E_LEARNING PLATFORM ANALYSIS REPORT

Date : 28-6-2025

Prepared by: Ahmed Maged

Objective of the analysis:The goal is to assess how students engage with courses, detect dropout trends, and evaluate course ratings—so the platform can improve learning quality and reduce student disengagement.

Overview of the Data : The dataset captures key aspects of an online learning platform, including student demographics, course details, enrollment history, learning progress, and course feedback. Together, these elements offer a full picture of user behavior and course performance across the platform .

Data Summary

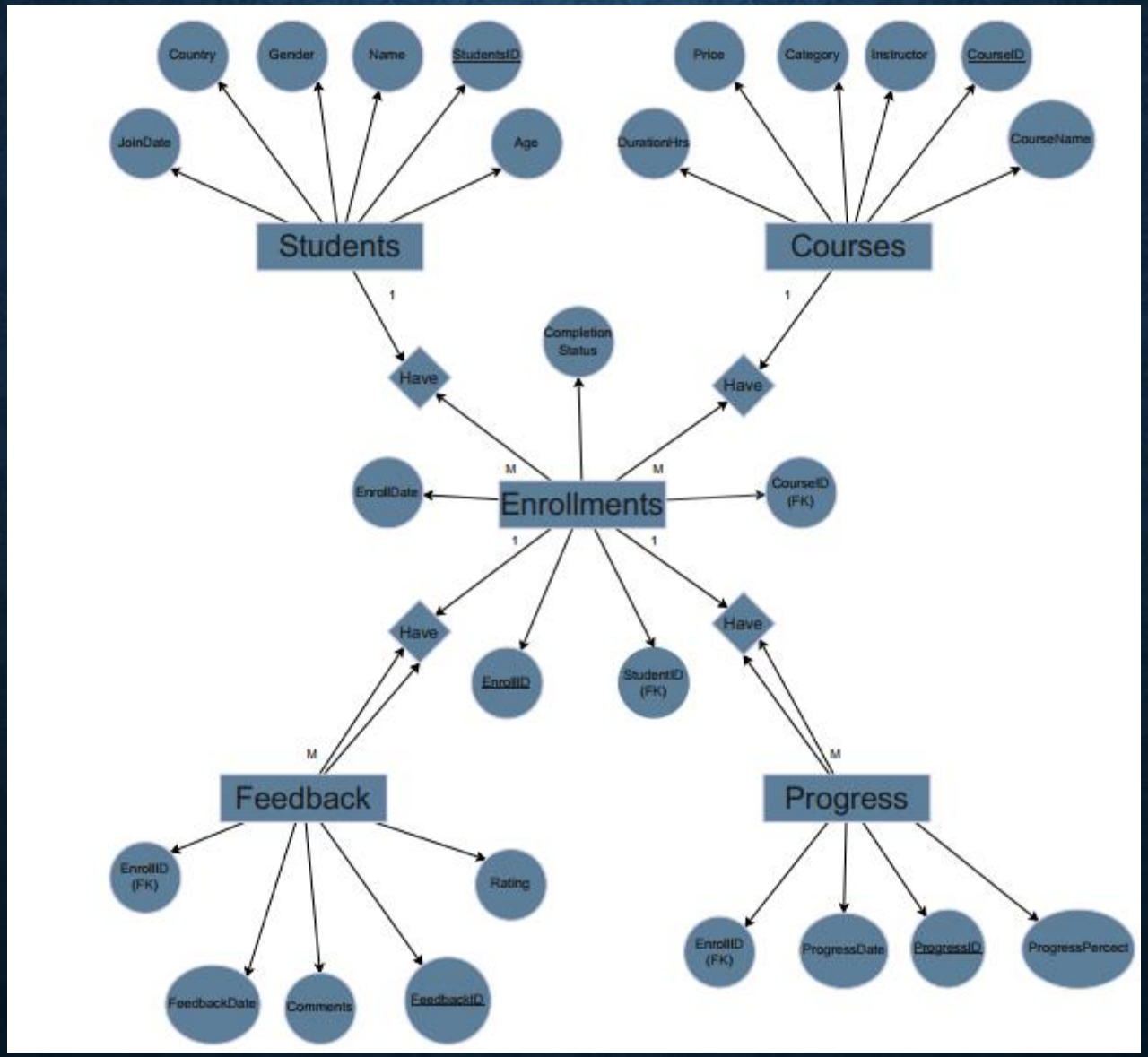
Analysis period: JAN 2023-MAY 2025

Number of Students Covered: 500

Key Categories Included in the Analysis:

[Data Science - Web Development – AI – Marketing - Business]

Create ERD


Country
Gender
Name
StudentsID
JoinDate
Age
Students
Price
Category
Instructor
CourseID
DurationHrs
CourseName
Courses
1
1
Completion Status
Have
Have
M
M
EnrollDate
Enrollments
CourseID (FK)
1
1
Have
Have
EnrollID
StudentID (FK)
M
M
Feedback
Progress
EnrollID (FK)
Rating
FeedbackDate
Comments
FeedbackID
EnrollID (FK)
ProgressDate
ProgressID
ProgressPercent

Create Data Base & Tables

```sql
use master;
create Database E_Learning
ON
( Name = E_learning_dat,
  filename = 'E:\data science\cours mec data analysis\data base.mdf',
  SIZE = 10 MB,
  MAXSIZE = 1000 MB,
  FILEGROWTH = 5 MB)
LOG ON
( Name = E_learning_log,
  filename = 'E:\data science\cours mec data analysis\data base.ldf',
  SIZE = 10 MB,
  MAXSIZE = 1000 MB,
  FILEGROWTH = 5 MB);

  USE E_Learning;
  GO

 CREATE TABLE Student (
    StudentID INT PRIMARY KEY,
    Name VARCHAR(100),
    Age INT CHECK (Age >= 10 AND Age <= 100),
    Gender VARCHAR(10),
    JoinDate DATE,
    Country VARCHAR(50)
);

CREATE TABLE Course (
    CourseID INT PRIMARY KEY,
    CourseName VARCHAR(100),
    Instructor VARCHAR(100),
    Category VARCHAR(50),
    DurationHrs INT CHECK (DurationHrs > 0)
```

```sql
 CREATE TABLE enrollment (
    EnrollID INT PRIMARY KEY,
    StudentID INT NOT NULL,
    CourseID INT NOT NULL,
    EnrollDate DATE,
    CompletionStatus VARCHAR(20)
);

CREATE TABLE Feedbacks (
    FeedbackID INT PRIMARY KEY,
    EnrollID INT NOT NULL,
    Rating INT CHECK (Rating >= 1 AND Rating <= 10),
    Comments VARCHAR(1000),
    FeedbackDate DATE
);

CREATE TABLE Progress (
    ProgressID INT PRIMARY KEY,
    EnrollID INT NOT NULL,
    ProgressDate DATE,
    ProgressPercent DECIMAL(5,2) CHECK (ProgressPercent BETWEEN 0 AND 100)
);

ALTER TABLE Enrollments
ADD FOREIGN KEY (StudentID) REFERENCES Students(StudentID),
    FOREIGN KEY (CourseID) REFERENCES Courses(CourseID);

ALTER TABLE Feedback
ADD FOREIGN KEY (EnrollID) REFERENCES Enrollments(EnrollID);

ALTER TABLE Progress
ADD FOREIGN KEY (EnrollID) REFERENCES Enrollments(EnrollID);
```

Insert Values

```
INSERT INTO Student (StudentID, Name, Age, Gender, JoinDate, Country)
VALUES  (1, 'Kathy Ross', 49, 'Female', '10/13/2023', 'Tunisia'),
 (2, 'Nicholas Holt', 38, 'Female', '10/25/2024', 'Palestine'),
 (3, 'Erica Hall', 44, 'Female', '2/18/2024', 'Jordan'),
 (4, 'John Bell', 37, 'Male', '7/3/2024', 'Bahrain'),
 (5, 'Amber Figueroa', 39, 'Female', '11/10/2023', 'Qatar'),
 (6, 'Laura Porter', 47, 'Female', '6/22/2024', 'Morocco'),
 (7, 'David Hernandez', 21, 'Male', '10/29/2024', 'United Arab Emirates'),
 (8, 'Angie Thomas', 27, 'Male', '4/3/2025', 'Jordan'),
 (9, 'April Rubio', 29, 'Male', '3/3/2025', 'Iraq'),
 (10, 'Michelle Johnston', 27, 'Male', '8/26/2024', 'Saudi Arabia'),
 (11, 'Joseph Barron', 30, 'Male', '1/20/2025', 'Lebanon'),
 (12, 'Robert Beck', 24, 'Female', '4/11/2024', 'Yemen'),
 (13, 'Cassandra Lewis', 21, 'Male', '10/5/2024', 'Palestine'),
 (14, 'Scott Gardner', 32, 'Female', '10/3/2023', 'Kuwait'),
 (15, 'Cheyenne Brown', 18, 'Male', '9/8/2024', 'Saudi Arabia'),
 (16, 'Donna Gibson', 44, 'Male', '11/21/2024', 'United Arab Emirates'),
 (17, 'Steven Thompson', 29, 'Female', '12/18/2023', 'Algeria'),
 (18, 'Dennis Hughes', 44, 'Male', '7/9/2023', 'Egypt'),
 (19, 'Raymond Johnson', 19, 'Female', '10/19/2023', 'Kuwait'),
 (20, 'Eric Mason', 24, 'Female', '6/7/2023', 'Tunisia'),
 (21, 'Jason Hamilton', 23, 'Female', '6/11/2023', 'Yemen'),
 (22, 'Michelle Drake', 33, 'Female', '6/7/2024', 'Iraq'),
 (23, 'Erin Jackson', 45, 'Male', '6/10/2023', 'Oman'),
 (24, 'Crystal Thomas', 41, 'Female', '3/2/2024', 'United Arab Emirates'),
 (25, 'Steven Welch', 42, 'Male', '1/1/2024', 'United Arab Emirates'),
 (26, 'Rhonda Spencer', 22, 'Male', '11/22/2023', 'Iraq'),
 (27, 'Pamela Watkins', 25, 'Female', '2/26/2024', 'United Arab Emirates'),
 (28, 'Daniel Hogan', 41, 'Female', '6/27/2023', 'Qatar'),
 (29, 'Daniel Willis', 30, 'Male', '7/20/2024', 'Sudan'),
 (30, 'Brittany Sanders MD', 20, 'Male', '8/30/2023', 'Oman'),
```

```
INSERT INTO Progress (ProgressID, EnrollID, ProgressDate, ProgressPercent)
VALUES  (1, 451, '7/26/2024', 36.35),
(2, 39, '1/7/2025', 89.29),
(3, 797, '6/29/2024', 84.39),
(4, 930, '1/20/2025', 67.71),
(5, 911, '4/11/2025', 56.79),
(6, 433, '7/19/2024', 33.73),
(7, 752, '11/2/2024', 10.5),
(8, 60, '6/23/2024', 79.35),
(9, 490, '5/17/2025', 83.4),
(10, 395, '10/28/2024', 7.97),
(11, 1, '2/21/2025', 79.23),
(12, 938, '1/20/2025', 12.81),
(13, 423, '2/10/2025', 31.98),
(14, 784, '8/11/2024', 62.37),
(15, 985, '10/17/2024', 53.45),
(16, 418, '1/6/2025', 71.74),
(17, 805, '6/25/2024', 17.75),
(18, 757, '6/6/2024', 19.04),
(19, 616, '1/9/2025', 2.22),
(20, 257, '3/10/2025', 8.57),
(21, 999, '4/7/2025', 95.45),
(22, 420, '6/25/2024', 52.09),
(23, 659, '10/12/2024', 64.29),
(24, 202, '9/25/2024', 47.01),
(25, 68, '11/6/2024', 42.32),
(26, 728, '1/29/2025', 95.89),
(27, 192, '12/9/2024', 33.07),
(28, 661, '12/26/2024', 75.31),
(29, 128, '1/15/2025', 32.58),
(30, 651, '1/21/2025', 13.04),
(31, 300, '9/27/2024', 33.18),
```

Insert Values

```
INSERT INTO Enrollment (EnrollID, StudentID, CourseID, EnrollDate, CompletionStatus)
VALUES  (1, 195, 45, '2/28/2025', 'Completed'),
(2, 426, 46, '12/8/2024', 'Completed'),
(3, 303, 43, '3/23/2025', 'Completed'),
(4, 133, 19, '9/11/2024', 'In Progress'),
(5, 19, 2, '1/12/2025', 'Dropped'),
(6, 377, 56, '5/12/2025', 'Dropped'),
(7, 441, 96, '8/29/2024', 'Dropped'),
(8, 105, 42, '2/23/2025', 'Dropped'),
(9, 263, 100, '5/11/2025', 'Completed'),
(10, 34, 67, '4/22/2025', 'Completed'),
(11, 391, 33, '6/29/2024', 'Dropped'),
(12, 363, 35, '2/12/2025', 'Dropped'),
(13, 225, 22, '5/30/2025', 'Completed'),
(14, 22, 23, '5/19/2025', 'In Progress'),
(15, 165, 72, '12/29/2024', 'Dropped'),
(16, 90, 34, '6/22/2024', 'Completed'),
(17, 285, 2, '11/15/2024', 'In Progress'),
(18, 2, 64, '10/7/2024', 'Dropped'),
(19, 353, 1, '7/6/2024', 'Completed'),
(20, 163, 46, '11/13/2024', 'Completed'),
(21, 364, 97, '3/26/2025', 'In Progress'),
(22, 54, 19, '12/2/2024', 'Dropped'),
(23, 133, 4, '3/2/2025', 'Dropped'),
(24, 69, 44, '12/20/2024', 'Dropped'),
(25, 274, 91, '1/26/2025', 'Completed'),
(26, 83, 25, '12/24/2024', 'Completed'),
(27, 59, 50, '11/30/2024', 'Completed'),
(28, 184, 21, '2/8/2025', 'In Progress'),
(29, 21, 60, '3/20/2025', 'Completed'),
(30, 193, 71, '10/21/2024', 'Dropped'),
```

```
INSERT INTO Course (CourseID, CourseName, Instructor, Category, DurationHrs, PriceUSD)
VALUES  (1, 'Data Science for Beginners', 'Kelly Smith', 'Data Science', 39, 251.06),
(2, 'Python for Data Analysis', 'Kristina Davis', 'Data Science', 13, 76.59),
(3, 'Machine Learning with Scikit-Learn', 'Zachary Lopez', 'Data Science', 41, 151.52),
(4, 'Data Wrangling with Pandas', 'Mr. Jason Fletcher MD', 'Data Science', 68, 108.87),
(5, 'Data Visualization with Matplotlib', 'Susan Thomas', 'Data Science', 98, 103.0),
(6, 'Exploratory Data Analysis', 'Brenda Deleon', 'Data Science', 96, 40.41),
(7, 'SQL for Data Science', 'Kevin Cook', 'Data Science', 24, 44.69),
(8, 'Statistics and Probability', 'Vincent Harper', 'Data Science', 65, 256.67),
(9, 'Big Data Foundations', 'Timothy Wheeler', 'Data Science', 96, 246.23),
(10, 'Data Engineering Basics', 'David Flores', 'Data Science', 95, 24.04),
(11, 'Advanced Machine Learning', 'Wendy Moran', 'Data Science', 12, 93.54),
(12, 'Data Science Capstone', 'Roger Hernandez', 'Data Science', 54, 188.52),
(13, 'Time Series Forecasting', 'Brian Hayes', 'Data Science', 41, 34.68),
(14, 'Excel for Data Analysis', 'Veronica Dodson', 'Data Science', 67, 32.0),
(15, 'Natural Language Processing', 'Brittney Pratt', 'Data Science', 99, 295.95),
(16, 'Deep Learning with PyTorch', 'Ashlee Harris', 'Data Science', 10, 123.68),
(17, 'Data Ethics and Privacy', 'Stacey Thompson', 'Data Science', 26, 74.95),
(18, 'Data Storytelling', 'Thomas Mason', 'Data Science', 22, 180.94),
(19, 'Feature Engineering', 'Marcia Christensen', 'Data Science', 55, 177.17),
(20, 'Model Deployment with Flask', 'Rebecca Johnson', 'Data Science', 25, 115.64),
(21, 'HTML & CSS Fundamentals', 'Jaclyn Schaefer', 'Web Development', 79, 207.57),
(22, 'JavaScript from Scratch', 'Bradley Jenkins', 'Web Development', 42, 100.73),
(23, 'React for Beginners', 'Candace Greene', 'Web Development', 58, 276.73),
(24, 'Node.js Essentials', 'Mary Castro', 'Web Development', 18, 199.15),
(25, 'Full Stack Web Development', 'Mr. Richard Vargas MD', 'Web Development', 37, 199.13),
(26, 'Web Accessibility', 'Bridget Stone', 'Web Development', 57, 95.5),
(27, 'Responsive Web Design', 'Kyle Perry', 'Web Development', 27, 202.34),
(28, 'Bootstrap for Web Design', 'Michael Harvey', 'Web Development', 14, 262.88),
(29, 'Modern JavaScript (ES6+)', 'Timothy Daniels', 'Web Development', 84, 209.35),
(30, 'Web APIs with Express.js', 'Lisa Collins', 'Web Development', 76, 159.49),
```

Insert Values

```
INSERT INTO Feedbacks (FeedbackID, EnrollID, Rating, Comments, FeedbackDate)
VALUES (1, 884, 4, 'The duration is too short for the content.', '4/30/2025'),
(2, 833, 8, 'The course content needs improvement.', '1/25/2025'),
(3, 500, 3, 'The course did not meet my expectations.', '7/8/2024'),
(4, 625, 3, 'The instructor was great and the approach was simple.', '2/8/2025'),
(5, 186, 8, 'I learned a lot from this course.', '4/16/2025'),
(6, 279, 7, 'The course did not meet my expectations.', '5/6/2025'),
(7, 479, 10, 'The course content needs improvement.', '5/30/2025'),
(8, 125, 1, 'The course was a bit boring.', '1/29/2025'),
(9, 370, 8, 'The course did not meet my expectations.', '6/18/2024'),
(10, 3, 10, 'The course did not meet my expectations.', '1/19/2025'),
(11, 52, 2, 'The course was a bit boring.', '8/26/2024'),
(12, 612, 8, 'The course was excellent and very useful.', '1/1/2025'),
(13, 897, 2, 'The course was a bit boring.', '9/9/2024'),
(14, 974, 2, 'The instructor was great and the approach was simple.', '12/25/2024'),
(15, 403, 10, 'The course was excellent and very useful.', '5/10/2025'),
(16, 611, 10, 'Great experience, I highly recommend it.', '9/11/2024'),
(17, 838, 6, 'The instructor was great and the approach was simple.', '6/7/2024'),
(18, 68, 6, 'The course content needs improvement.', '8/5/2024'),
(19, 73, 4, 'Great experience, I highly recommend it.', '9/3/2024'),
(20, 391, 2, 'Rich and very helpful content.', '10/29/2024'),
(21, 532, 9, 'The duration is too short for the content.', '11/2/2024'),
(22, 109, 1, 'The course did not meet my expectations.', '4/20/2025'),
(23, 345, 10, 'The course was excellent and very useful.', '4/20/2025'),
(24, 322, 8, 'The course did not meet my expectations.', '4/9/2025'),
(25, 237, 4, 'The course content needs improvement.', '10/4/2024'),
(26, 403, 1, 'The instructor was great and the approach was simple.', '3/2/2025'),
(27, 200, 5, 'The course was a bit boring.', '10/20/2024'),
(28, 833, 1, 'The course was a bit boring.', '1/27/2025'),
(29, 842, 10, 'I learned a lot from this course.', '5/31/2025'),
(30, 756, 9, 'The instructor was great and the approach was simple.', '5/6/2025'),
```

Display Values

SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
SELECT * FROM Student
```

100 %

Results | Messages

	StudentID	Name	Age	Gender	JoinDate	Country
1	1	Kathy Ross	49	Female	2023-10-13	Tunisia
2	2	Nicholas Holt	38	Female	2024-10-25	Palestine
3	3	Erica Hall	44	Female	2024-02-18	Jordan
4	4	John Bell	37	Male	2024-07-03	Bahrain
5	5	Amber Figu...	39	Female	2023-11-10	Qatar
6	6	Laura Porter	47	Female	2024-06-22	Morocco
7	7	David Hern...	21	Male	2024-10-29	United ...
8	8	Angie Tho...	27	Male	2025-04-03	Jordan
9	9	April Rubio	29	Male	2025-03-03	Iraq
10	10	Michelle Jo...	27	Male	2024-08-26	Saudi ...
11	11	Joseph Bar...	30	Male	2025-01-20	Lebanon
12	12	Robert Beck	24	Female	2024-04-11	Yemen
13	13	Cassandra ...	21	Male	2024-10-05	Palestine
14	14	Scott Gard...	32	Female	2023-10-03	Kuwait
15	15	Cheyenne ...	18	Male	2024-09-08	Saudi ...
16	16	Donna Gib...	44	Male	2024-11-21	United ...
17	17	Steven Th...	29	Female	2023-12-18	Algeria
18	18	Dennis Hu...	44	Male	2023-07-09	Egypt
19	19	Raymond J...	19	Female	2023-10-19	Kuwait
20	20	Eric Mason	24	Female	2023-06-07	Tunisia
21	21	Jason Hami...	23	Female	2023-06-11	Yemen
22	22	Michelle Dr...	33	Female	2024-06-07	Iraq

Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:03 | 500 ro

Display Values

SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
SELECT * FROM course
```

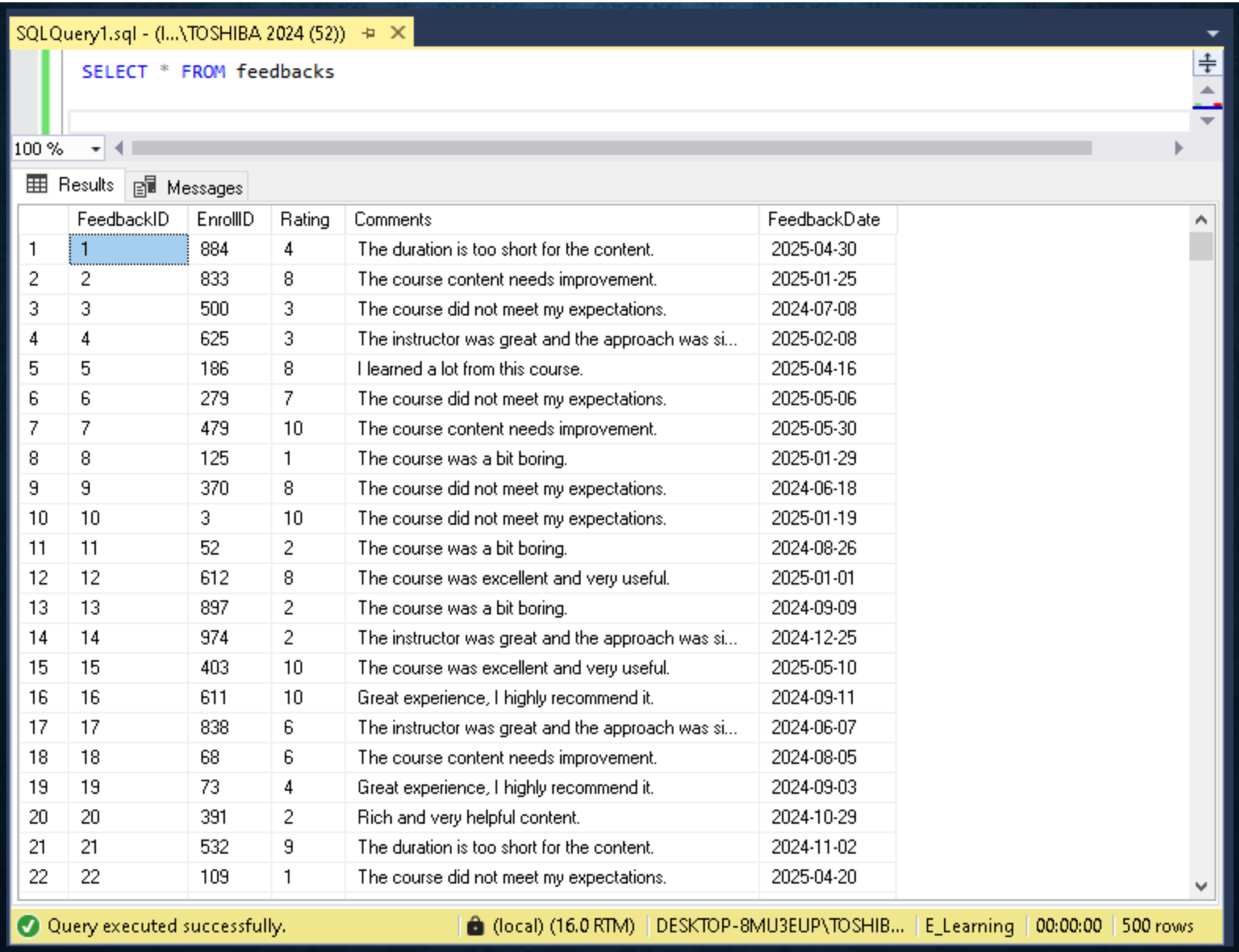
100 %

Results | Messages

	CourseID	CourseName	Instructor	Category	DurationHrs	PriceUSD
1	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06
2	2	Python for Data Analysis	Kristina Davis	Data Science	13	76.59
3	3	Machine Learning with Scikit-Learn	Zachary Lopez	Data Science	41	151.52
4	4	Data Wrangling with Pandas	Mr. Jason Fletcher MD	Data Science	68	108.87
5	5	Data Visualization with Matplotlib	Susan Thomas	Data Science	98	103.00
6	6	Exploratory Data Analysis	Brenda Deleon	Data Science	96	40.41
7	7	SQL for Data Science	Kevin Cook	Data Science	24	44.69
8	8	Statistics and Probability	Vincent Harper	Data Science	65	256.67
9	9	Big Data Foundations	Timothy Wheeler	Data Science	96	246.23
10	10	Data Engineering Basics	David Flores	Data Science	95	24.04
11	11	Advanced Machine Learning	Wendy Moran	Data Science	12	93.54
12	12	Data Science Capstone	Roger Hernandez	Data Science	54	188.52
13	13	Time Series Forecasting	Brian Hayes	Data Science	41	34.68
14	14	Excel for Data Analysis	Veronica Dodson	Data Science	67	32.00
15	15	Natural Language Processing	Brittney Pratt	Data Science	99	295.95
16	16	Deep Learning with PyTorch	Ashlee Harris	Data Science	10	123.68
17	17	Data Ethics and Privacy	Stacey Thompson	Data Science	26	74.95
18	18	Data Storytelling	Thomas Mason	Data Science	22	180.94
19	19	Feature Engineering	Marcia Christensen	Data Science	55	177.17
20	20	Model Deployment with Flask	Rebecca Johnson	Data Science	25	115.64
21	21	HTML & CSS Fundamentals	Jaclyn Schaefer	Web Development	79	207.57
22	22	JavaScript from Scratch	Bradley Jenkins	Web Development	42	100.73

Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:00 | 100 rows

Display Values


SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
SELECT * FROM feedbacks
```

100 %

Results | Messages

	FeedbackID	EnrollID	Rating	Comments	FeedbackDate
1	1	884	4	The duration is too short for the content.	2025-04-30
2	2	833	8	The course content needs improvement.	2025-01-25
3	3	500	3	The course did not meet my expectations.	2024-07-08
4	4	625	3	The instructor was great and the approach was si...	2025-02-08
5	5	186	8	I learned a lot from this course.	2025-04-16
6	6	279	7	The course did not meet my expectations.	2025-05-06
7	7	479	10	The course content needs improvement.	2025-05-30
8	8	125	1	The course was a bit boring.	2025-01-29
9	9	370	8	The course did not meet my expectations.	2024-06-18
10	10	3	10	The course did not meet my expectations.	2025-01-19
11	11	52	2	The course was a bit boring.	2024-08-26
12	12	612	8	The course was excellent and very useful.	2025-01-01
13	13	897	2	The course was a bit boring.	2024-09-09
14	14	974	2	The instructor was great and the approach was si...	2024-12-25
15	15	403	10	The course was excellent and very useful.	2025-05-10
16	16	611	10	Great experience, I highly recommend it.	2024-09-11
17	17	838	6	The instructor was great and the approach was si...	2024-06-07
18	18	68	6	The course content needs improvement.	2024-08-05
19	19	73	4	Great experience, I highly recommend it.	2024-09-03
20	20	391	2	Rich and very helpful content.	2024-10-29
21	21	532	9	The duration is too short for the content.	2024-11-02
22	22	109	1	The course did not meet my expectations.	2025-04-20

Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:00 | 500 rows

Display Values

SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
SELECT * FROM progress
```

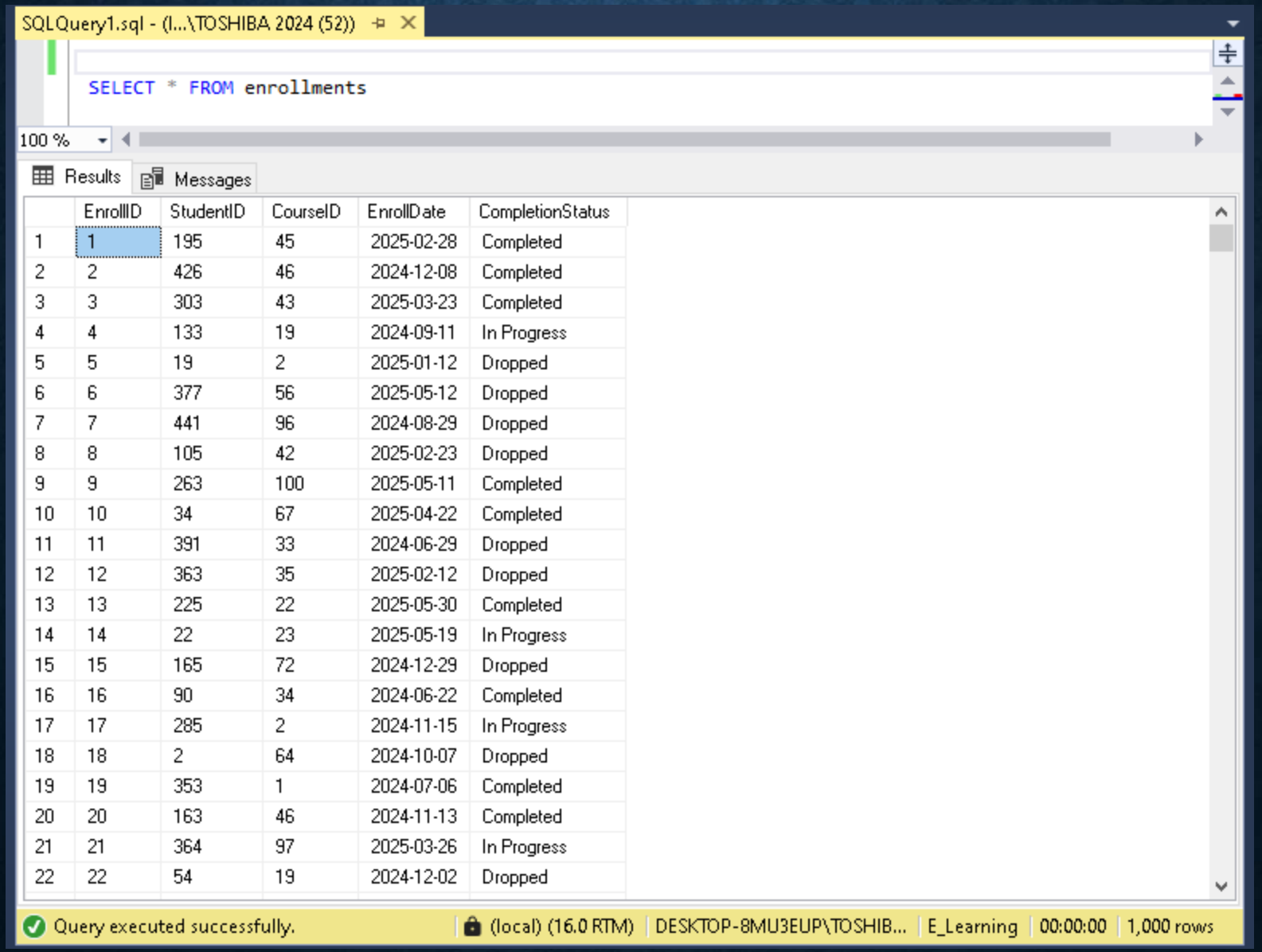
100 %

Results | Messages

	ProgressID	EnrollID	ProgressDate	ProgressPercent
1	1	451	2024-07-26	36.35
2	2	39	2025-01-07	89.29
3	3	797	2024-06-29	84.39
4	4	930	2025-01-20	67.71
5	5	911	2025-04-11	56.79
6	6	433	2024-07-19	33.73
7	7	752	2024-11-02	10.50
8	8	60	2024-06-23	79.35
9	9	490	2025-05-17	83.40
10	10	395	2024-10-28	7.97
11	11	1	2025-02-21	79.23
12	12	938	2025-01-20	12.81
13	13	423	2025-02-10	31.98
14	14	784	2024-08-11	62.37
15	15	985	2024-10-17	53.45
16	16	418	2025-01-06	71.74
17	17	805	2024-06-25	17.75
18	18	757	2024-06-06	19.04
19	19	616	2025-01-09	2.22
20	20	257	2025-03-10	8.57
21	21	999	2025-04-07	95.45
22	22	420	2024-06-25	52.09

Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:00 | 10,000 rows

Display Values


SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
SELECT * FROM enrollments
```

100 %

Results | Messages

	EnrollID	StudentID	CourseID	EnrollDate	CompletionStatus
1	1	195	45	2025-02-28	Completed
2	2	426	46	2024-12-08	Completed
3	3	303	43	2025-03-23	Completed
4	4	133	19	2024-09-11	In Progress
5	5	19	2	2025-01-12	Dropped
6	6	377	56	2025-05-12	Dropped
7	7	441	96	2024-08-29	Dropped
8	8	105	42	2025-02-23	Dropped
9	9	263	100	2025-05-11	Completed
10	10	34	67	2025-04-22	Completed
11	11	391	33	2024-06-29	Dropped
12	12	363	35	2025-02-12	Dropped
13	13	225	22	2025-05-30	Completed
14	14	22	23	2025-05-19	In Progress
15	15	165	72	2024-12-29	Dropped
16	16	90	34	2024-06-22	Completed
17	17	285	2	2024-11-15	In Progress
18	18	2	64	2024-10-07	Dropped
19	19	353	1	2024-07-06	Completed
20	20	163	46	2024-11-13	Completed
21	21	364	97	2025-03-26	In Progress
22	22	54	19	2024-12-02	Dropped

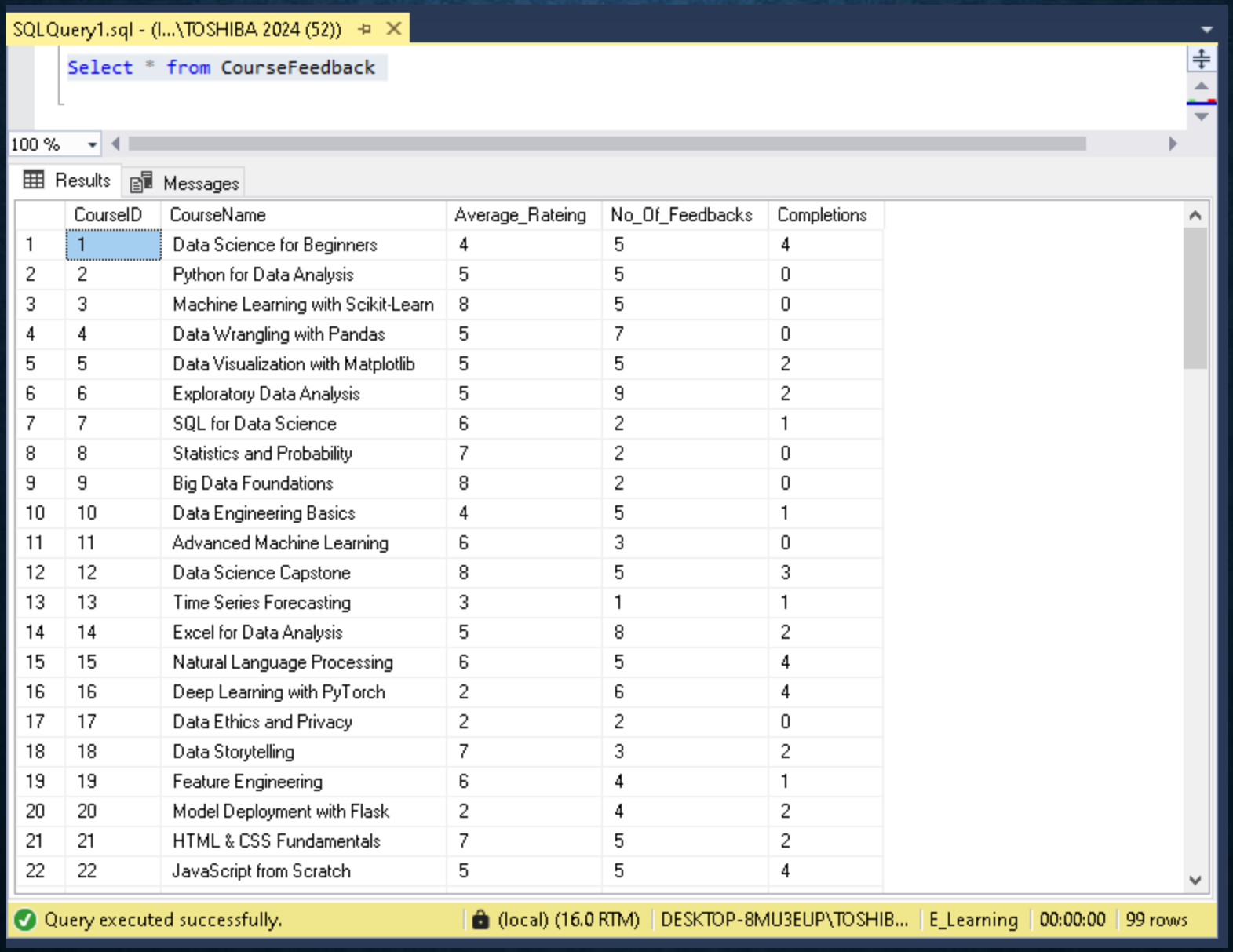
Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:00 | 1,000 rows

Create Views

```sql
--Latest progress % for each student in each course

Create view StudentProgress
AS

SELECT S.StudentID,S.Name,C.CourseName,MAX(P.ProgressPercent) AS LatestProgress
FROM student S LEFT JOIN enrollment E
ON S.StudentID = E.StudentID JOIN course C
ON C.CourseID = E.CourseID   JOIN progress P
ON P.EnrollID = E.EnrollID
GROUP by S.StudentID,S.Name,C.CourseName;
```

```sql
-- Avg rating, number of feedbacks, and completions per course

CREATE VIEW CourseFeedback
AS

SELECT C.CourseID,C.CourseName,AVG(F.Rating) AS Average_Rateing,
COUNT(distinct F.FeedbackID) AS No_Of_Feedbacks,
SUM(CASE WHEN E.CompletionStatus = 'Completed' THEN 1 ELSE 0 END) AS Completions
FROM course C LEFT JOIN enrollment E
ON C.CourseID = E.CourseID JOIN feedbacks F
ON F.EnrollID = E.EnrollID
GROUP by C.CourseID,C.CourseName
```

Display Values


SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
Select * from CourseFeedback
```

100 %

Results | Messages

	CourseID	CourseName	Average_Rateing	No_Of_Feedbacks	Completions
1	1	Data Science for Beginners	4	5	4
2	2	Python for Data Analysis	5	5	0
3	3	Machine Learning with Scikit-Learn	8	5	0
4	4	Data Wrangling with Pandas	5	7	0
5	5	Data Visualization with Matplotlib	5	5	2
6	6	Exploratory Data Analysis	5	9	2
7	7	SQL for Data Science	6	2	1
8	8	Statistics and Probability	7	2	0
9	9	Big Data Foundations	8	2	0
10	10	Data Engineering Basics	4	5	1
11	11	Advanced Machine Learning	6	3	0
12	12	Data Science Capstone	8	5	3
13	13	Time Series Forecasting	3	1	1
14	14	Excel for Data Analysis	5	8	2
15	15	Natural Language Processing	6	5	4
16	16	Deep Learning with PyTorch	2	6	4
17	17	Data Ethics and Privacy	2	2	0
18	18	Data Storytelling	7	3	2
19	19	Feature Engineering	6	4	1
20	20	Model Deployment with Flask	2	4	2
21	21	HTML & CSS Fundamentals	7	5	2
22	22	JavaScript from Scratch	5	5	4

Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:00 | 99 rows

Display Values

SQLQuery1.sql - (l...\TOSHIBA 2024 (52))

```
Select * from StudentProgress
```

100 %

Results | Messages

	StudentID	Name	CourseName	LatestProgress
1	2	Nicholas Holt	E-commerce Marketing	75.53
2	2	Nicholas Holt	HTML & CSS Fundamentals	86.68
3	2	Nicholas Holt	Social Media Marketing	70.22
4	2	Nicholas Holt	Strategic Planning	91.87
5	4	John Bell	HR for Non-HR Managers	88.20
6	4	John Bell	Reinforcement Learning	94.09
7	5	Amber Figueroa	Copywriting for Marketing	76.43
8	5	Amber Figueroa	Machine Learning with Scikit-Learn	79.46
9	5	Amber Figueroa	SQL for Data Science	77.52
10	6	Laura Porter	Generative AI with GANs	90.08
11	9	April Rubio	Feature Engineering	92.93
12	9	April Rubio	Time Series Forecasting	93.22
13	10	Michelle Johnston	AI in Finance	71.01
14	10	Michelle Johnston	Building Chatbots	97.60
15	13	Cassandra Lewis	Customer Journey Mapping	98.36
16	13	Cassandra Lewis	Email Marketing Techniques	90.76
17	13	Cassandra Lewis	Web APIs with Express.js	99.81
18	14	Scott Gardner	Big Data Foundations	94.40
19	14	Scott Gardner	Marketing Automation Tools	90.43
20	14	Scott Gardner	Startup Finance	97.97
21	15	Cheyenne Brown	SEO Basics	83.36
22	16	Donna Gibson	Data Visualization with Matplotlib	96.91

Query executed successfully. | (local) (16.0 RTM) | DESKTOP-8MU3EUP\TOSHIB... | E_Learning | 00:00:01 | 990 rows

Import data & Libraries (Python)

Import data & Libraries

```
[ ]  import pandas as pd
     import numpy as np
     import matplotlib.pyplot as plt
     import seaborn as sns
     %matplotlib inline
```

```
[ ]  students = pd.read_csv("/content/drive/MyDrive/students_updated.csv")
```

```
[ ]  progress = pd.read_csv("/content/drive/MyDrive/progress.csv")
```

```
[ ]  feedbacks = pd.read_csv("/content/drive/MyDrive/feedback_updated.csv")
```

```
[ ]  enrollments = pd.read_csv("/content/drive/MyDrive/enrollments.csv")
```

```
[ ]  courses = pd.read_csv("/content/drive/MyDrive/courses_100_clean.csv")
```

```
[ ]  course_feedback = pd.read_excel("/content/drive/MyDrive/E_Learning.xls",sheet_name="CourseFeedback")
```

```
[ ]  students_progress = pd.read_excel("/content/drive/MyDrive/E_Learning.xls",sheet_name="StudentProgress")
```

Data Cleaning (Python)

Data cleaning

```
courses.head()
```

	CourseID	CourseName	Instructor	Category	DurationHrs	PriceUSD
0	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06
1	2	Python for Data Analysis	Kristina Davis	Data Science	13	76.59
2	3	Machine Learning with Scikit-Learn	Zachary Lopez	Data Science	41	151.52
3	4	Data Wrangling with Pandas	Mr. Jason Fletcher MD	Data Science	68	108.87
4	5	Data Visualization with Matplotlib	Susan Thomas	Data Science	98	103.00

```
[ ] courses.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 100 entries, 0 to 99
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   CourseID     100 non-null    int64
 1   CourseName   100 non-null    object
 2   Instructor   100 non-null    object
 3   Category     100 non-null    object
 4   DurationHrs  100 non-null    int64
 5   PriceUSD     100 non-null    float64
dtypes: float64(1), int64(2), object(3)
memory usage: 4.8+ KB
```

```
courses.describe()
```

	CourseID	DurationHrs	PriceUSD
count	100.000000	100.000000	100.000000
mean	50.500000	52.870000	139.956700
std	29.011492	27.690809	81.302878
min	1.000000	10.000000	21.060000
25%	25.750000	26.750000	77.107500
50%	50.500000	54.000000	123.975000
75%	75.250000	77.500000	199.135000
max	100.000000	100.000000	297.700000

```
[12] students.head()
```

	StudentID	Name	Age	Gender	JoinDate	Country
0	1	Kathy Ross	49	Female	10/13/2023	Tunisia
1	2	Nicholas Holt	38	Female	10/25/2024	Palestine
2	3	Erica Hall	44	Female	2/18/2024	Jordan
3	4	John Bell	37	Male	7/3/2024	Bahrain
4	5	Amber Figueroa	39	Female	11/10/2023	Qatar

Next steps: View recommended plots | New interactive sheet

Data Cleaning (Python)

```
courses.describe()
```

	CourseID	DurationHrs	PriceUSD
count	100.000000	100.000000	100.000000
mean	50.500000	52.870000	139.956700
std	29.011492	27.690809	81.302878
min	1.000000	10.000000	21.060000
25%	25.750000	26.750000	77.107500
50%	50.500000	54.000000	123.975000
75%	75.250000	77.500000	199.135000
max	100.000000	100.000000	297.700000

```
[12] students.head()
```

	StudentID	Name	Age	Gender	JoinDate	Country
0	1	Kathy Ross	49	Female	10/13/2023	Tunisia
1	2	Nicholas Holt	38	Female	10/25/2024	Palestine
2	3	Erica Hall	44	Female	2/18/2024	Jordan
3	4	John Bell	37	Male	7/3/2024	Bahrain
4	5	Amber Figueroa	39	Female	11/10/2023	Qatar

Next steps: View recommended plots | New interactive sheet

```
students.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 500 entries, 0 to 499
Data columns (total 6 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   StudentID  500 non-null    int64
 1   Name       500 non-null    object
 2   Age        500 non-null    int64
 3   Gender     500 non-null    object
 4   JoinDate   500 non-null    object
 5   Country    500 non-null    object
dtypes: int64(2), object(4)
memory usage: 23.6+ KB
```

```
[14] students['Age'] = students['Age'].astype(float)
```

```
[15] students['JoinDate'] = pd.to_datetime(students['JoinDate'])
```

```
[16] students.describe()
```

	StudentID	Age	JoinDate
count	500.000000	500.000000	500
mean	250.500000	33.862000	2024-06-13 02:03:50.399999744
min	1.000000	18.000000	2023-06-03 00:00:00
25%	125.750000	25.000000	2023-12-09 18:00:00
50%	250.500000	34.000000	2024-06-14 00:00:00
75%	375.250000	42.000000	2024-12-17 06:00:00
max	500.000000	50.000000	2025-06-01 00:00:00
std	144.481833	9.583666	NaN

Data Cleaning (Python)

```
[17] feedbacks.head()
```

	FeedbackID	EnrollID	Rating	Comments	FeedbackDate
0	1	884	4	The duration is too short for the content.	4/30/2025
1	2	833	8	The course content needs improvement.	1/25/2025
2	3	500	3	The course did not meet my expectations.	7/8/2024
3	4	625	3	The instructor was great and the approach was ...	2/8/2025
4	5	186	8	I learned a lot from this course.	4/16/2025

Next steps: View recommended plots | New interactive sheet

```
feedbacks.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 500 entries, 0 to 499
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   FeedbackID    500 non-null    int64
 1   EnrollID      500 non-null    int64
 2   Rating        500 non-null    int64
 3   Comments      500 non-null    object
 4   FeedbackDate  500 non-null    object
dtypes: int64(3), object(2)
memory usage: 19.7+ KB
```

```
[19] feedbacks['FeedbackDate'] = pd.to_datetime(feedbacks['FeedbackDate'])
```

```
[20] feedbacks.describe()
```

	FeedbackID	EnrollID	Rating	FeedbackDate
count	500.000000	500.000000	500.000000	500
mean	250.500000	513.314000	5.522000	2024-12-10 10:22:04.800000
min	1.000000	2.000000	1.000000	2024-06-02 00:00:00
25%	125.750000	275.000000	3.000000	2024-09-11 00:00:00
50%	250.500000	536.000000	5.000000	2024-12-18 00:00:00
75%	375.250000	756.250000	8.000000	2025-03-07 06:00:00
max	500.000000	997.000000	10.000000	2025-06-02 00:00:00
std	144.481833	284.226058	2.861099	NaN

```
[21] enrollments.head()
```

	EnrollID	StudentID	CourseID	EnrollDate	CompletionStatus
0	1	195	45	2/28/2025	Completed
1	2	426	46	12/8/2024	Completed
2	3	303	43	3/23/2025	Completed
3	4	133	19	9/11/2024	In Progress
4	5	19	2	1/12/2025	Dropped

Next steps: View recommended plots | New interactive sheet

Data Cleaning (Python)

```
[22] enrollments.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 5 columns):
 #   Column            Non-Null Count  Dtype 
---  ------            --------------  ----- 
 0   EnrollID          1000 non-null   int64 
 1   StudentID         1000 non-null   int64 
 2   CourseID          1000 non-null   int64 
 3   EnrollDate        1000 non-null   object
 4   CompletionStatus  1000 non-null   object
dtypes: int64(3), object(2)
memory usage: 39.2+ KB
```

```
[23] enrollments['EnrollDate']=pd.to_datetime(enrollments['EnrollDate'])
```

```
[24] enrollments.describe()
```

	EnrollID	StudentID	CourseID	EnrollDate
count	1000.000000	1000.00000	1000.000000	1000
mean	500.500000	247.61400	50.791000	2024-12-07 01:24:57.600000
min	1.000000	2.00000	1.000000	2024-06-03 00:00:00
25%	250.750000	120.00000	26.000000	2024-09-10 18:00:00
50%	500.500000	244.00000	52.000000	2024-12-07 00:00:00
75%	750.250000	372.25000	75.000000	2025-03-06 06:00:00
max	1000.000000	500.00000	100.000000	2025-06-02 00:00:00
std	288.819436	142.57745	29.010462	NaN

```
progress.head()
```

	ProgressID	EnrollID	ProgressDate	ProgressPercent
0	1	451	7/26/2024	36.35
1	2	39	1/7/2025	89.29
2	3	797	6/29/2024	84.39
3	4	930	1/20/2025	67.71
4	5	911	4/11/2025	56.79

Next steps: View recommended plots | New interactive sheet

```
[26] progress.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10000 entries, 0 to 9999
Data columns (total 4 columns):
 #   Column           Non-Null Count  Dtype  
---  ------           --------------  -----  
 0   ProgressID       10000 non-null  int64  
 1   EnrollID         10000 non-null  int64  
 2   ProgressDate     10000 non-null  object 
 3   ProgressPercent  10000 non-null  float64
dtypes: float64(1), int64(2), object(1)
memory usage: 312.6+ KB
```

```
[27] progress['ProgressDate'] = pd.to_datetime(progress['ProgressDate'])
```

Data Cleaning (Python)

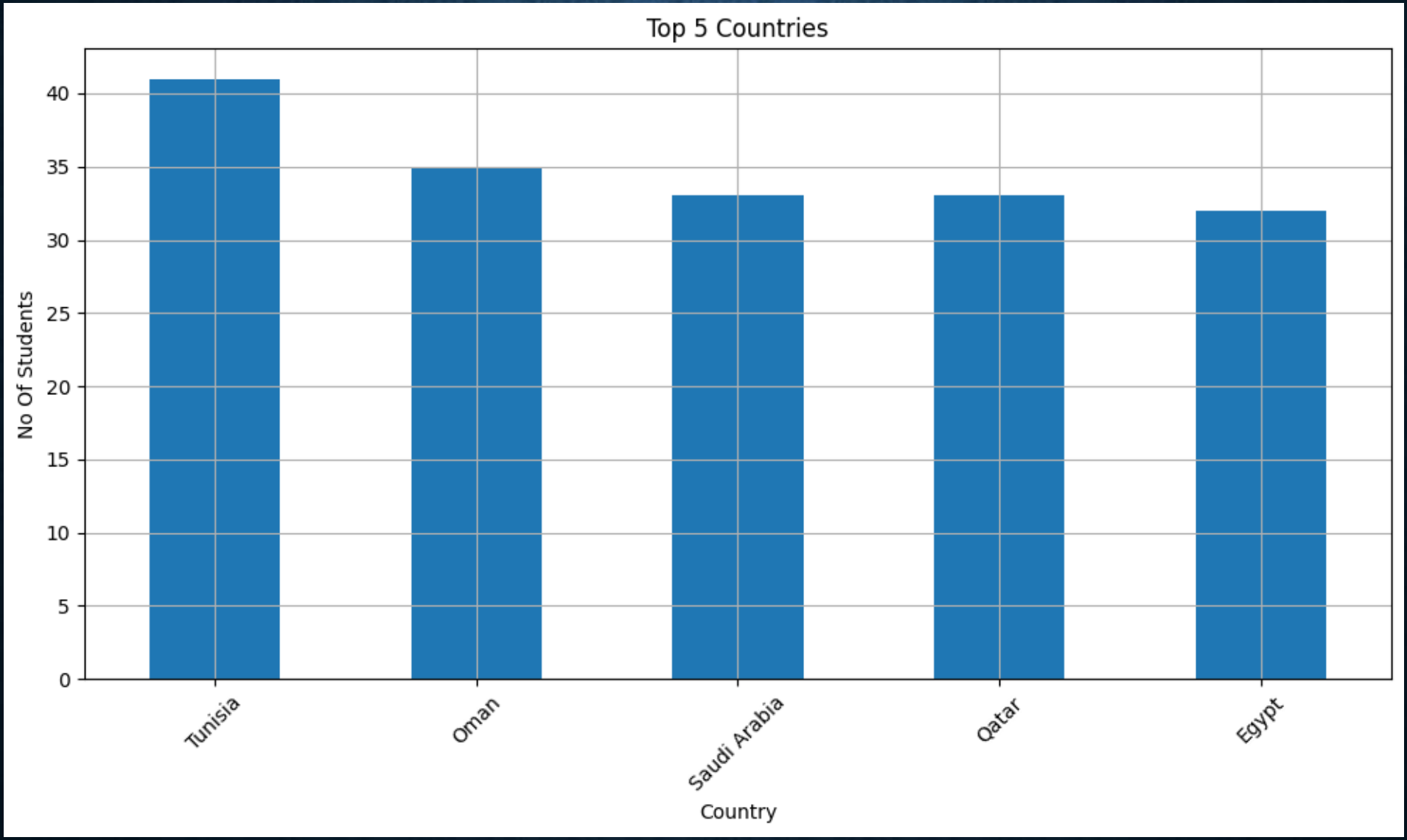
```
[28] progress.describe()
```

	ProgressID	EnrollID	ProgressDate	ProgressPercent
count	10000.00000	10000.000000	10000	10000.000000
mean	5000.50000	502.901000	2024-12-01 23:46:53.760000	50.438448
min	1.00000	1.000000	2024-06-02 00:00:00	0.000000
25%	2500.75000	255.000000	2024-09-02 00:00:00	25.680000
50%	5000.50000	502.000000	2024-12-03 00:00:00	50.785000
75%	7500.25000	754.000000	2025-03-02 00:00:00	75.460000
max	10000.00000	1000.000000	2025-06-02 00:00:00	100.000000
std	2886.89568	288.525964	NaN	28.852745

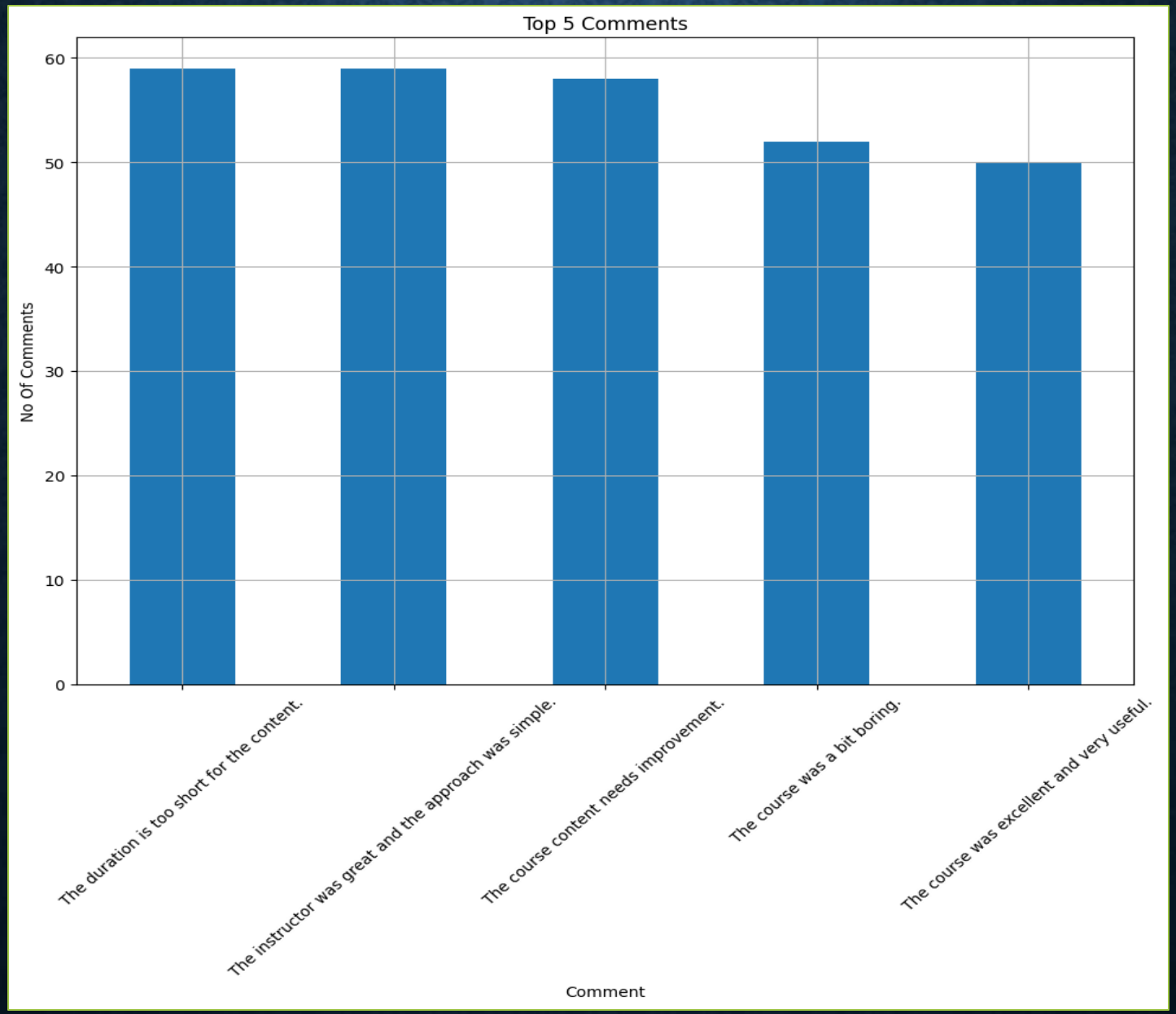
```
[29] enrollment_course = courses.merge(enrollments,on="CourseID",how="left")
     enrollment_course
```

	CourseID	CourseName	Instructor	Category	DurationHrs	PriceUSD	EnrollID	StudentID	EnrollDate	CompletionStatus
0	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06	19	353	2024-07-06	Completed
1	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06	94	401	2024-08-11	Completed
2	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06	144	243	2024-11-23	Completed
3	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06	267	467	2024-08-28	Completed
4	1	Data Science for Beginners	Kelly Smith	Data Science	39	251.06	384	324	2024-07-31	Dropped
...	...	...	...	...	...	...	...	...	...	...
995	100	Risk Management in Business	Wendy Richardson	Business	69	292.15	467	264	2024-08-02	Dropped
996	100	Risk Management in Business	Wendy Richardson	Business	69	292.15	660	264	2025-03-13	In Progress
997	100	Risk Management in Business	Wendy Richardson	Business	69	292.15	770	120	2024-06-22	Completed
998	100	Risk Management in Business	Wendy Richardson	Business	69	292.15	856	225	2025-03-31	Dropped

Data Analysis & Exploration (Python)



Data Analysis & Exploration (Python)



Data Analysis & Exploration (Python)

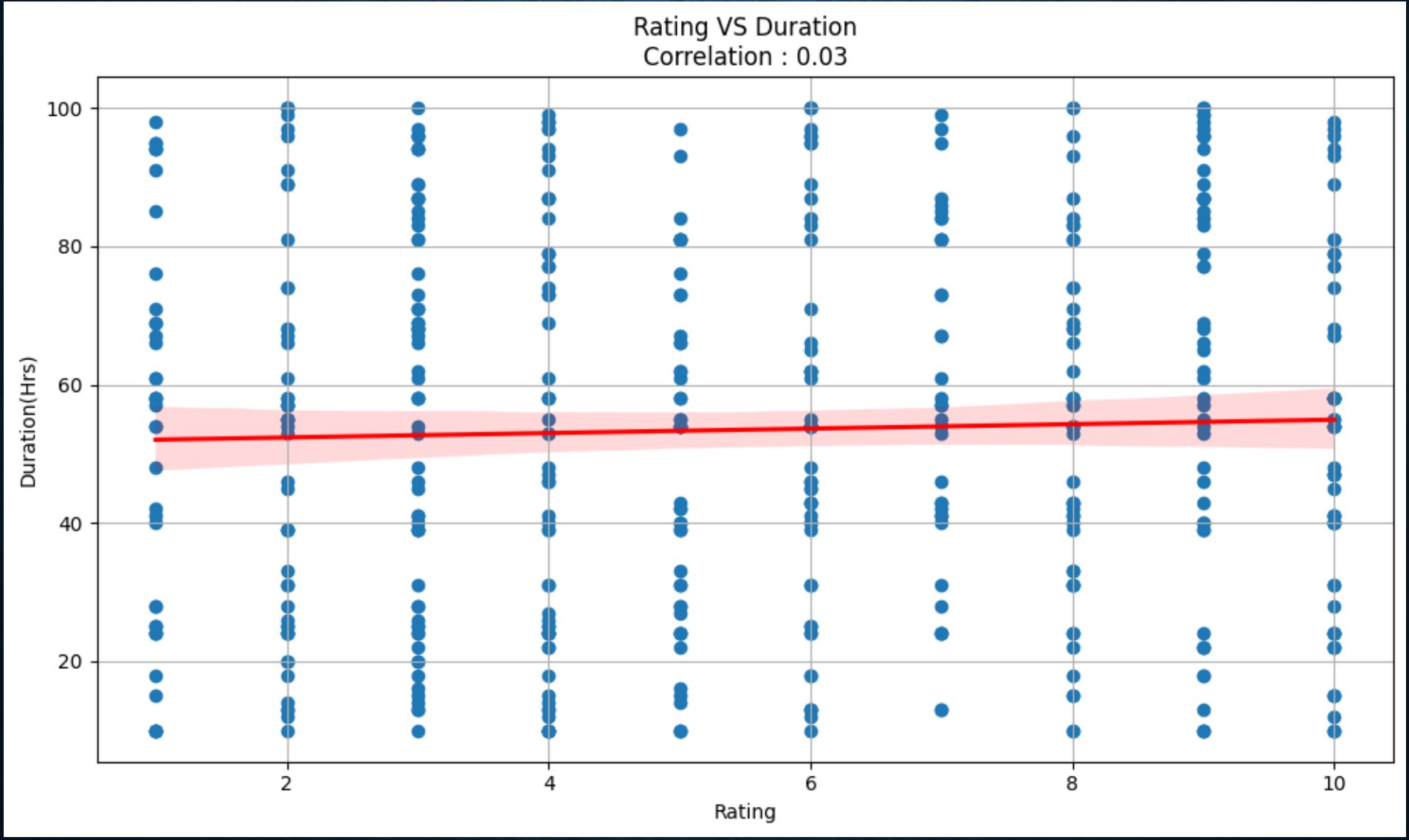
What is the average progress for each category?

```
[38] x.groupby(by = "Category")['ProgressPercent'].mean().round(2)
```

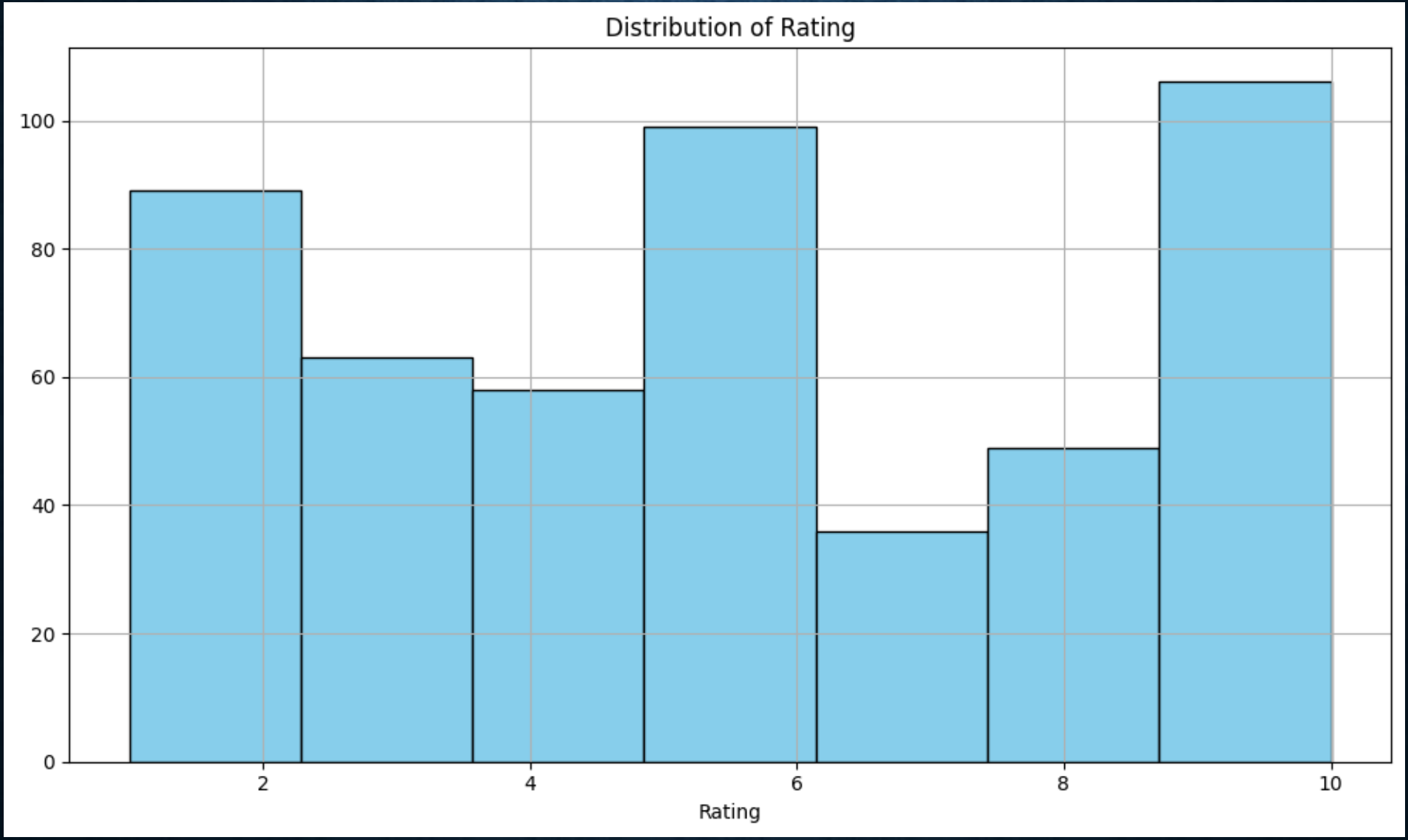
Category	ProgressPercent
AI	90.42
Business	89.99
Data Science	89.74
Marketing	90.16
Web Development	89.40

dtype: float64

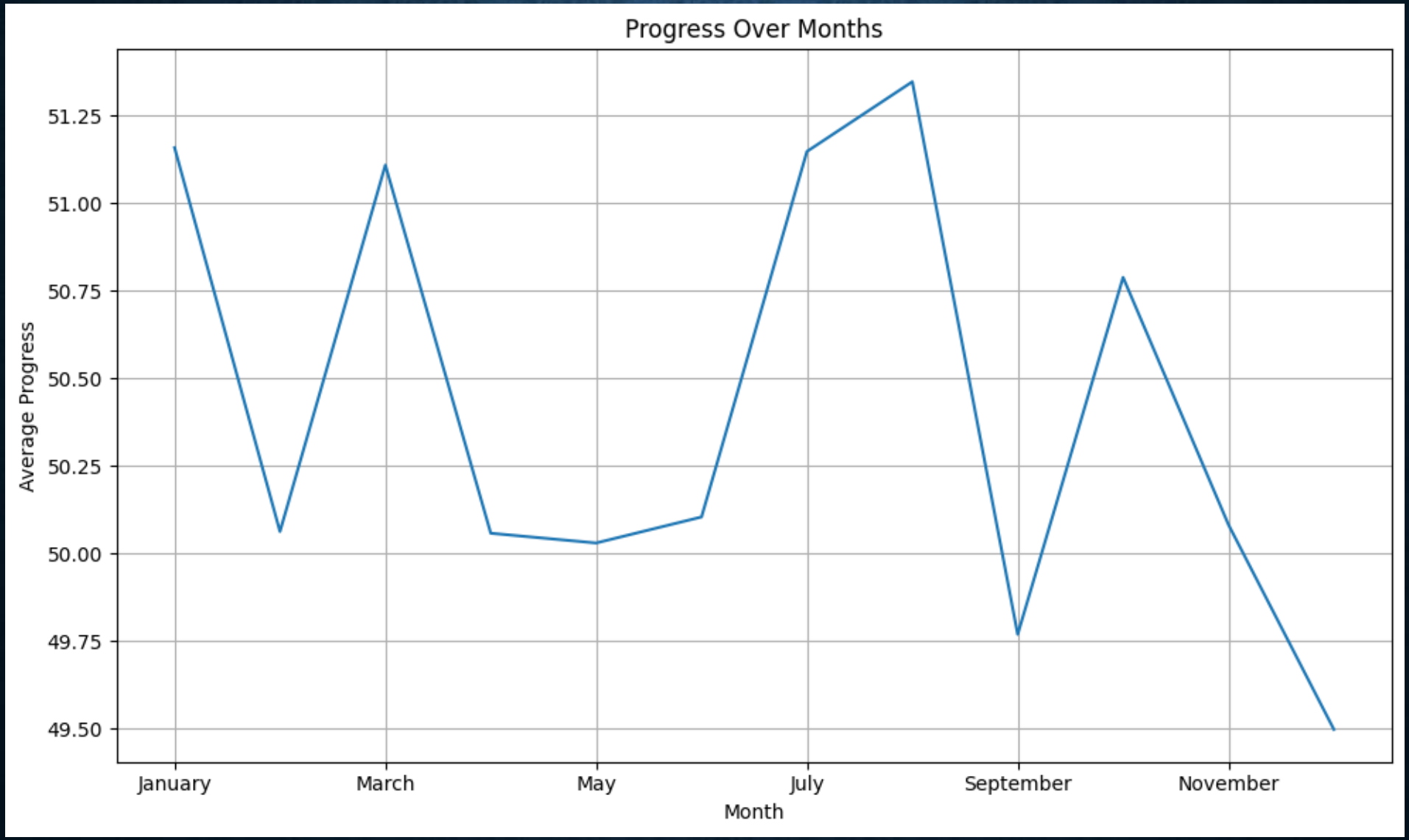
Data Analysis & Exploration (Python)



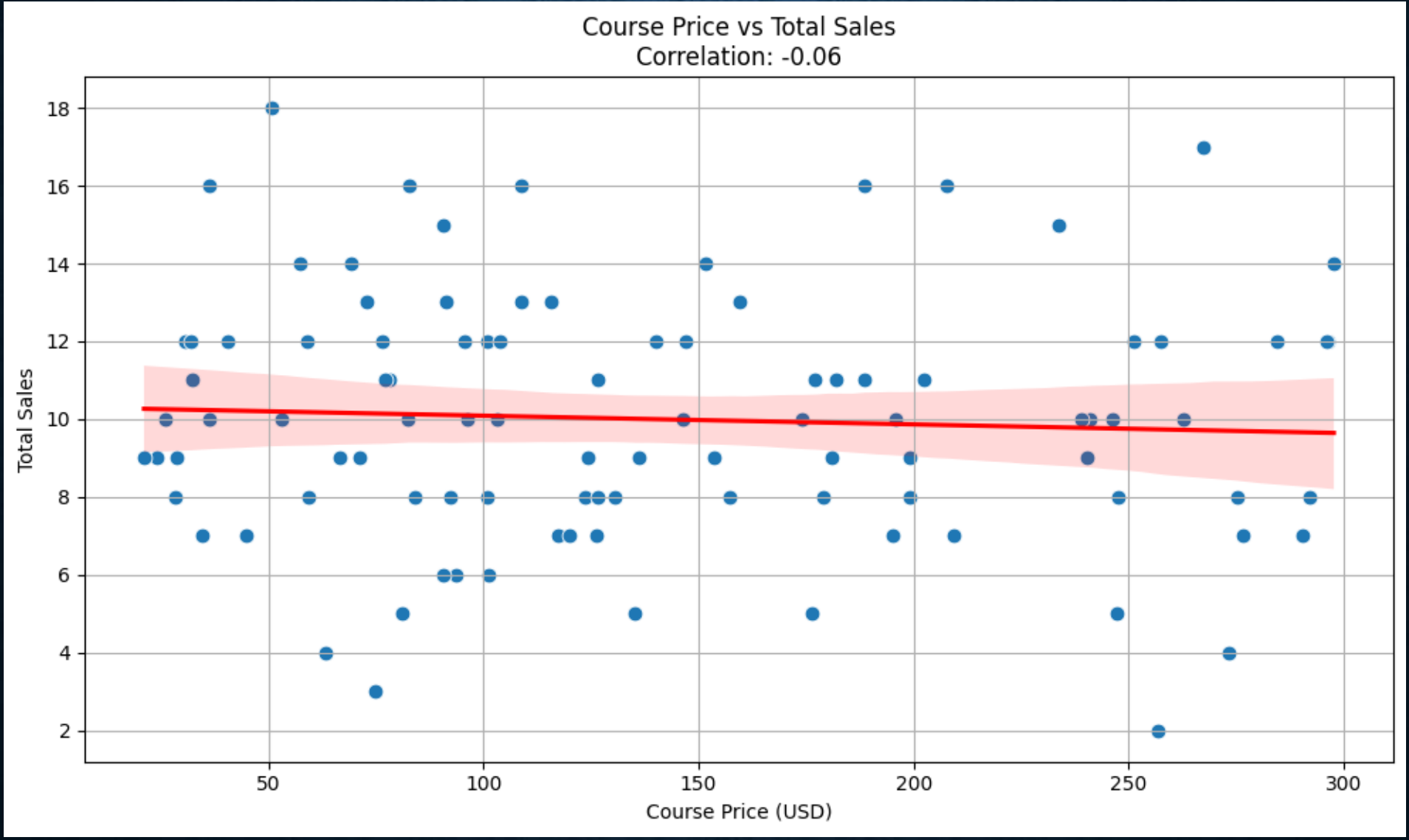
Data Analysis & Exploration (Python)



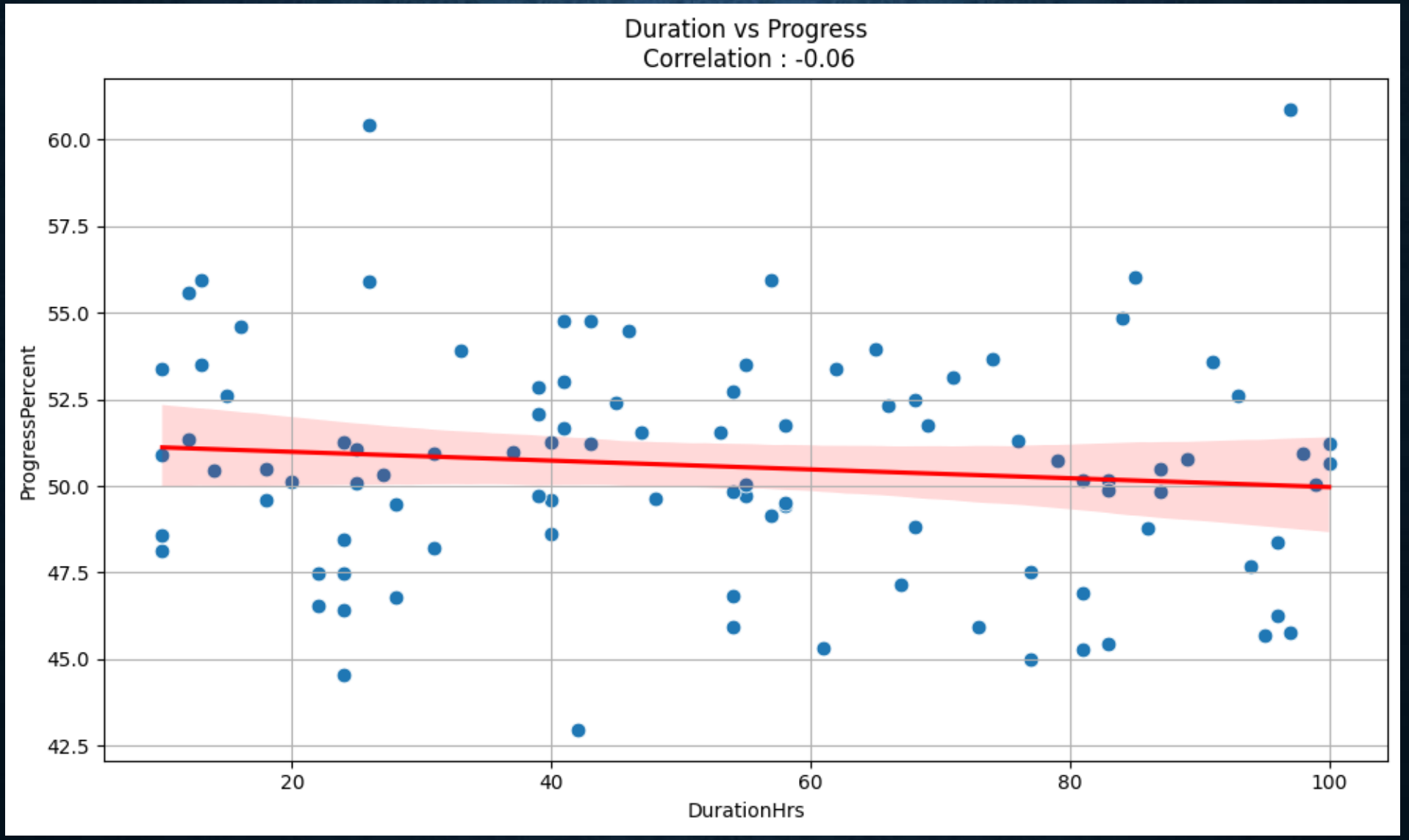
Data Analysis & Exploration (Python)



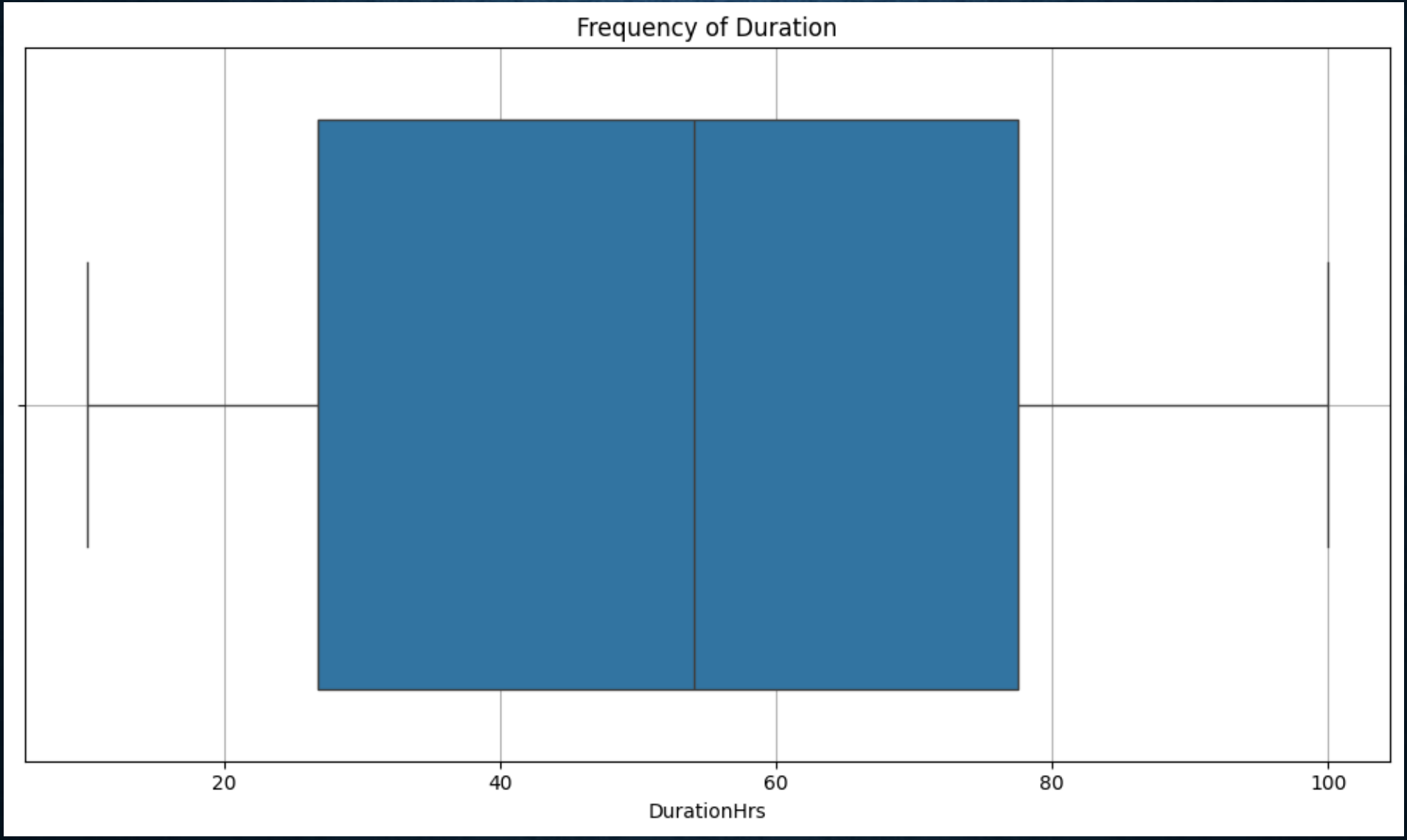
Data Analysis & Exploration (Python)



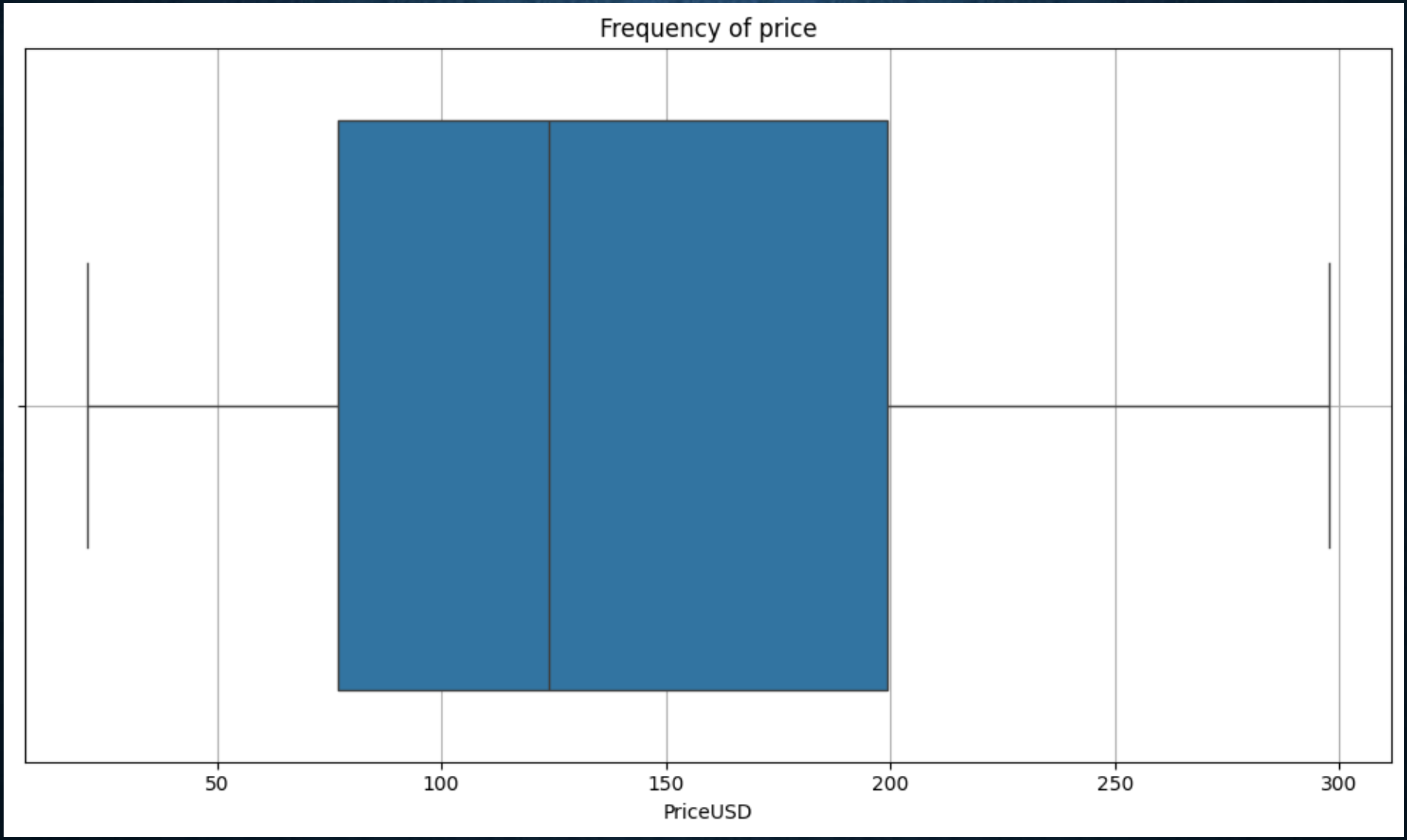
Data Analysis & Exploration (Python)



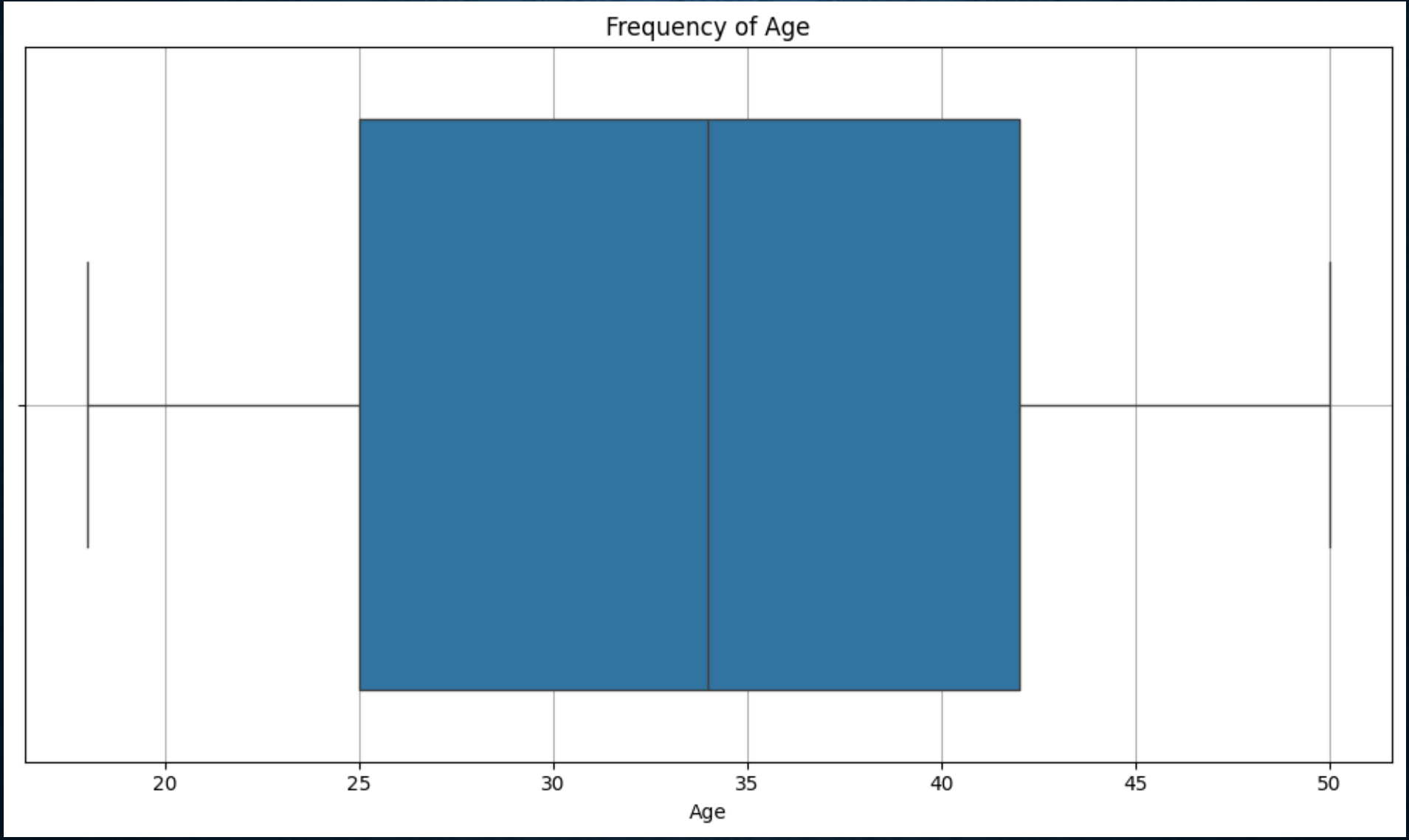
Data Analysis & Exploration (Python)



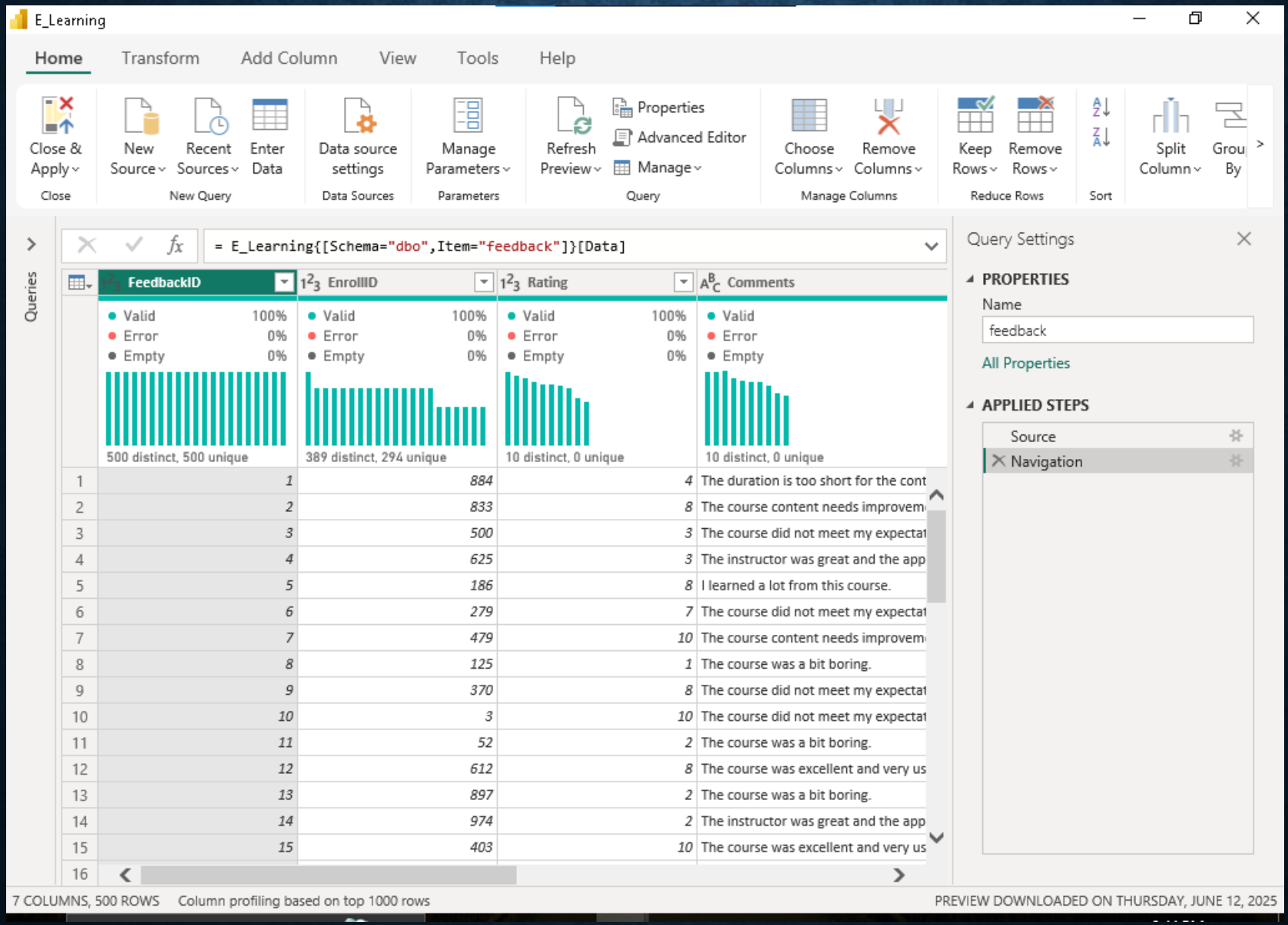
Data Analysis & Exploration (Python)



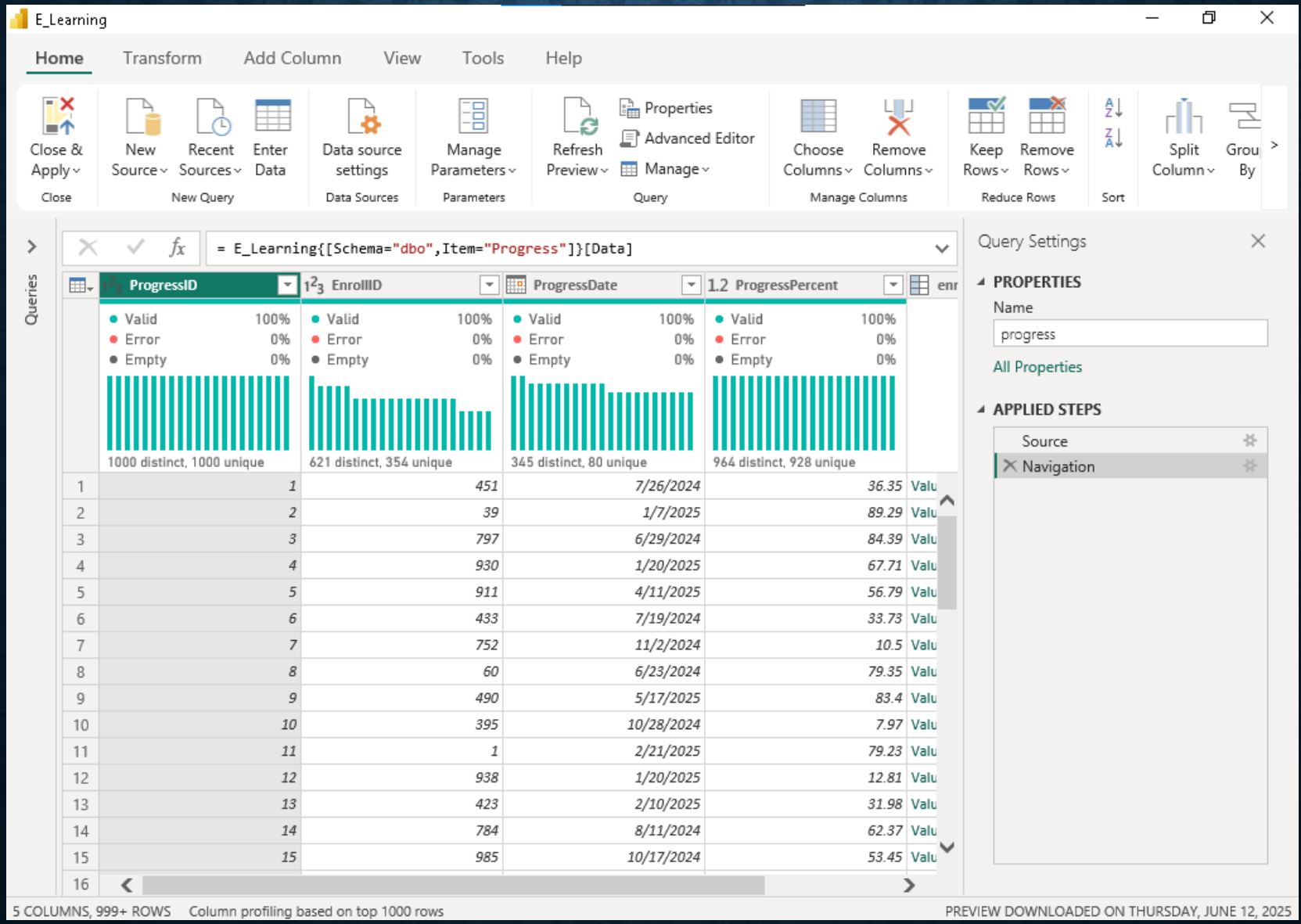
Data Analysis & Exploration (Python)



Data cleaning (Power bi)

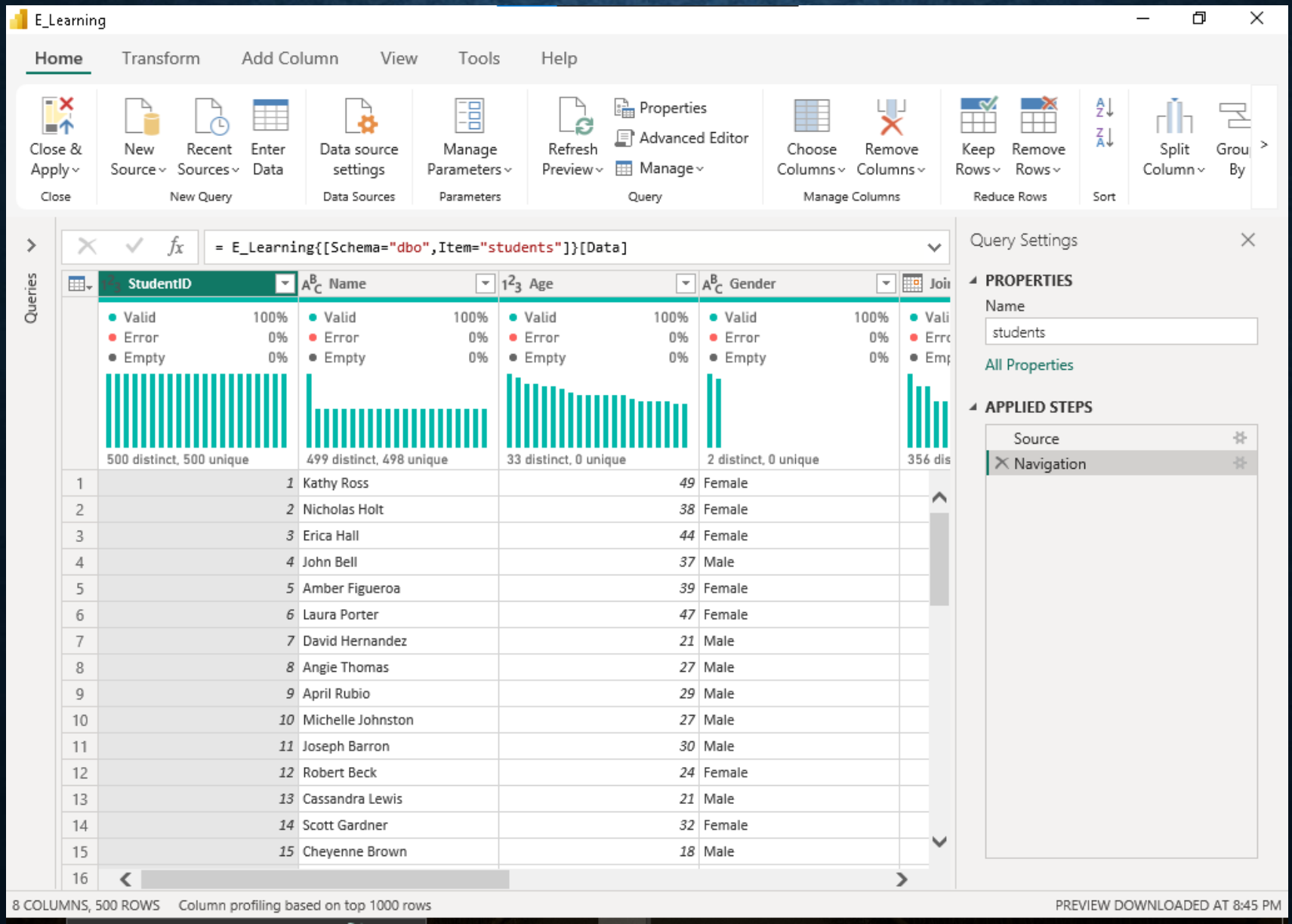


Data cleaning (Power bi)

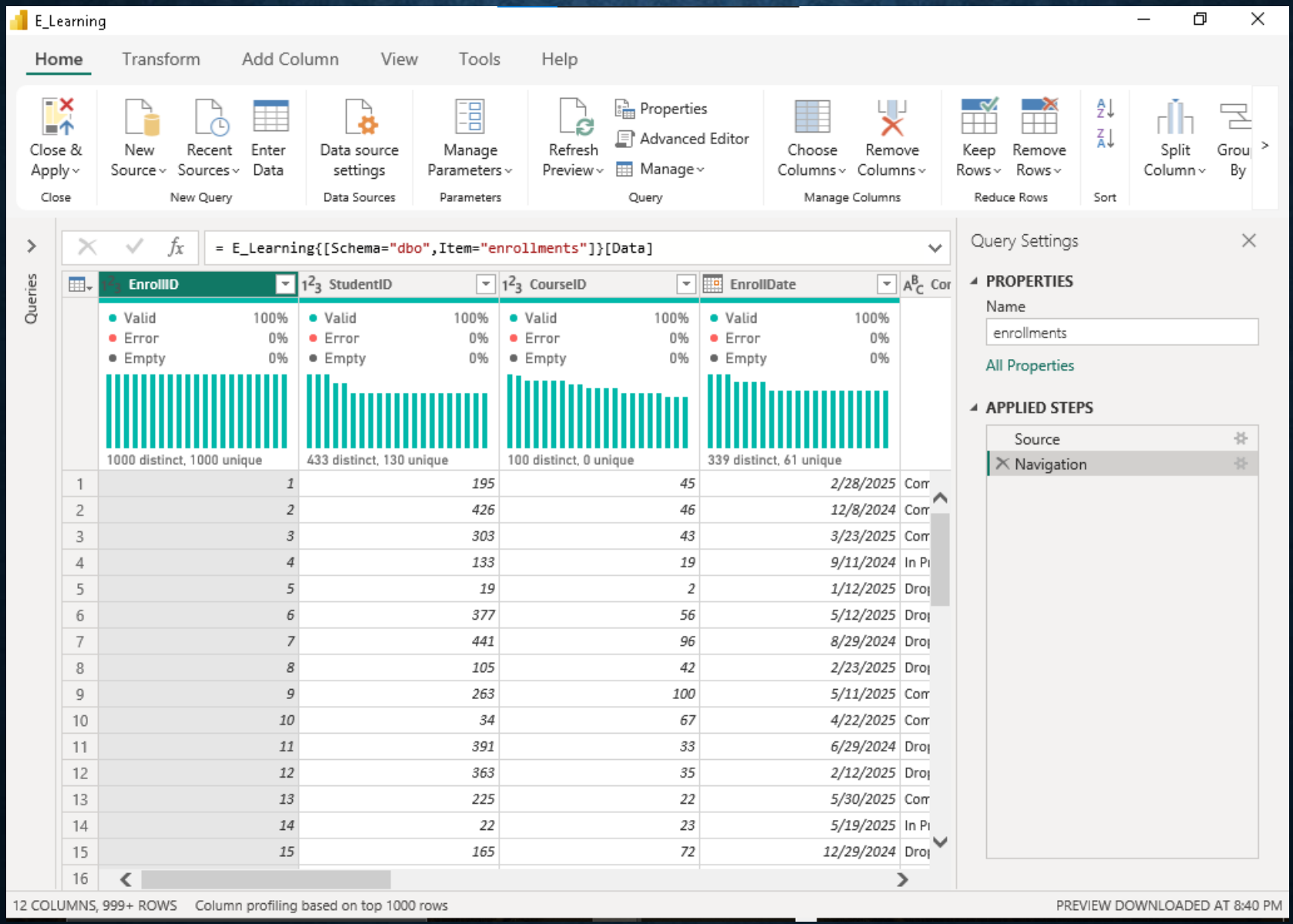


	ProgressID	EnrollID	ProgressDate	ProgressPercent
1	1	451	7/26/2024	36.35
2	2	39	1/7/2025	89.29
3	3	797	6/29/2024	84.39
4	4	930	1/20/2025	67.71
5	5	911	4/11/2025	56.79
6	6	433	7/19/2024	33.73
7	7	752	11/2/2024	10.5
8	8	60	6/23/2024	79.35
9	9	490	5/17/2025	83.4
10	10	395	10/28/2024	7.97
11	11	1	2/21/2025	79.23
12	12	938	1/20/2025	12.81
13	13	423	2/10/2025	31.98
14	14	784	8/11/2024	62.37
15	15	985	10/17/2024	53.45
16				

Data cleaning (Power bi)



Data cleaning (Power bi)



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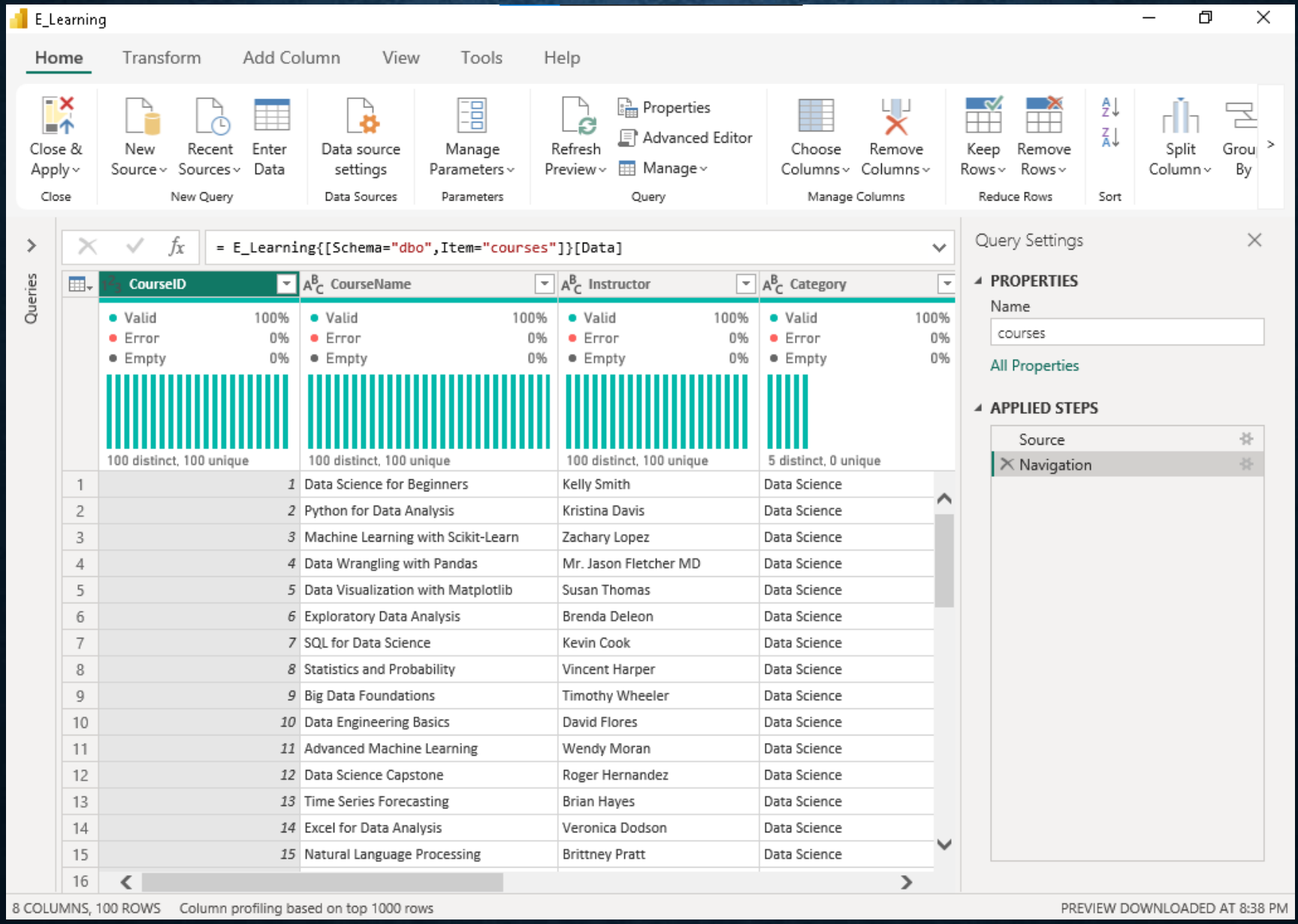
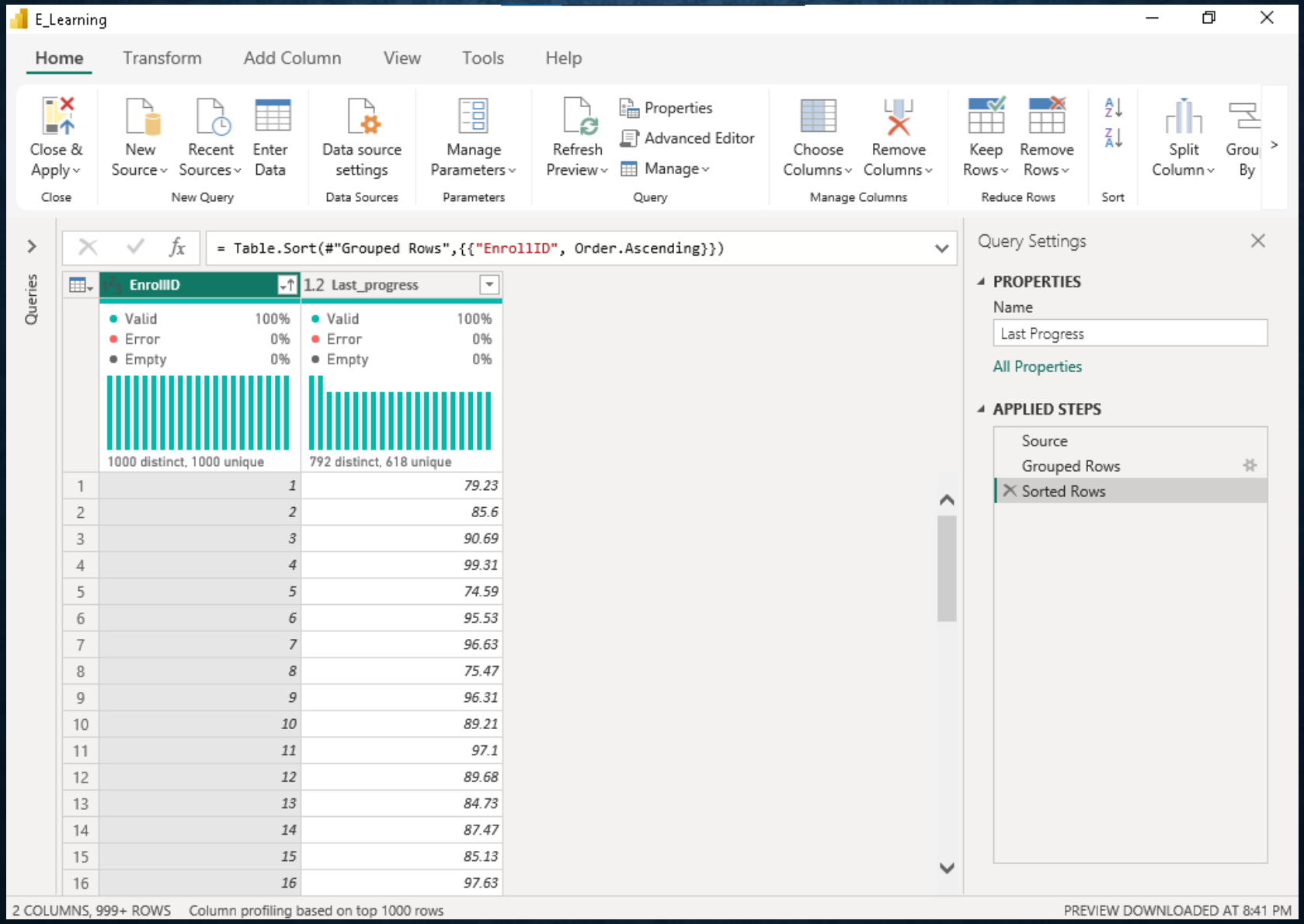
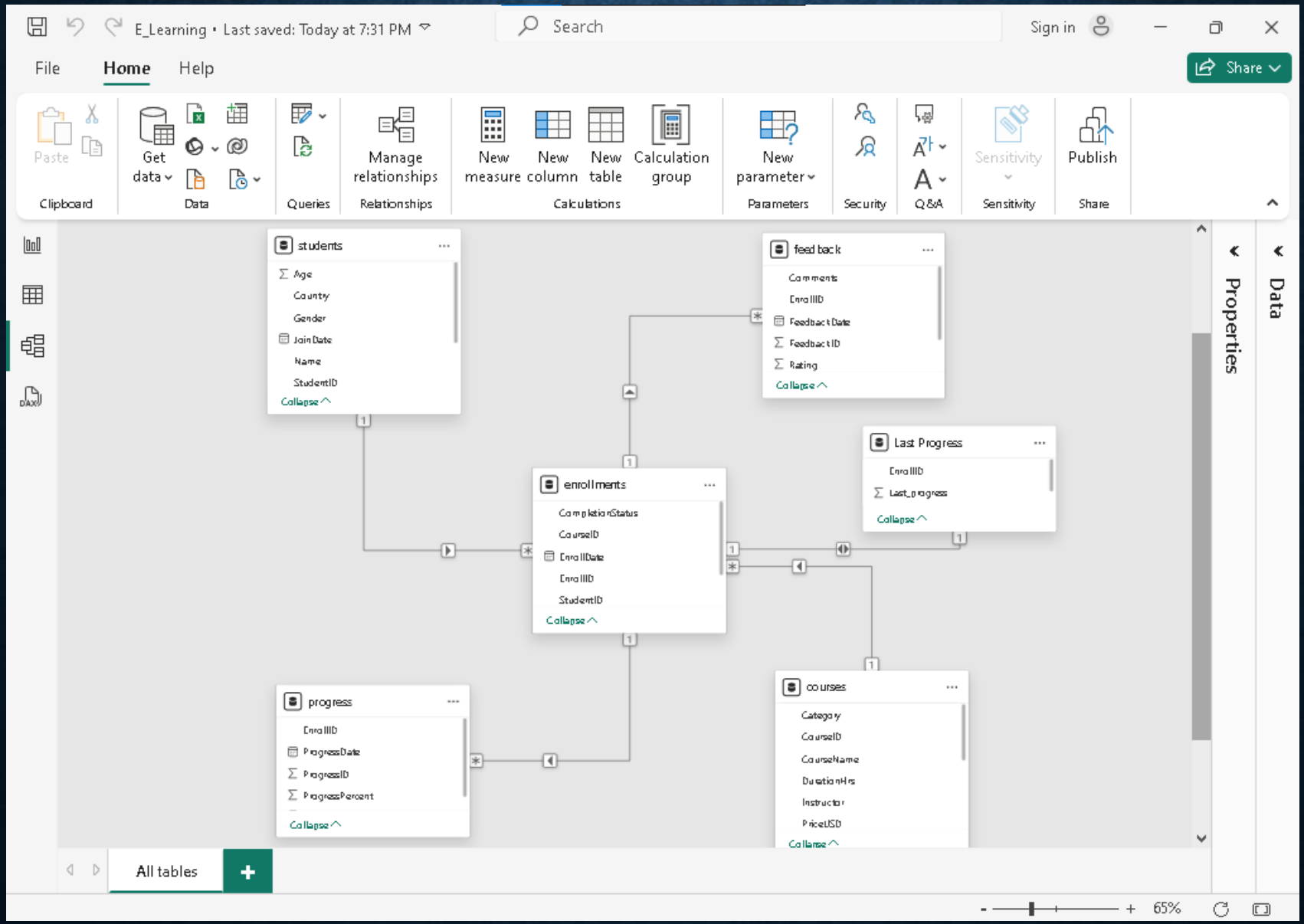


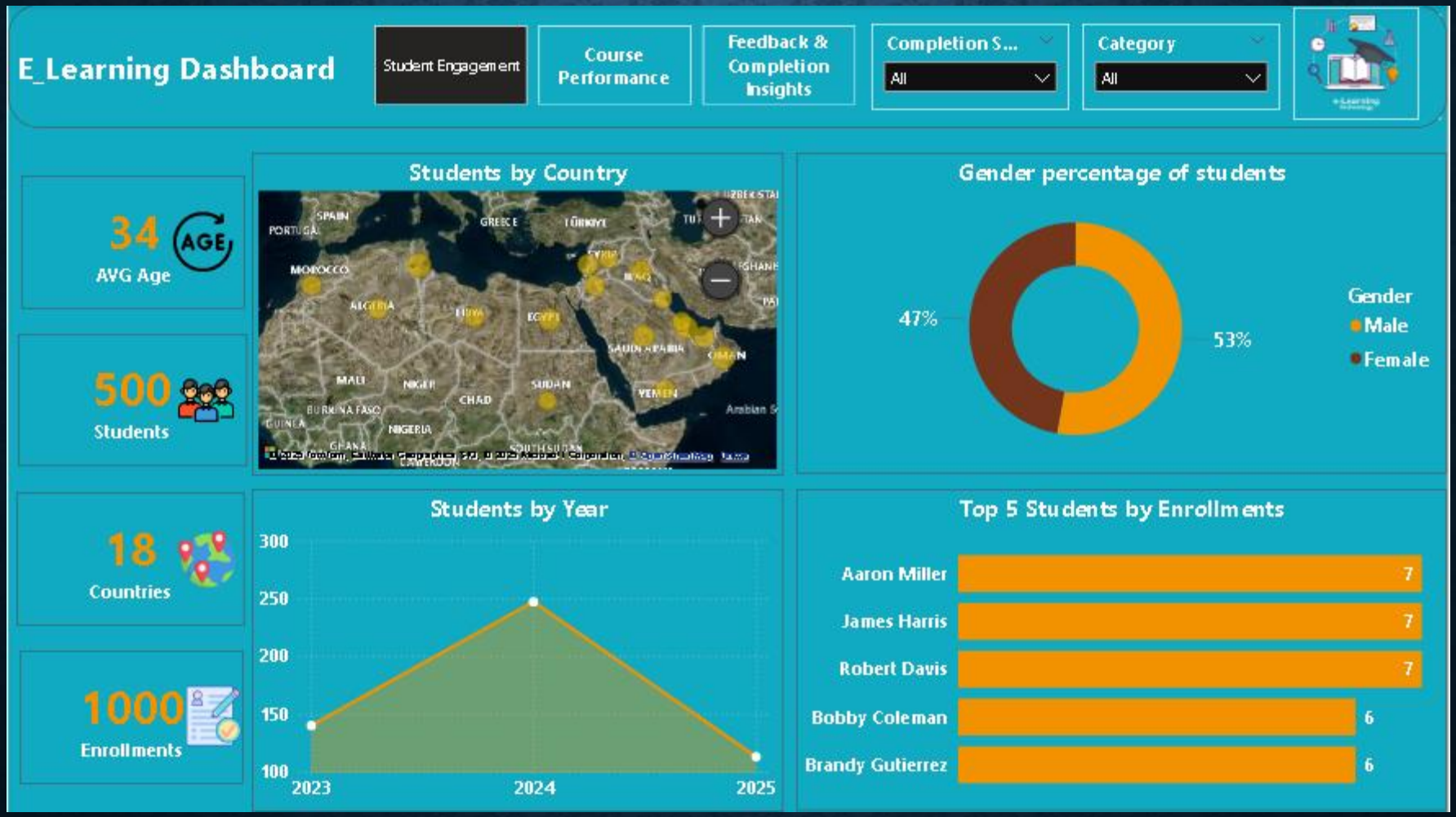
Data cleaning (Power bi)



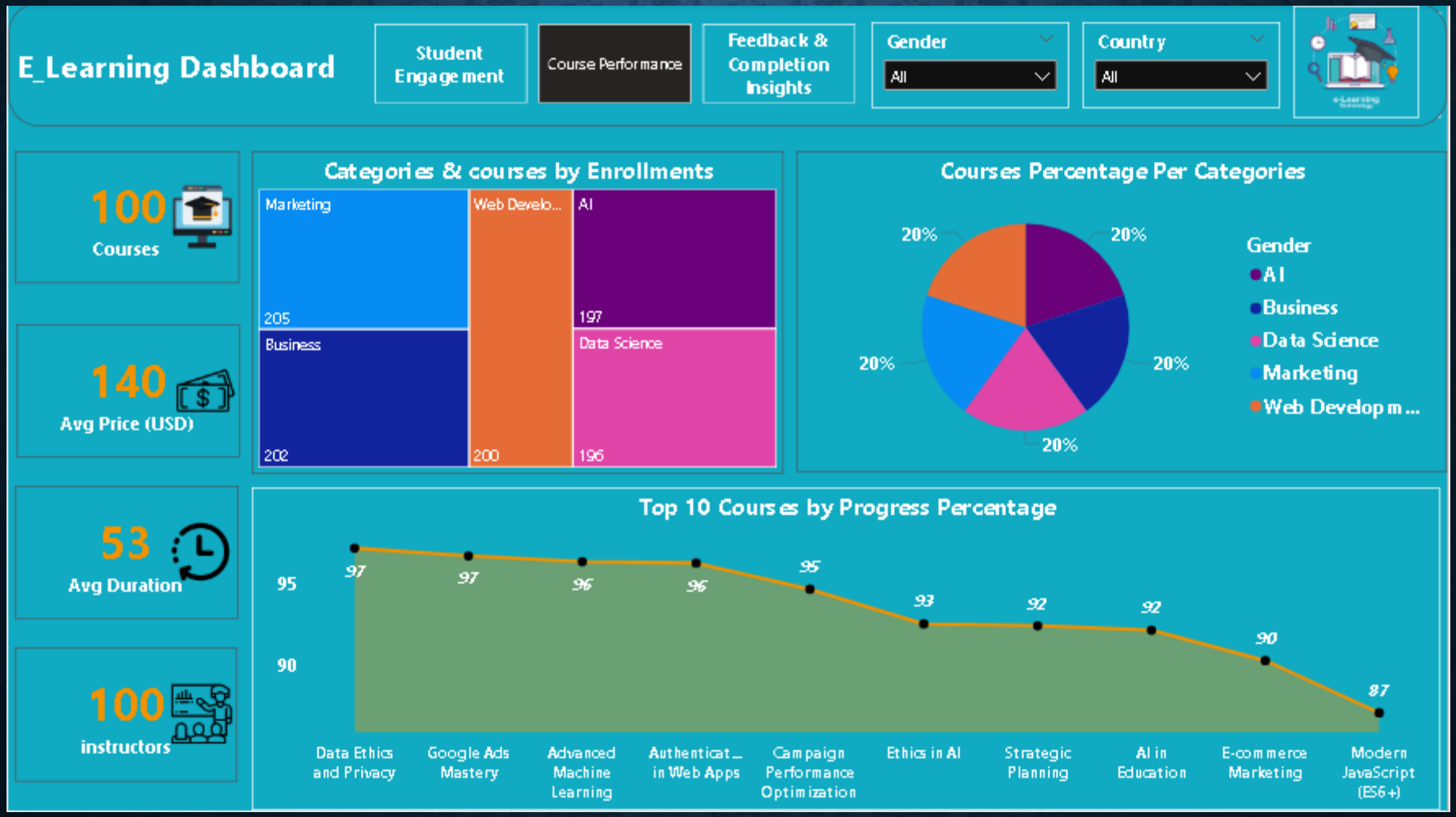
Data Modeling (Power bi)



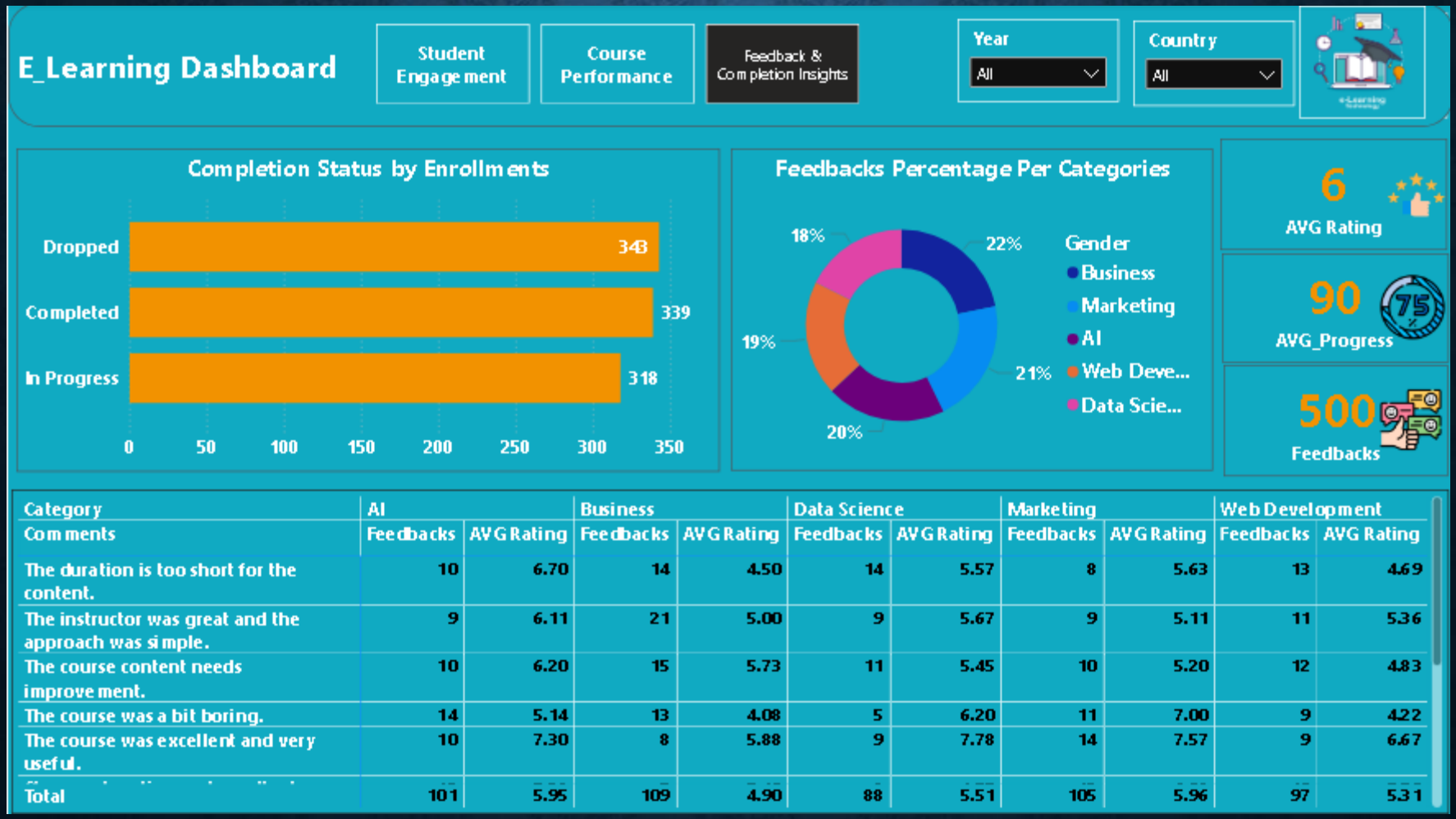
Student Engagement Dashboard



Course Performance Dashboard

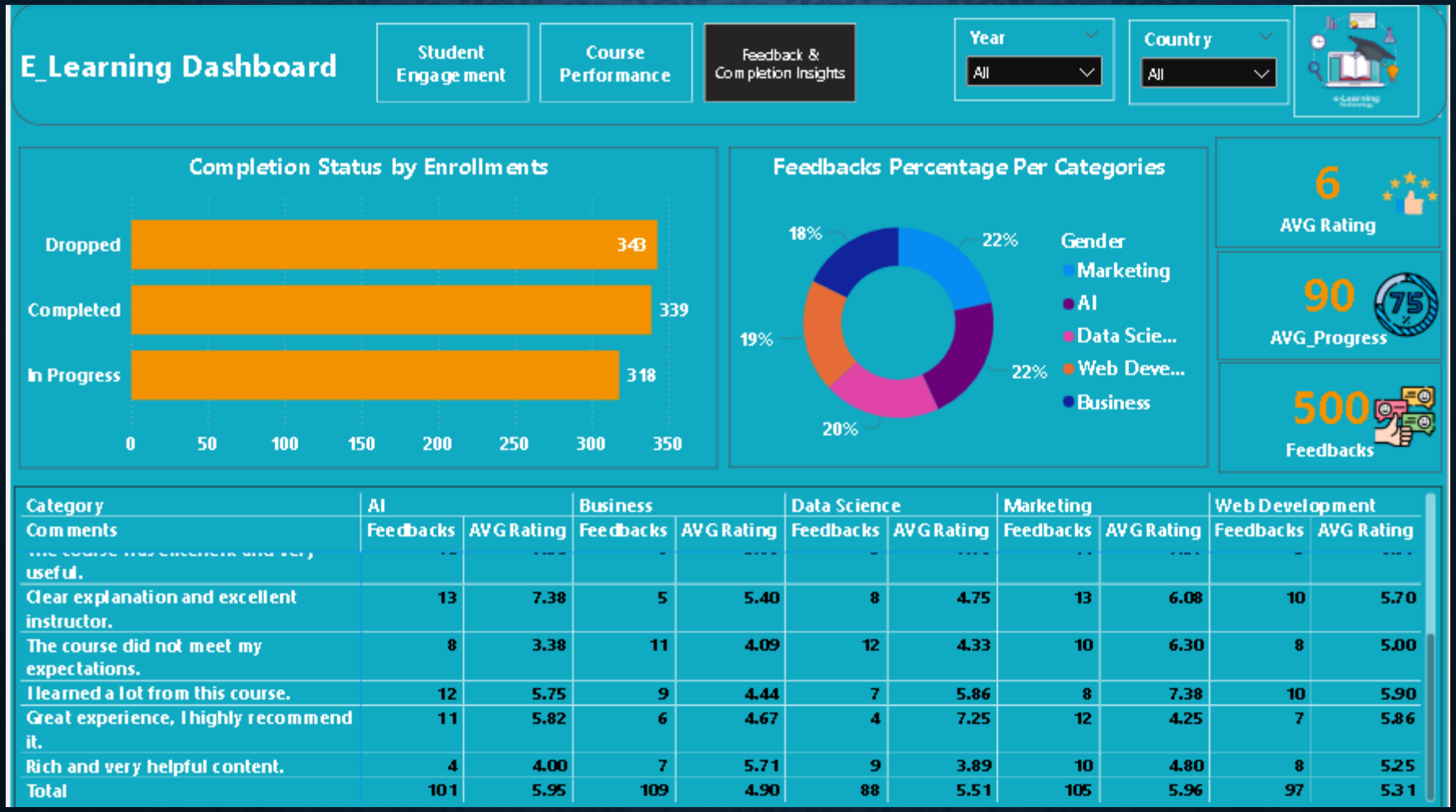


Feedback & Completion Insights Dashboard



Category	AI		Business		Data Science		Marketing		Web Development	
Comments	Feedbacks	AVG Rating	Feedbacks	AVG Rating	Feedbacks	AVG Rating	Feedbacks	AVG Rating	Feedbacks	AVG Rating
The duration is too short for the content.	10	6.70	14	4.50	14	5.57	8	5.63	13	4.69
The instructor was great and the approach was simple.	9	6.11	21	5.00	9	5.67	9	5.11	11	5.36
The course content needs improvement.	10	6.20	15	5.73	11	5.45	10	5.20	12	4.83
The course was a bit boring.	14	5.14	13	4.08	5	6.20	11	7.00	9	4.22
The course was excellent and very useful.	10	7.30	8	5.88	9	7.78	14	7.57	9	6.67
Total	101	5.95	109	4.90	88	5.51	105	5.96	97	5.31

Feedback & Completion Insights Dashboard



Category	AI		Business		Data Science		Marketing		Web Development	
Comments	Feedbacks	AVG Rating	Feedbacks	AVG Rating	Feedbacks	AVG Rating	Feedbacks	AVG Rating	Feedbacks	AVG Rating
useful.										
Clear explanation and excellent instructor.	13	7.38	5	5.40	8	4.75	13	6.08	10	5.70
The course did not meet my expectations.	8	3.38	11	4.09	12	4.33	10	6.30	8	5.00
I learned a lot from this course.	12	5.75	9	4.44	7	5.86	8	7.38	10	5.90
Great experience, I highly recommend it.	11	5.82	6	4.67	4	7.25	12	4.25	7	5.86
Rich and very helpful content.	4	4.00	7	5.71	9	3.89	10	4.80	8	5.25
Total	101	5.95	109	4.90	88	5.51	105	5.96	97	5.31

The most reliable positive points in marketing.

1- variety categories and courses .

2- find students from a lot of countries.

3- Average Progress is high.

4- good comments more than bad comments .

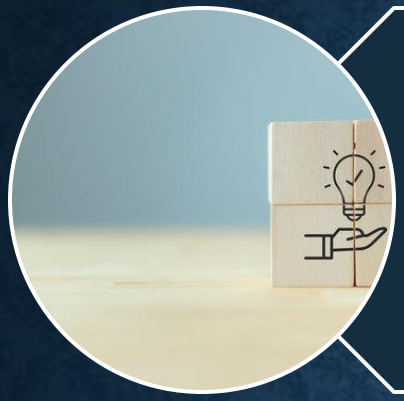
The most prominent problems and challenges facing us.

1- Average Rating is not good.

2- We have problems in duration and content.

3 – Drop percentage is high.

4 – Average Age is high.



Suggestions for improving the learning experience.

1- Change Rating System.

2-Create a track and change the education system.

3- update the content & explain.

Q&A?

THANK YOU ALL!

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