B.Bran_ID
JOIN Track T ON s.Track_ID = T.Track_ID
LEFT JOIN Student_Freelance_Profile F ON S.St_ID = F.St_ID
LEFT JOIN Student_Certifications C ON S.St_ID = C.St_ID
WHERE S.St_ID =@Student_ID;
```

St Name	Track Name	Intake ID	Bran Name	Freelance Platform	Certificate Name
Karim Adel	AI / Machine Learning	1	Cairo	Upwork	PMP

The report that takes the exam ID and returns its questions.

```
GO  
ALTER PROCEDURE [dbo].[Sp_GetExamQu]  
    @Exam_ID INT  
AS  
BEGIN  
    SELECT  
        EQ.Ex_ID,  
        EQ.Question_Order,  
        QP.Body AS Question,  
        STRING_AGG(C.Body, ', ') AS Choices  
    FROM Qu_Pool QP  
    JOIN Exam_Qup EQ ON QP.Qu_ID = EQ.Qu_ID  
    JOIN Choices C ON EQ.Qu_ID = C.Qu_ID  
    WHERE EQ.Ex_ID = @Exam_ID  
    GROUP BY EQ.Ex_ID, EQ.Question_Order, QP.Body  
    ORDER BY EQ.Question_Order;  
END
```

The screenshot shows a Microsoft Word document with a table titled "Exam Info". The table has three columns: "Question Order", "Question", and "Choices". The "Question Order" column contains integers 1 through 5. The "Question" column contains exam questions. The "Choices" column contains lists of options. The document also includes a header with the ITI logo and navigation controls.

Question Order	Question	Choices
1	What is the key advantage of using Git & CI?	<ul style="list-style-type: none">DAX measures are calculated at query timeDAX only works with text dataDAX measures are stored in tablesDAX cannot use aggregations
2	How do you implement Git & CI in production?	<ul style="list-style-type: none">Star schema improves query performanceStar schema cannot have relationships<ul style="list-style-type: none">Star schema is outdatedStar schema requires more storage
3	What is the main purpose of Git & CI?	<ul style="list-style-type: none">Star schema requires more storage<ul style="list-style-type: none">Star schema is outdatedStar schema cannot have relationships<ul style="list-style-type: none">Star schema improves query performance
4	What is the key advantage of using Git & CI?	<ul style="list-style-type: none">To export reports to PDFTo transform data before loading<ul style="list-style-type: none">To create visualizations onlyTo manage user permissions
5	How do you implement Git & CI in production?	<ul style="list-style-type: none">To transform data before loading<ul style="list-style-type: none">To create visualizations onlyTo manage user permissionsTo export reports to PDF



Microsoft Azure

05

Uploading data to Microsoft Azure, where the data is securely stored and managed through Azure services

Microsoft Azure

Search resources, services, and docs (G+/)

Copilot

Home > ITI-Examination_System (iti-exam-sqlsrv/ITI-Examination_System) > iti-exam-sqlsrv >

ITI_Examination_System (iti-exam-sqlsrv/ITI_Examination_System) SQL database

Copy Restore Export Set server firewall Delete Connect with... Feedback

Overview

Activity log Tags Diagnose and solve problems Query editor (preview) Mirror database in Fabric (preview) Resource visualizer

Settings

Compute + storage Connection strings Maintenance Properties Locks

Data management

Replicas Sync to other databases

Integrations Power Platform Security

Search

Essentials

Resource group (move) : rg-iti-exam-dev Status : Online Location : UK South Subscription (move) : Azure subscription 1 Subscription ID : [REDACTED]

Tags (edit) : Add tags

Server name : iti-exam-sqlsrv.database.windows.net Connection strings : Show database connection strings Pricing tier : Free - General Purpose - Serverless: Gen5, 2 vCores Overage billing : Enabled Free monthly vCore amount : 0 vCore seconds remaining Earliest restore point : 2025-12-06 07:41 UTC

Monitoring Properties Features Notifications (1) Integrations Tutorials

Database data storage

Review the below metrics and monitor your applications and infrastructure.

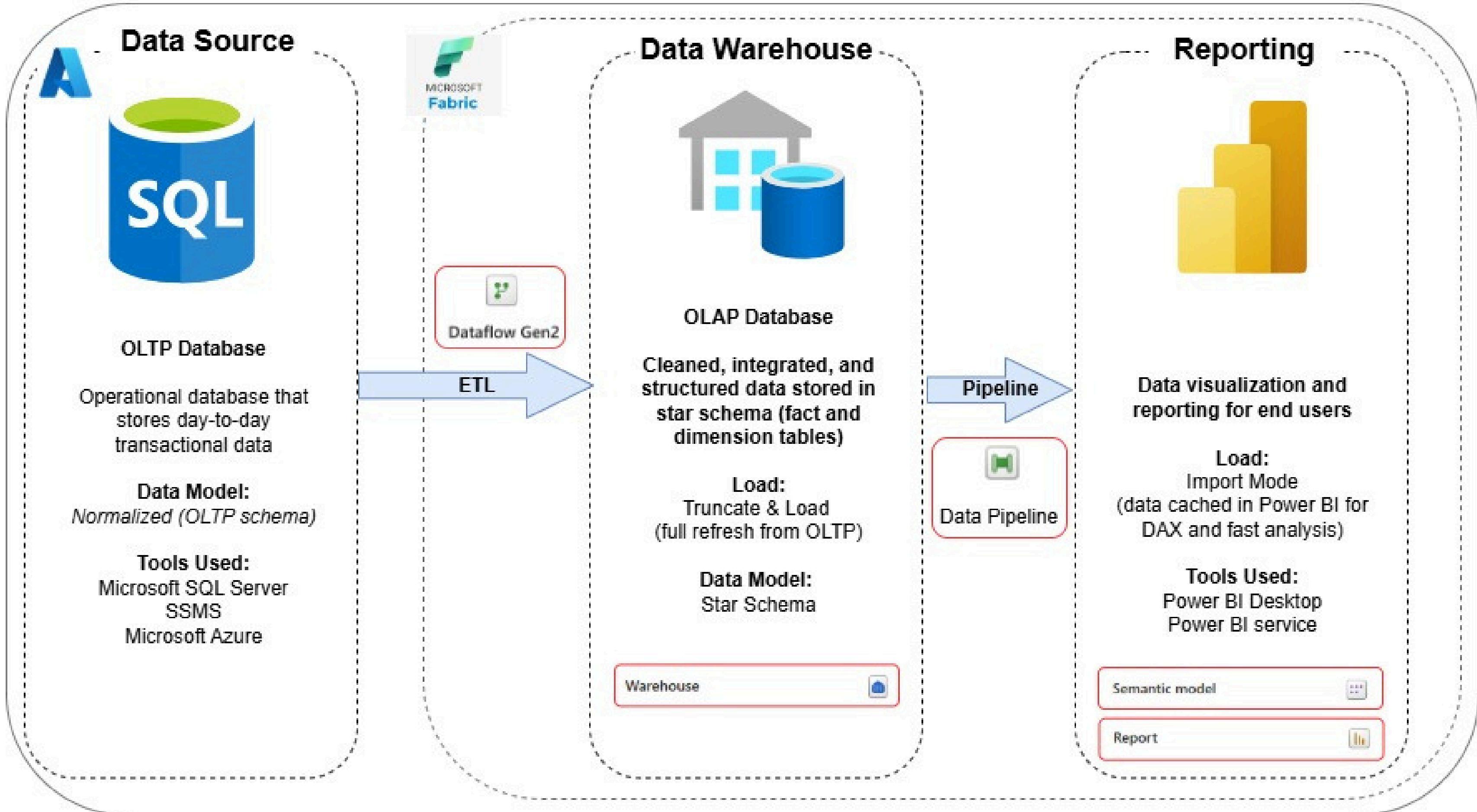
0.31% Used

Used space 103 MB Remaining space 31.9 GB Allocated space 112 MB Max storage 32 GB

Add or remove favorites by pressing Ctrl+Shift+F

The screenshot shows the Azure portal interface for managing an Azure SQL Database. The main page displays the database's properties, including its resource group (rg-iti-exam-dev), status (Online), location (UK South), and subscription information (Azure subscription 1). It also shows the database's server name, connection strings, pricing tier (Free - General Purpose - Serverless: Gen5, 2 vCores), overage billing status, free monthly vCore amount (0 vCore seconds remaining), and earliest restore point (2025-12-06 07:41 UTC). The 'Monitoring' tab is selected. Below this, a 'Database data storage' section provides a summary of storage usage with a donut chart showing 0.31% used space and a bar chart showing used, remaining, allocated, and max storage space in MB. The sidebar on the left lists various management options such as activity log, tags, and resource visualizer.

High Level Architecture





Microsoft Fabric

06

Seemlessly, the data is connected to Microsoft Fabric. This integration allows you to use Fabric for data transformation, modelling, reporting, and advanced insights.

Fabric ITI_Lakehouse ITI_Lakehouse Dataflow_ETL ITI_DWH Search Trials activated: 29 days left Home Workspaces Copilot OneLake catalog Monitor Real-Time Workloads ITI_Examination_system My workspace

ITI_Examination_system Create deployment pipeline Create app Manage access Works List view

+ New item New folder Import Migrate Filter by keyword Filter

Name	Status	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Dataflow_ETL	✓ ₂	Dataflow Gen2 (C...)	—	Mohamed Fayed...	12/1/2025, 9:22:28 PM	—	—	—	No
Final Project		Report	—	ITI_Examination_s...	12/11/2025, 1:47:34 P...	—	—	—	
Final Project		Semantic model	—	ITI_Examination_s...	12/11/2025, 1:47:34 ...	N/A	—	—	
ITI_DWH		Warehouse	—	Mohamed Fayed...	—	—	—	—	
ITI_Lakehouse		Lakehouse	—	Mohamed Fayed...	—	—	—	—	
ITI_Lakehouse		SQL analytics en...	—	Mohamed Fayed...	—	—	—	—	
ITI_Pipeline		Pipeline	—	Mohamed Fayed...	—	—	—	—	
LinkedIn Dataflow	✓	Dataflow Gen2 (C...)	—	Mohamed Fayed...	11/24/2025, 8:43:28 P...	—	—	—	
Notebook_ITI		Notebook	—	Mohamed Fayed...	—	—	—	—	

Dataflow Gen2

Prep, clean, and transform data.



Warehouse



Provide strategic insights from multiple sources into your entire business.



Lakehouse

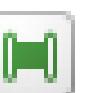


Store big data for cleaning, querying, reporting, and sharing.

Notebook



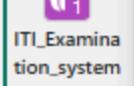
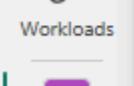
Pipeline



Explore, analyze, and visualize data and build ML models. Supports Apache Spark, Python, T-SQL, and more.

Ingest data at scale and schedule data workflows.

Trials activated:
29 days left



ITI_Examination_system

+ New item

New folder

Import

Micro

Create deployment pipeline

Create app

Manage access

Worksp

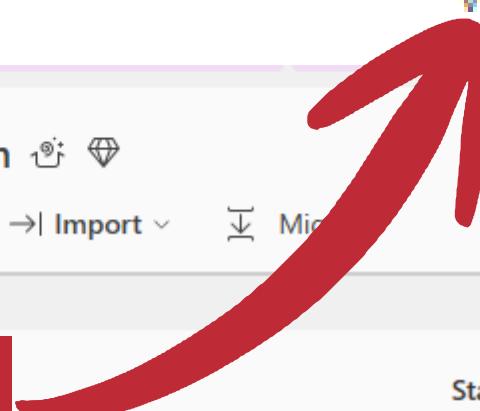
List view

Filter by keyword

Filter

Grid

Name
Dataflow_ETL
Final Project
Final Project
ITI_DWH
ITI_Lakehouse
ITI_Lakehouse
ITI_Pipeline
LinkedIn Dataflow
Notebook_ITI



Name	Status	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Dataflow_ETL	✓ ₂	Dataflow Gen2 (C... —	—	Mohamed Fayed ...	12/1/2025, 9:22:28 PM	—	—	—	No
Final Project		Report	—	ITI_Examination_s...	12/11/2025, 1:47:34 P...	—	—	—	
Final Project		Semantic model	—	ITI_Examination_s...	12/11/2025, 1:47:34 ...	N/A	—	—	
ITI_DWH		Warehouse	—	Mohamed Fayed ...	—	—	—	—	
ITI_Lakehouse		Lakehouse	—	Mohamed Fayed ...	—	—	—	—	
ITI_Lakehouse		SQL analytics en...	—	Mohamed Fayed ...	—	—	—	—	
ITI_Pipeline		Pipeline	—	Mohamed Fayed ...	—	—	—	—	
LinkedIn Dataflow	✓	Dataflow Gen2 (C... —	—	Mohamed Fayed ...	11/24/2025, 8:43:28 P...	—	—	—	
Notebook_ITI		Notebook	—	Mohamed Fayed ...	—	—	—	—	

Fabric Dataflow_ETL X

Trials activated:
7 days left

Power Query

Home Transform Add column View Help

Copilot OneLake catalog Monitor Real-Time Workloads My workspace

Queries [11]

DimBranch DimCourse DimDepartment DimExam DimInstructor DimIntake DimStudent FactStudent_Grades DimTrack DimDate Dimlinkedprofiles

Table.SelectColumns(#"Navigation 1", {"Bran_ID", "Bran_Name", "Location"})

	Bran_ID	Bran_Name	Location
1	1	Cairo	Cairo
2	2	Alexandria	Alexandria
3	3	Giza	Giza
4	4	Mansoura	Dakahlia
5	5	Damanhur	Beheira
6	6	Tanta	Gharbia
7	7	Asyut	Asyut
8	8	Ismailia	Ismailia
9	9	Port Said	Port Said
10	10	Minya	Minya

Query settings

Properties Name: DimBranch

Applied steps

- Source
- Navigation 1
- Choose col...

Data destination

Warehouse

Completed (2.49 s) Columns: 3 Rows: 10 Column profiling based on top 1,000 rows Add default destination... Last run on 12/1/25 at 9:22 PM Step

Fabric Dataflow_ETL X

Power Query

Home Transform Add column View Help

Queries [11]

- DimBranch
- DimCourse
- DimDepartment
- DimExam
- DimInstructor
- DimIntake
- DimStudent
- FactStudent_Grades
- DimTrack
- DimDate
- Dimlinkedprofiles

Completed (2.49 s) Columns: 3 Rows: 10

Search

Trials activated: 7 days left

SQL Server database

Server * iti-exam-sqlsrv.database.windows.net

Database ITI_Examination_System

Advanced options

OK Cancel

Data destination

Warehouse

Step

Query settings

Name DimBranch

Applied steps

- Source
- Navigation 1
- Choose col...

Data destination

Warehouse

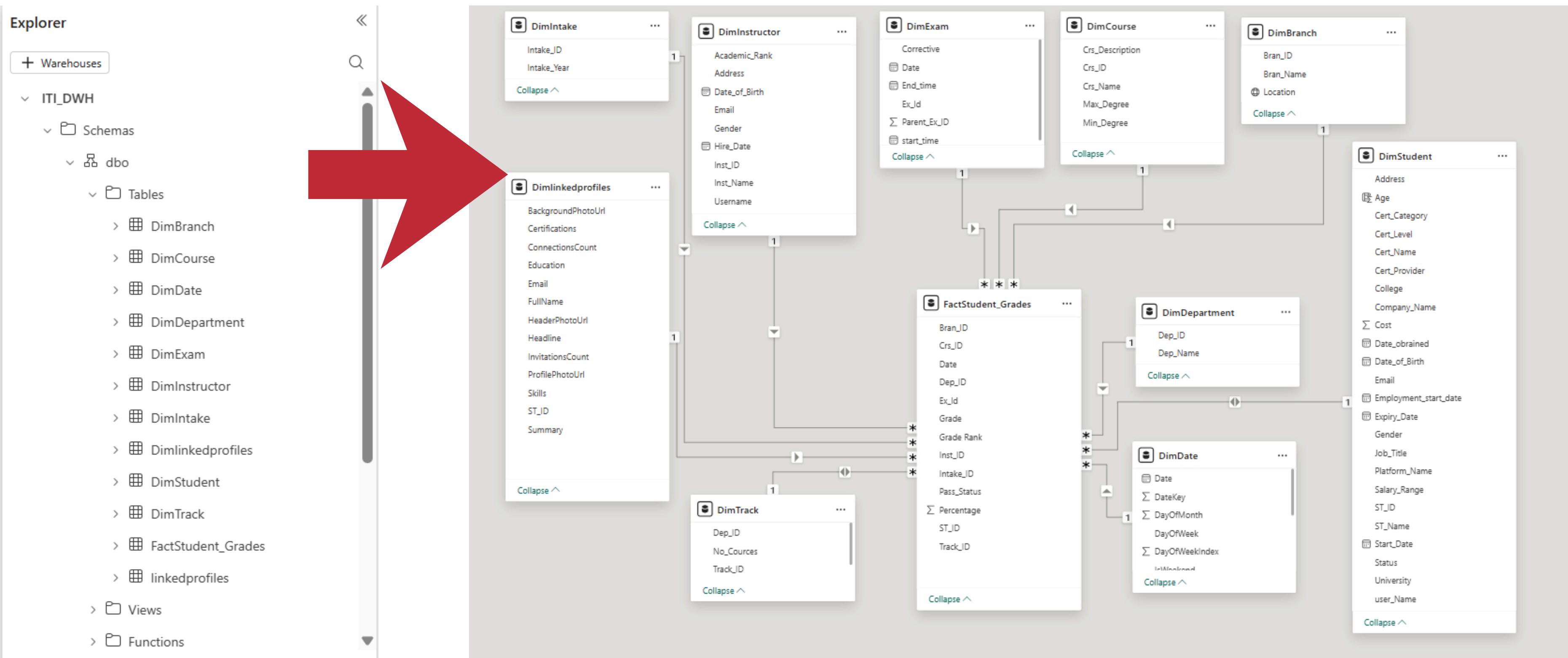
Step

Column profiling

Row	Branch ID	Branch Name
1	1	Cairo
2	2	Alexandria
3	3	Giza
4	4	Mansoura
5	5	Damanhur
6	6	Tanta
7	7	Asyut
8	8	Ismailia
9	9	Port Said
10	10	Minya

Data Modeling

Convert tables in the data warehouse (OLAP) into Fact and dimensions tables (Star Schema). It will help to improve performance and be clear to understand.



Fabric ITI_Lakehouse Notebook_ITI Saved Trials activated: 7 days left Home Edit AI tools Run View Comments History Develop Share

Home Connect PySpark (Python) Environment Workspace default Data Wrangler Copilot

Explorer Files > ... > Ahmed Search files Certifications.csv Connections.csv Education.csv Email Addresses.csv Invitations.csv Learning.csv Profile.csv Rich_Media.csv Skills.csv

1 # -----
2 # PART 1: Setup & Test Reading a CSV File
3 # -----
4
5 from pyspark.sql import SparkSession
6 from pyspark.sql import functions as F
7 from pyspark.sql import types as T
8
9 spark = SparkSession.builder.getOrCreate()
10
11 print("Spark session started")
12
[26] ✓ - Command executed in 267 ms by Mohamed Fayed Abd Ellatif Elbasuoney on 2:35:21 PM, 11/24/25
... Spark session started

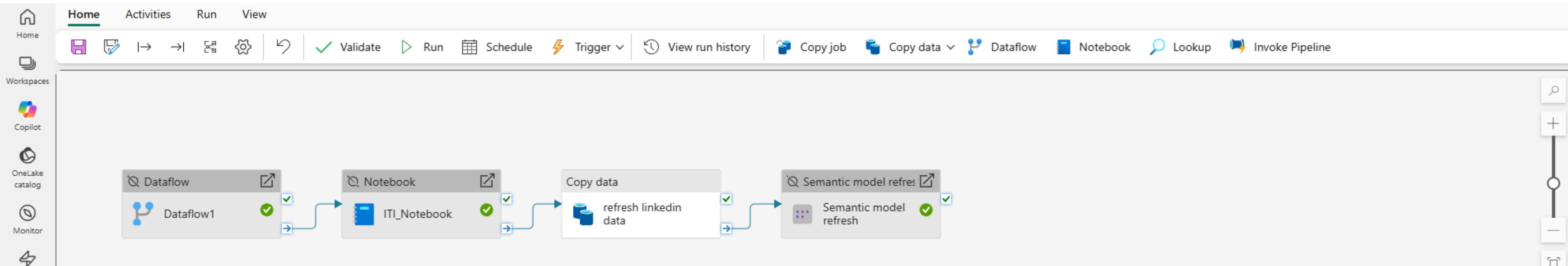
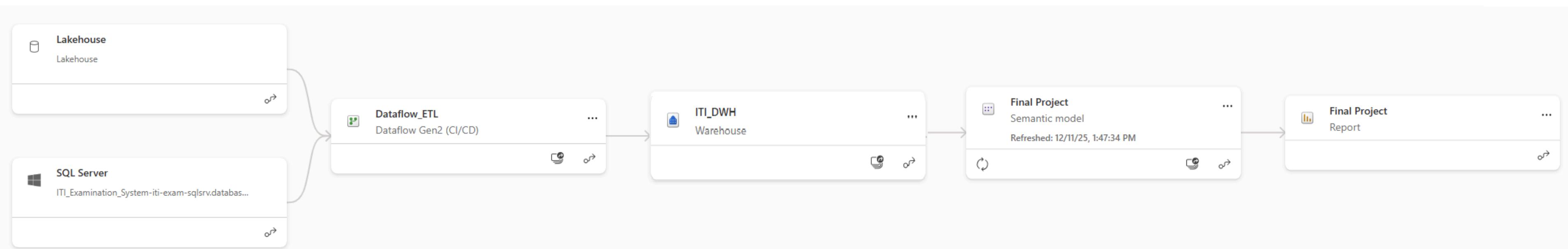
1 # =====
2 # PART 2 – Student folders + Safe CSV loader + Record template
3 # =====
4
5 from pyspark.sql.utils import AnalysisException
6
7 # -----
8 # 1. List of student folders (based on your Lakehouse)
9 # -----
10 students = [
11 "Ahmed",
12 "Aya",
13 "Manar",
14 "Mennatullah",
15 "Mohamed Elbasuoney"
16]
17
18 print("Students detected: ", students)

PySpark (Python)

ITI_Examination_system My workspace

Not connected AutoSave: On Selected Cell 1 of 5 cells

Data Flow & Pipeline





Power BI

07

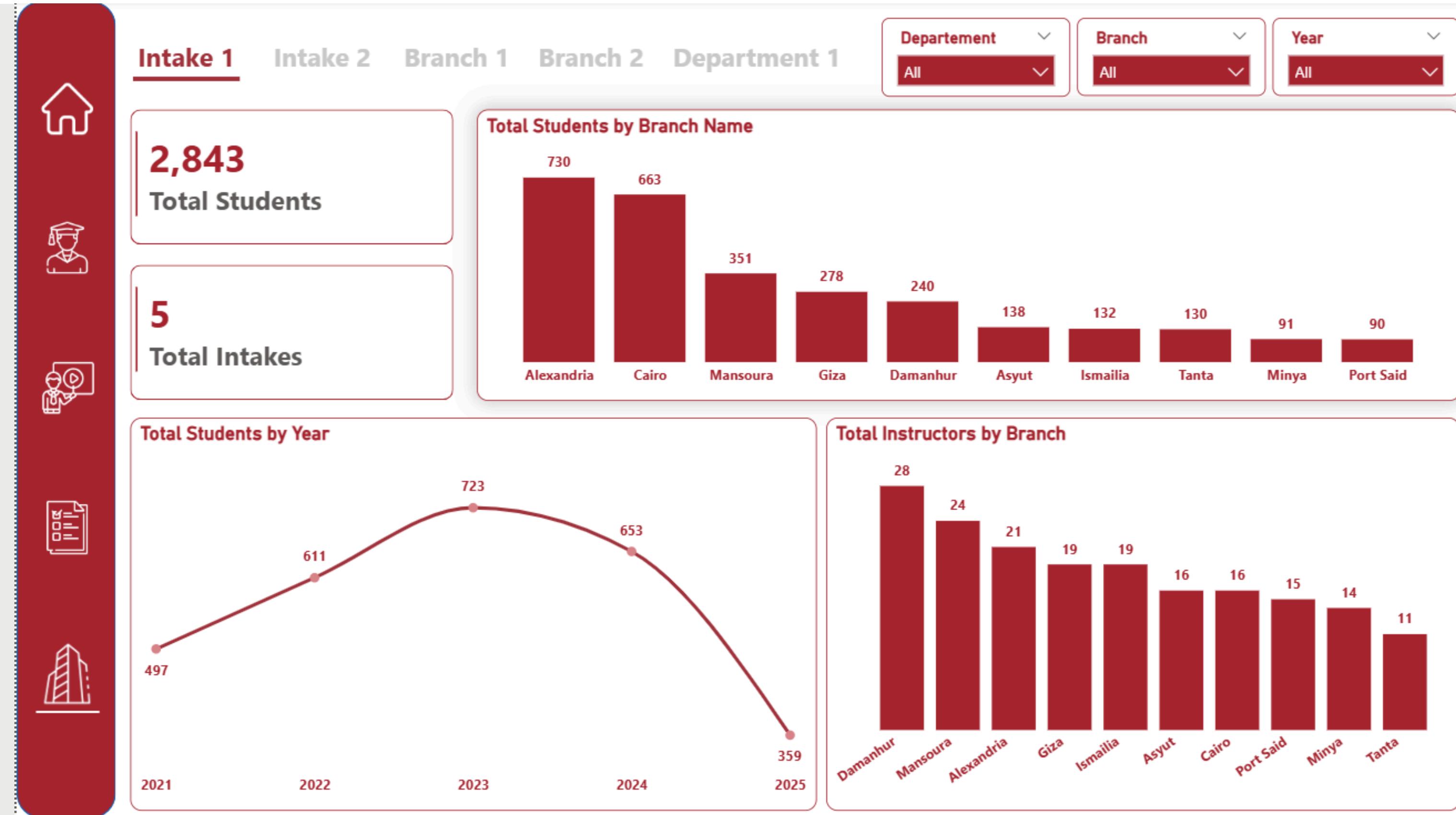
Using Power BI to implement Dashboards, so we will be able to extract insights and view the suitable analysis for the data



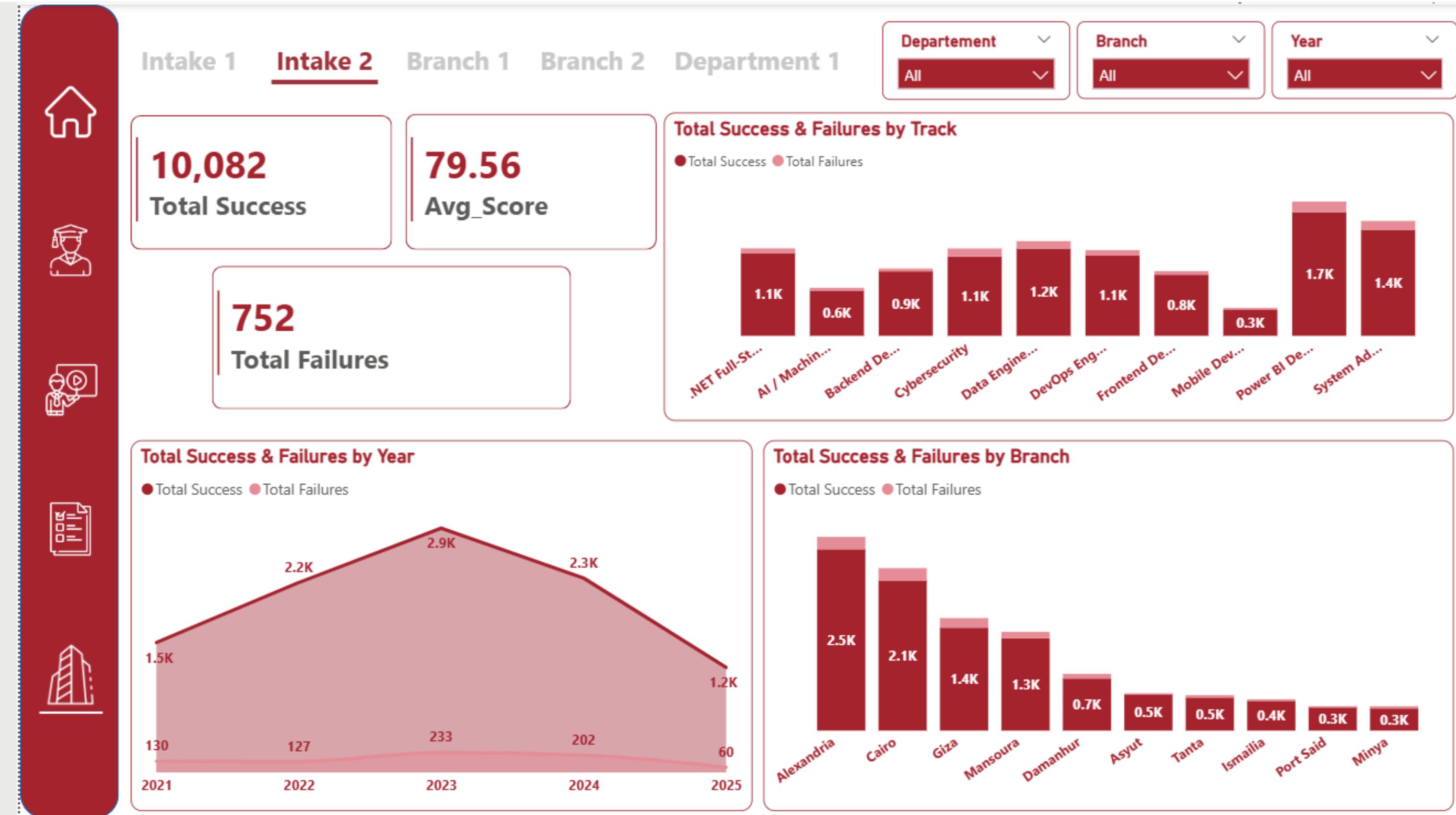
Examination System



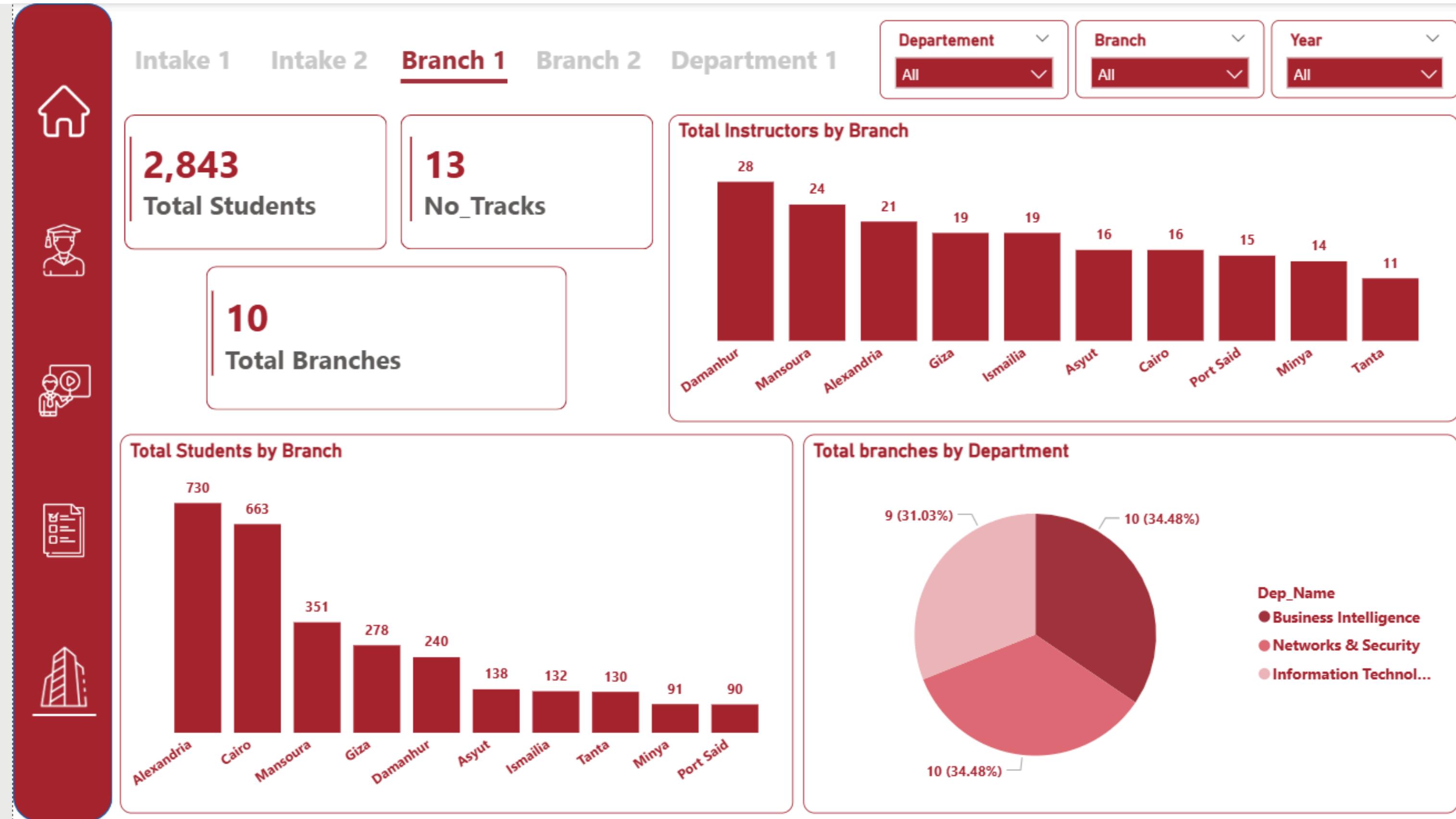
Intake Overview



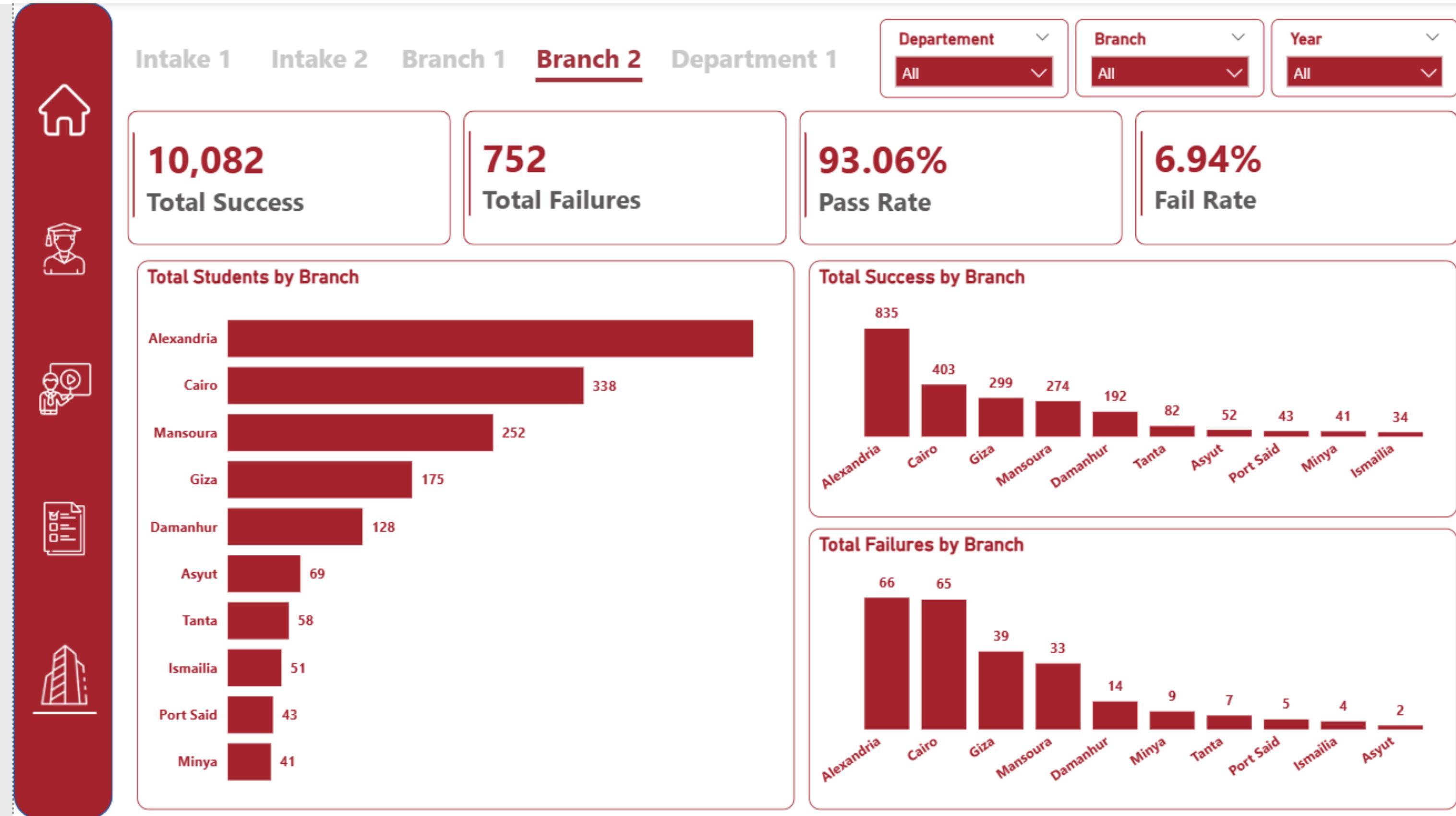
Intake Performance Analysis



Branch Overview



Branch Performance Analysis



Department Level

Department 1 **Department 2** **Track 1**

Departement **Branch** **Year**

All All All

3 Total Departments

96 Total Courses

13 Total Tracks

79.56 Average Score

Total Courses by Department

Information Tech...	37
Networks & Secu...	30
Business Intellige...	29

Total Tracks by Department

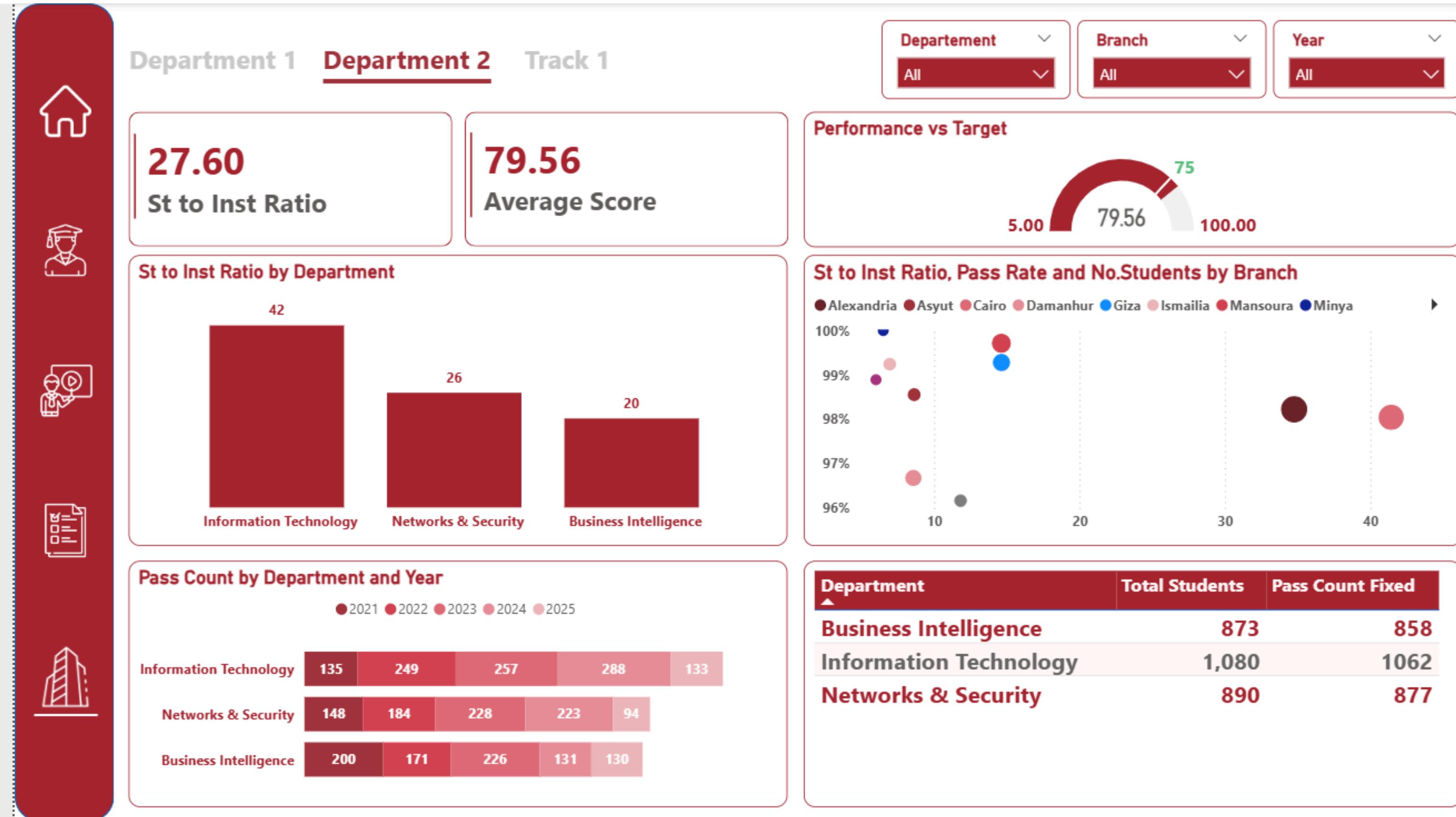
Information Technology	4
Business Intelligence	3
Networks & Security	3

Total Instructors by Department

Dep_Name	Business Intelligence	41.75%
Dep_Name	Networks & Security	33.01%
Dep_Name	Information Technology	25.24%

ST_Name	Department	Average Score
Abdullah Ahmed	Business Intelligence	87.00
Abdullah Ali	Business Intelligence	69.00
Abdullah Bakr	Business Intelligence	77.25
Abdullah El Sayed	Business Intelligence	75.00
Abdullah Ezzat	Business Intelligence	82.00
Abdullah Galal	Business Intelligence	76.67
Abdullah Hamdy	Business Intelligence	86.25
Abdullah Ibrahim	Business Intelligence	36.00
Abdullah Khalil	Business Intelligence	77.22

Department Performance Insights



Track Overview

Track 1 **Track 2** **Instructor 1** **Instructor 2**

Departement **All** Branch **All** Year **All**

2,843 Total Students

103 Total Instructors

13 Total Tracks

96 Total Courses

Total Students by Track

Power BI Development	362
.NET Full-Stack Web	326
System Administration	323
Frontend Development	312
Cybersecurity	293

Total Instructors by Track

Power BI Development	29
.NET Full-Stack Web	27
System Administration	26
Frontend Development	25
Cybersecurity	24
Backend Development	22
Mobile Application Development	21
AI / Machine Learning	17
Data Engineering	13
DevOps Engineering	12
Power BI Development	10
.NET Full-Stack Web	10
System Administration	5
Frontend Development	4
Cybersecurity	12
Backend Development	11
Mobile Application Development	10
AI / Machine Learning	8
Data Engineering	7
DevOps Engineering	8
Power BI Development	7
.NET Full-Stack Web	7
System Administration	7
Frontend Development	7
Cybersecurity	3
Backend Development	3
Mobile Application Development	3

Track	Alexandria	Asyut	Cairo	Damanhur	Giza	Ismailia	Mansoura	Minya	Port Said	Tanta	Total
.NET Full-Stack Web	147	24	73	47		21	10	5	10	25	362
AI / Machine Learning	22	17	79	6	26	8	13	10	4	12	197
Backend Development	56	30	52	42		11	51	8	11	32	293
Cybersecurity	47	12	82	33	58	13	39	8	10	10	312
Data Engineering	55	9	83	5	40	12	57	7	8	3	279
DevOps Engineering	59	11	58	18	44	12	22	8	8	12	252
Frontend Development	95	25	47	47		20	65	10	7	7	323
Total	730	138	663	240	278	132	351	91	90	130	2,843

Home

Student

Course

Report

Branch

Track Academic Performance

Track 1 **Track 2** Instructor 1 Instructor 2

Departement Branch Year

2,843
Total Students

2797
Pass Count

93.06%
Pass Rate

79.56
Average Score

Pass Rate by Track

Track	Pass Rate (%)
System Admin	99.39%
Mobile Development	99.02%
Backend Development	98.98%
DevOps Engineering	98.81%
Power BI Development	98.49%
.NET Full-Stack	98.34%
Data Engineering	98.21%
AI / Machine Learning	97.97%
Frontend Development	97.52%
Cybersecurity	97.44%

Average Score by Year

Year	Average Score
2021	79.6
2022	80.3
2023	78.6
2024	78.9
2025	81.6

Track	Year	Total Students	Pass Rate Final	Average Score
.NET Full-Stack Web	2021	44	97.73%	81.75
.NET Full-Stack Web	2022	85	97.65%	83.28
.NET Full-Stack Web	2023	56	100.00%	81.74
.NET Full-Stack Web	2024	122	97.54%	79.33
.NET Full-Stack Web	2025	55	100.00%	76.32
AI / Machine Learning	2021	49	97.96%	83.17
AI / Machine Learning	2022	37	97.30%	74.97

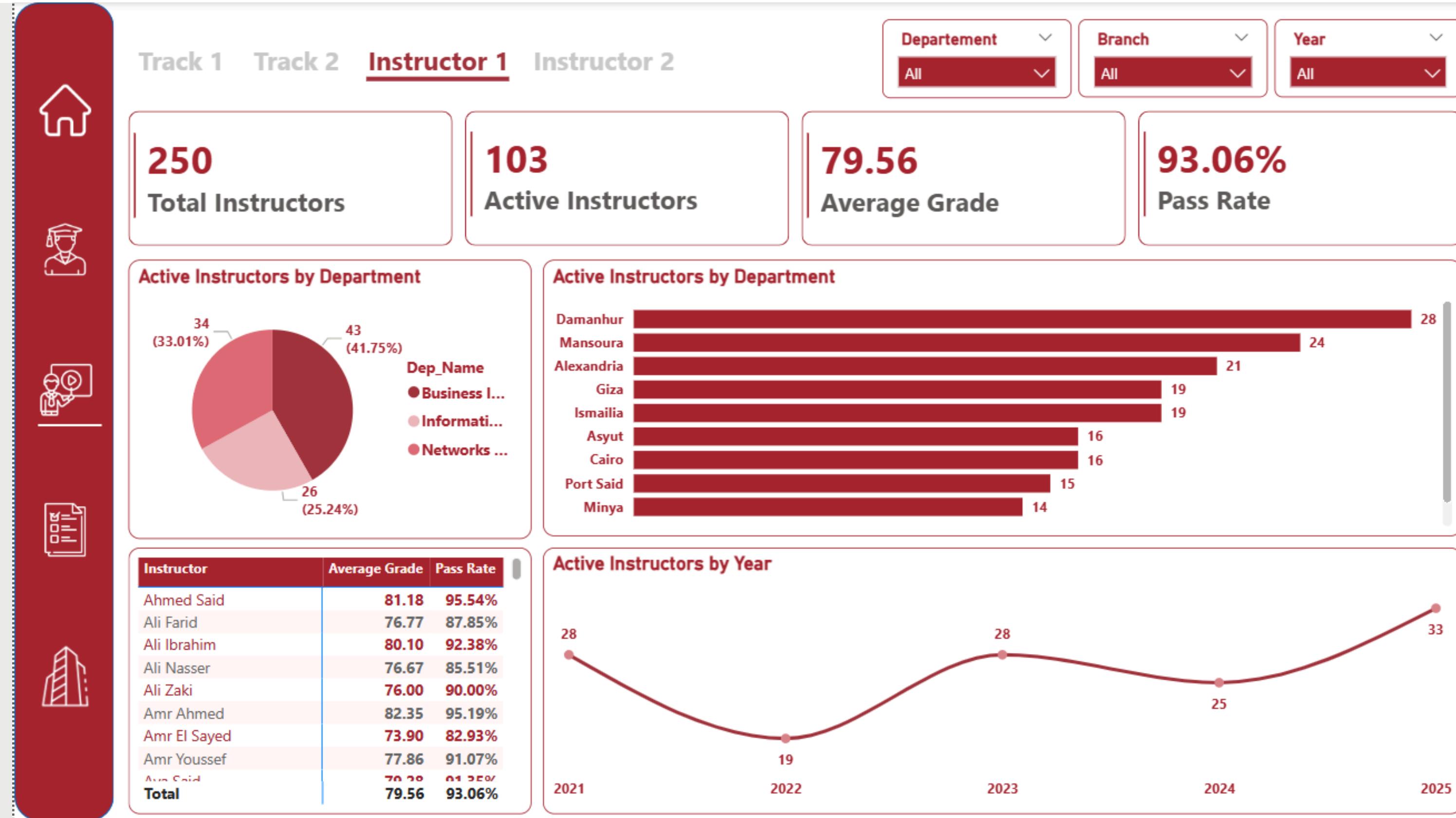
Home

Student Profile

Gradebook

Building

Instructor Overview



Instructor Performance Analysis

Track 1 Track 2 Instructor 1 **Instructor 2** Course 1

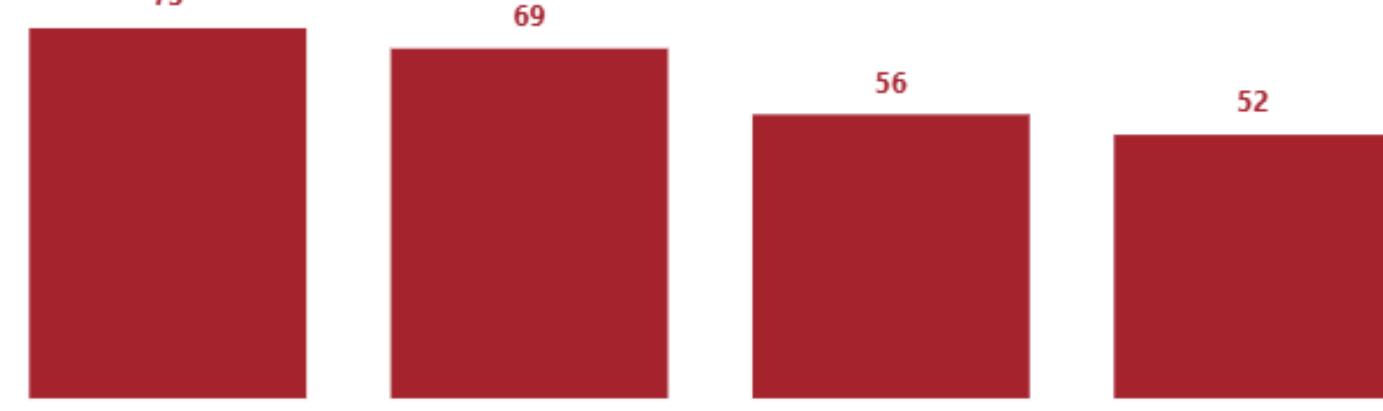
Departement Branch Year

All All All

250 Total Instructors **103** Active Instructors **79.56** Average Grade **93.06%** Pass Rate

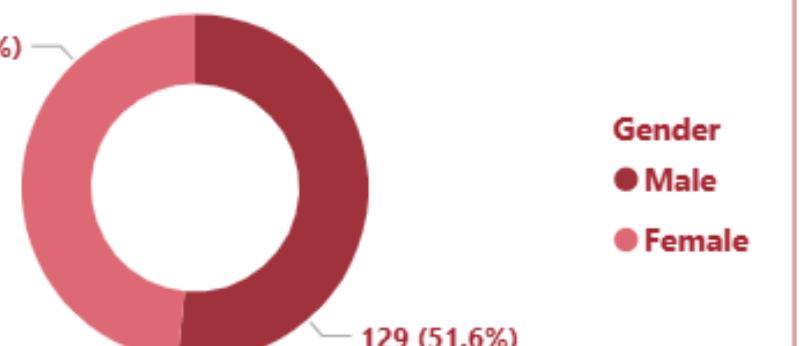
Instructor	Courses Taught	Exams Taught	Students Taught
Dina Ali	5	12	162
Fatma Saleh	3	14	147
Laila Said	4	19	148
Mariam Mohamed	9	29	108
Mohamed Saleh	5	35	149
Nour Ali	2	18	119
Salma Ali	9	35	120
Sherif Nasser	4	34	114
Tarek Ibrahim	6	8	136
Tarek Kamel	5	8	115

Total Instructors by Academic_Rank



Academic Rank	Count
Lead Instructor	73
Senior Instructor	69
Instructor	56
Principal Instructor	52

Total Instructors by Gender

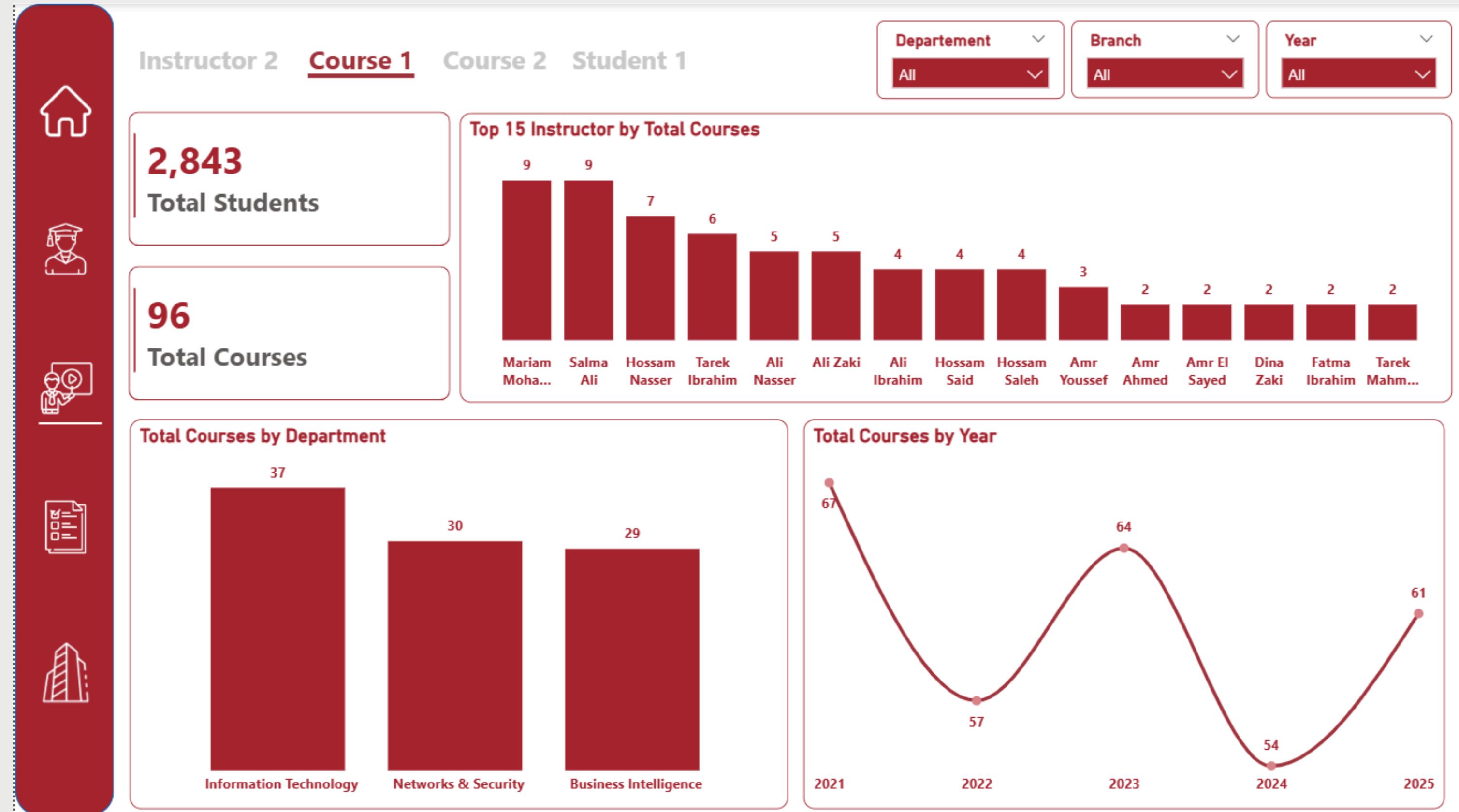


Gender	Count	Percentage
Male	121	48.4%
Female	129	51.6%

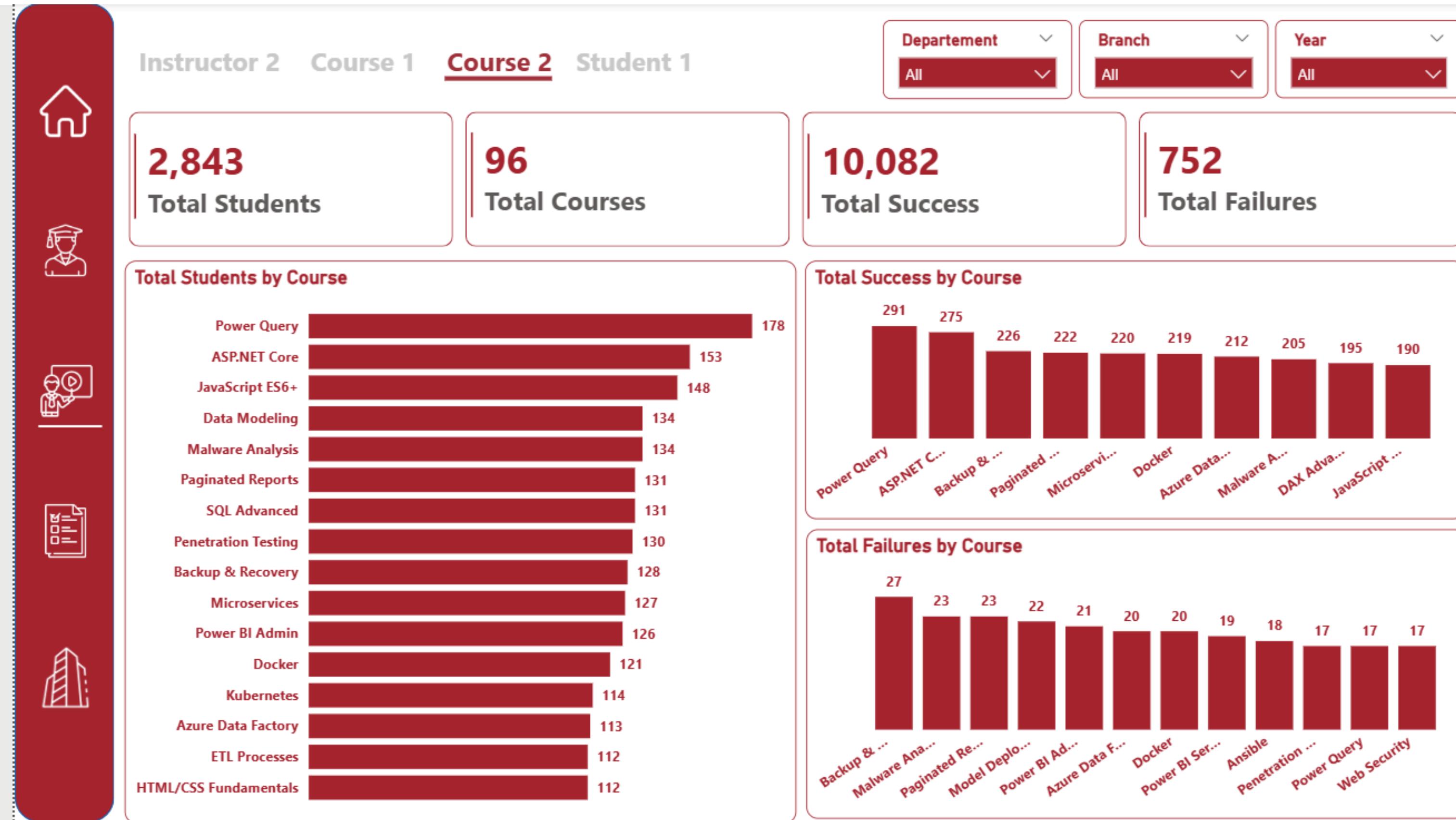
Active Instructors by Department and Track

Department	Track	Count
Business Intelligence	Power BI Development	29
	Data Engineering	26
Networks & Security	Cybersecurity	27
	AI / Machine Learning	25
Information Technology	Backend Development	25
	System Administration	25

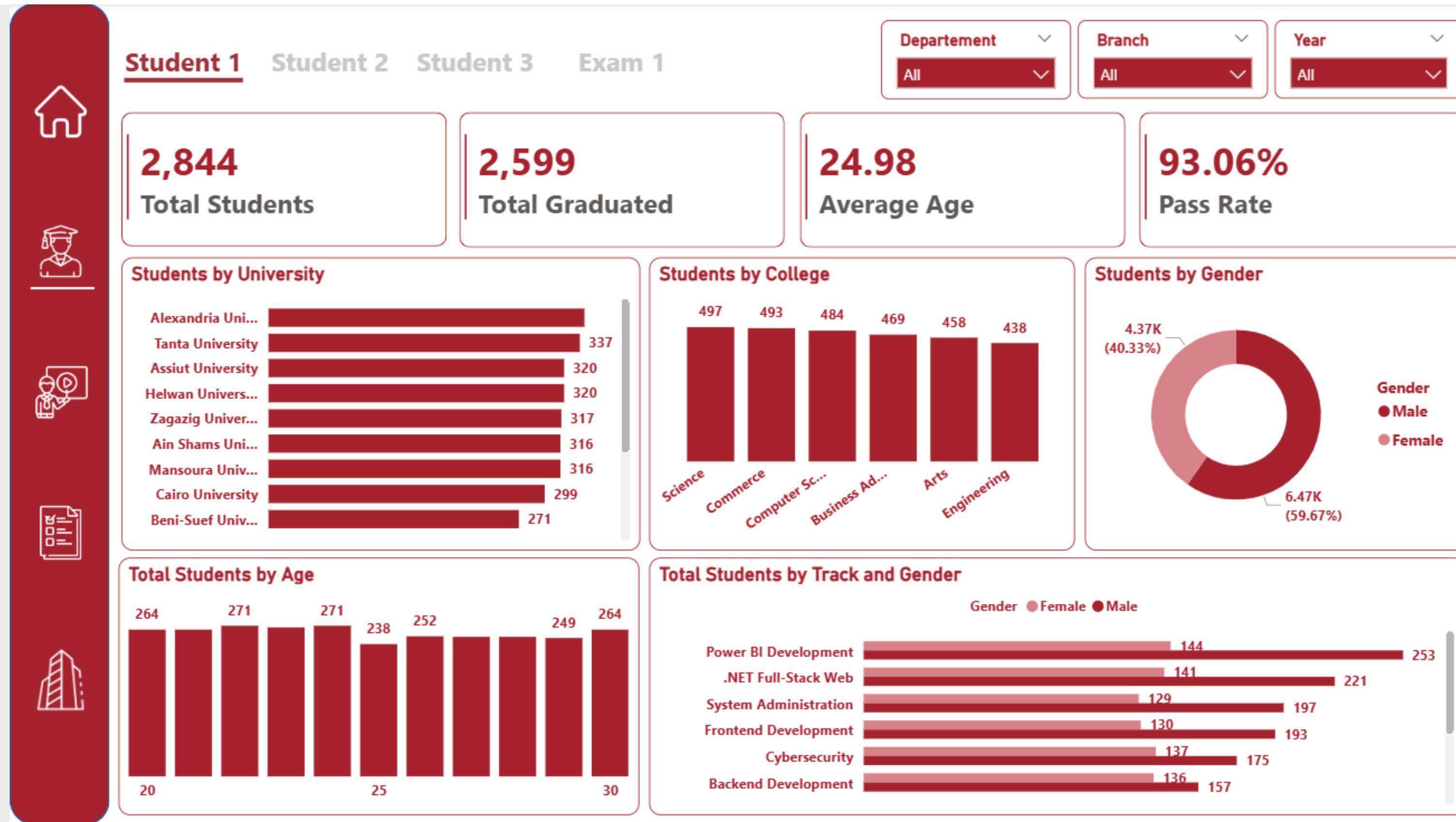
Course Overview



Course Performance Metrics



Student Overview



Student | Track & Branch

Student 1 **Student 2** Student 3 Exam 1

Departement **All** Branch **All** Year **All**

2,843 Total Students **2,599** Total Graduated **10** Total Tracks **10** Total Branches

Top 5 Branches by No.Graduates

Alexandria	Cairo	Mansoura	Dama...
664	606	251	328
Giza			212

Top 3 Tracks by No.Graduates

Power BI Development	355
.NET Full-Stack Web	333
Frontend Development	305

Top 3 Tracks by No.Students

Power BI Development	362
.NET Full-Stack Web	326
System Administration	

- Home
- Graduate
- Search
- Report
- Branches

Student | Freelancing

Student 1 Student 2 **Student 3** Exam 1

Departement Branch Year

All All All

\$882,574
Total Freelance Revenue

4,883
Total Freelancers

8
Freelance Platforms

\$180.83
Avg Freelance Income

Total Freelance Revenue by Platform

Platform	Total Freelance Revenue
Toptal	\$111K
Mostaql	\$108K
Upwork	\$108K
Khamsat	\$108K
PeoplePerHour	\$108K
Guru	\$107K
Fiverr	\$107K
Freelancer	\$103K

Total Freelance Revenue by Year

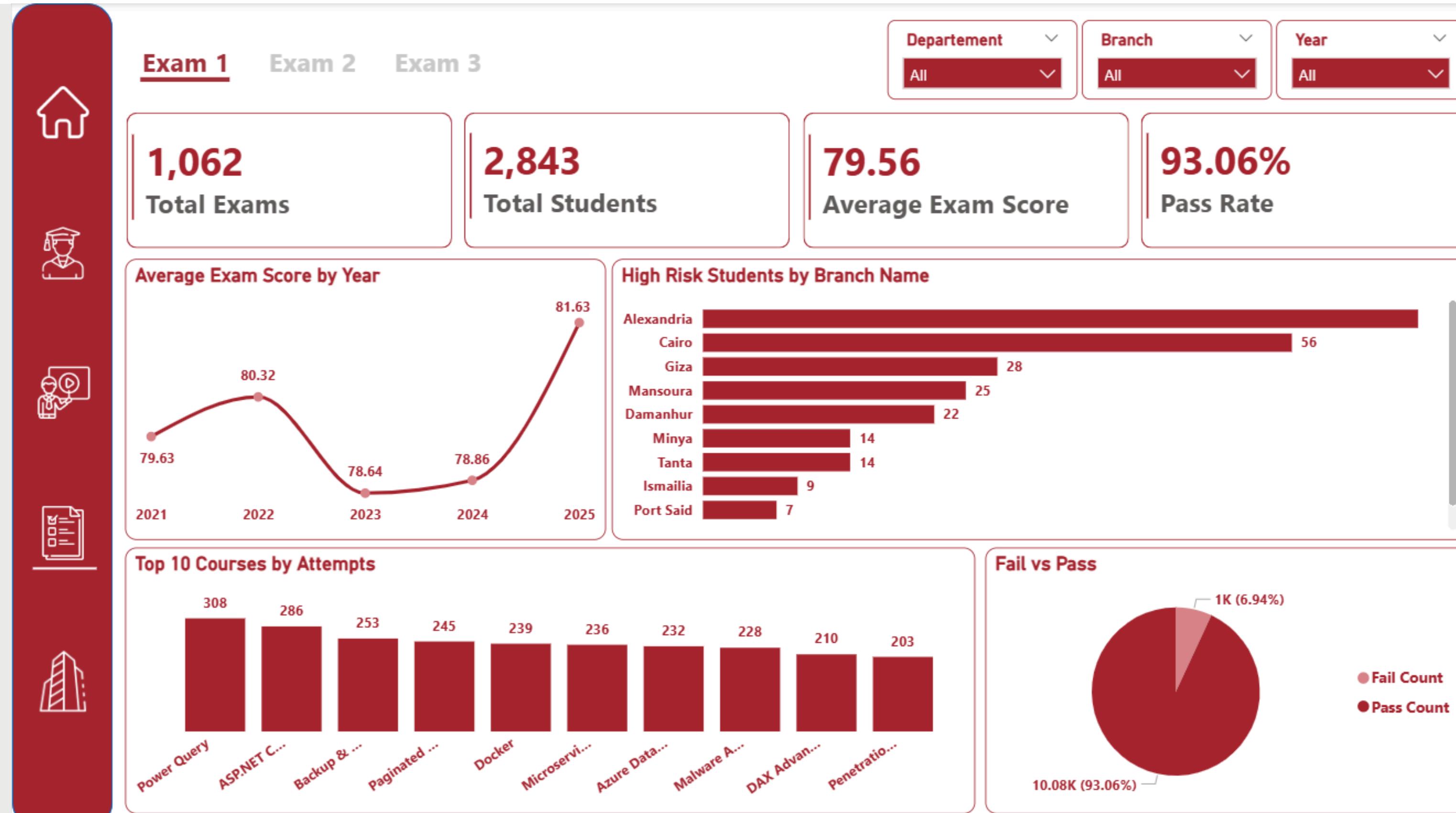
Year	Total Freelance Revenue
2021	\$92K
2022	\$125K
2023	\$147K
2024	\$123K
2025	\$66K

Top 5 Students by Total Freelance Revenue

Student Name	Total Freelance Revenue
Hossam Galal	\$3.5K
Nada Ismail	\$3.4K
Mai Hassan	\$3.4K
Mariam Farid	\$3.3K
Samy Kamel	\$3.3K

ST_ID	ST_Name	Track_Name	Total Freelance Revenue	Freelance Platforms
1	Khaled Zaki	.NET Full-Stack Web	\$165	1
4	Sherif Dawoud	DevOps Engineering	\$395	1
5	Mohamed Galal	Cybersecurity	\$370	1
6	Ahmed Mahmoud	Backend Development	\$150	1
7	Aya Saleh	System Administration	\$200	1
9	Youssef Said	.NET Full-Stack Web	\$299	1
14	Mai Ezzat	Power BI	\$39	1

Exam Overview



Exam | Student

Exam 1 Exam 2 Exam 3

Departement Branch Year

All All All

2,843
Total Students

80.64
Avg Student Score

24.98
Average Age

247
High Risk Students

Top 5 Students by Total Score

1030	1010	1000	1000	1000	1000	1000
Samy Amin	Hossam Galal	Ahmed Salah	Aya Fathy	Manar Elmslim...	Mennal... Ibrahim	Moham... Elbasuo...

Avg Student Score by University

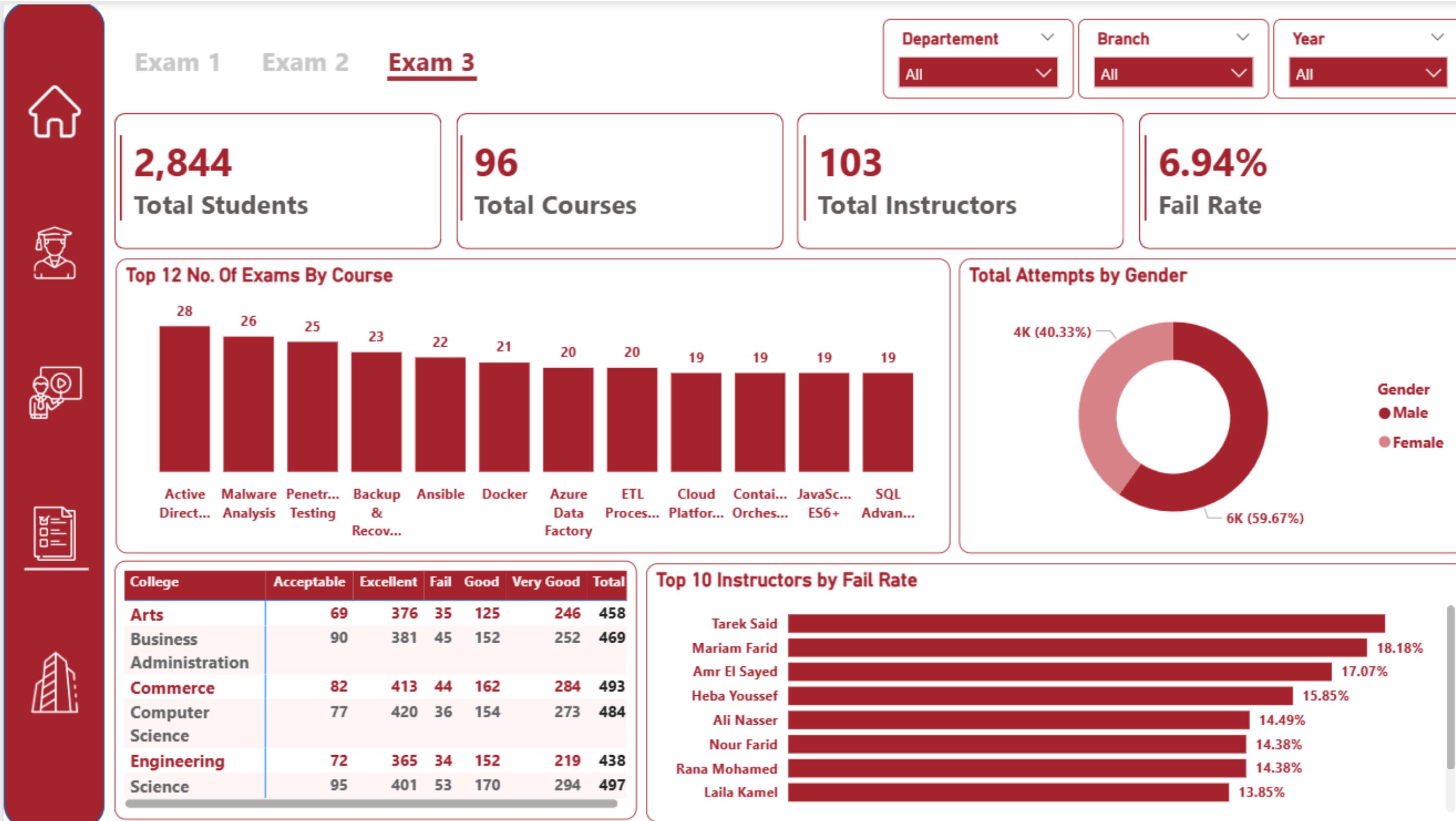
100.00	100.00	100.00	100.00	81.51	81.45	81.12	80.97	80.96	79.94	79.83	79.80	79.58
Alexandria	Damanhour	Mansoura	Tanta	Alexandria...	Tanta Univ...	Assiut Uni...	Mansoura ...	Helwan Un...	Zagazig U...	Ain Shams ...	Beni-Suef ...	Cairo Univ...

Total Students by Grade

Excellent	1,785
Very Good	1,568
Good	915
Acceptable	485
Fail	247

ST_ID	ST_Name	Total Score	Avg Student Score
1	Khaled Zaki	170.00	85.00
4	Sherif Dawoud	600.00	85.71
5	Mohamed Galal	170.00	85.00
6	Ahmed Mahmoud	510.00	85.00
7	Aya Saleh	535.00	89.17
9	Youssef Said	170.00	85.00
14	Mai Ezzat	245.00	81.67
16	Mona Galal	360.00	90.00
17	Adam Hamdy	350.00	87.50
18	Hossam Farid	170.00	85.00

Exam | Course & Instructor



Recap

Centralized data (Azure/Fabric) so reports and dashboards rely on a single source of truth

Designed for scalability: more students/exams/data without redesigning the system of truth

Data monitoring for performance, participation, outcomes, and trends over time

Enables data-driven decisions Based on Historical Data

THANK YOU

14 Dec, 2025