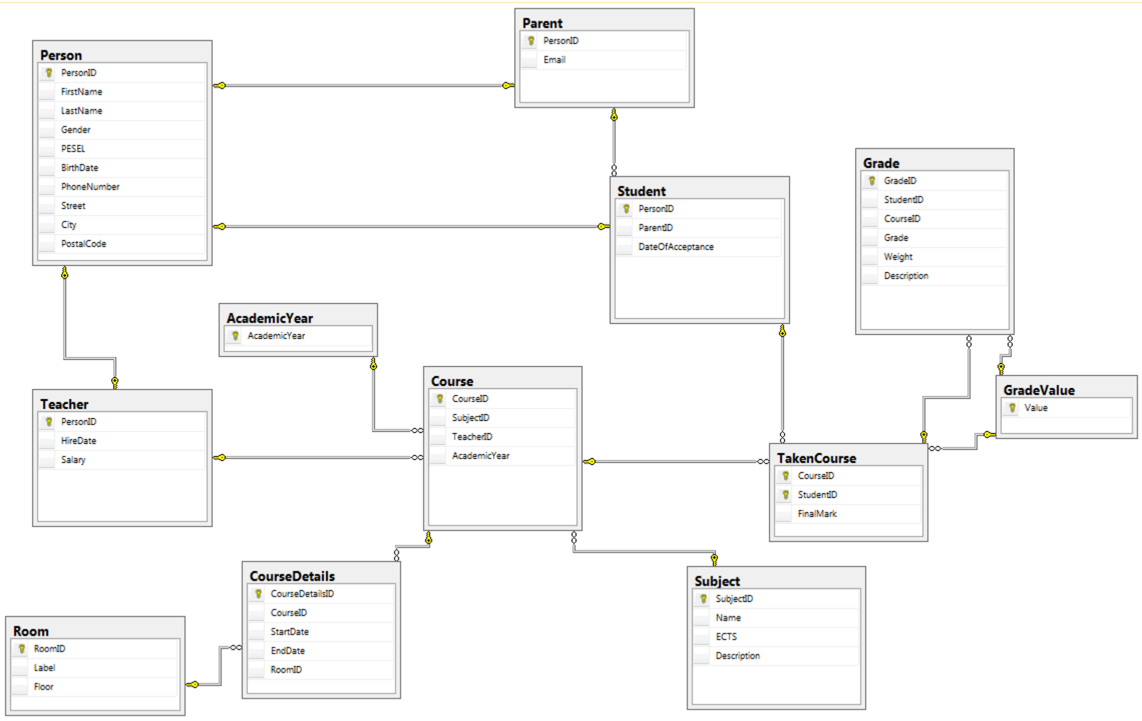
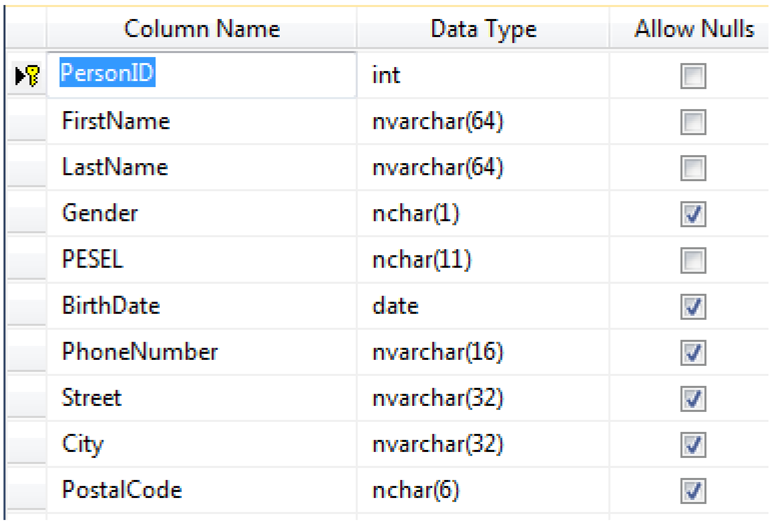
Diagram ER



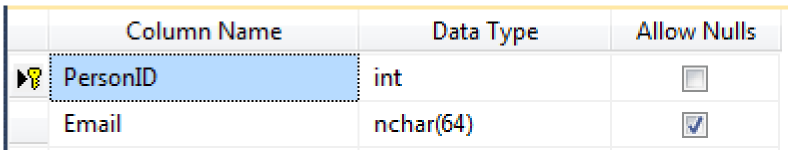
Schemat bazy danych:

Tabela Person



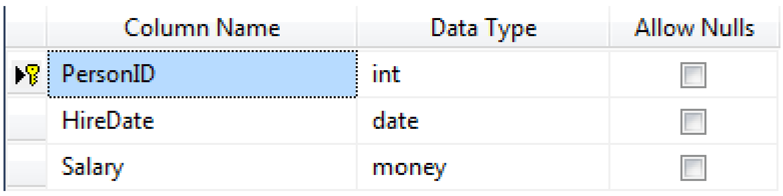
Column Name	Data Type	Allow Nulls
PersonID	int	☐
FirstName	nvarchar(64)	☐
LastName	nvarchar(64)	☐
Gender	nchar(1)	✓
PESEL	nchar(11)	☐
BirthDate	date	✓
PhoneNumber	nvarchar(16)	✓
Street	nvarchar(32)	✓
City	nvarchar(32)	✓
PostalCode	nchar(6)	✓

Tabela Parent



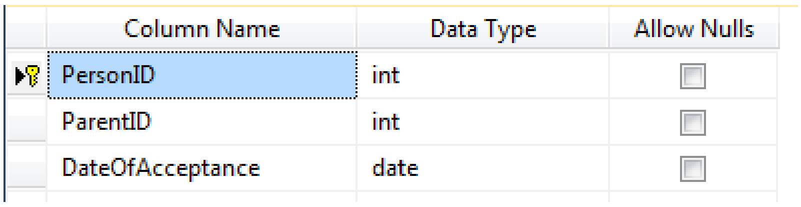
Column Name	Data Type	Allow Nulls
PersonID	int	☐
Email	nchar(64)	✓

Tabela Teacher



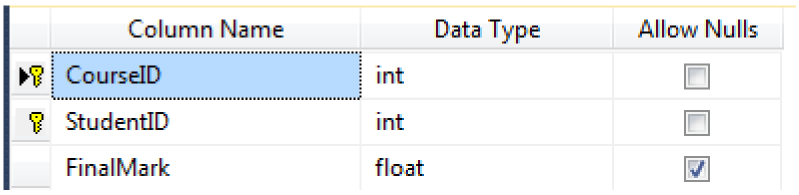
	Column Name	Data Type	Allow Nulls
▶🔑	PersonID	int	☐
	HireDate	date	☐
	Salary	money	☐

Tabela Student



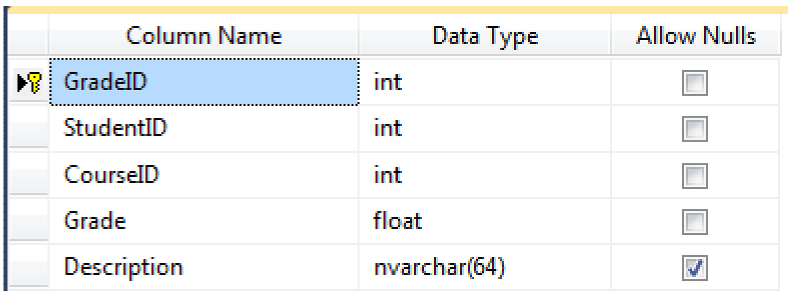
	Column Name	Data Type	Allow Nulls
▶🔑	PersonID	int	☐
	ParentID	int	☐
	DateOfAcceptance	date	☐

Tabela TakenCourse



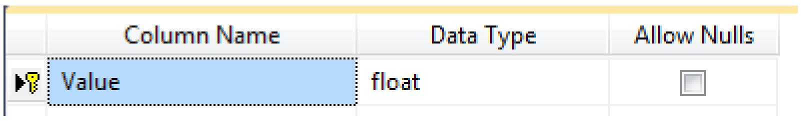
	Column Name	Data Type	Allow Nulls
▶🔑	CourseID	int	☐
🔑	StudentID	int	☐
	FinalMark	float	✓

Tabela Grade



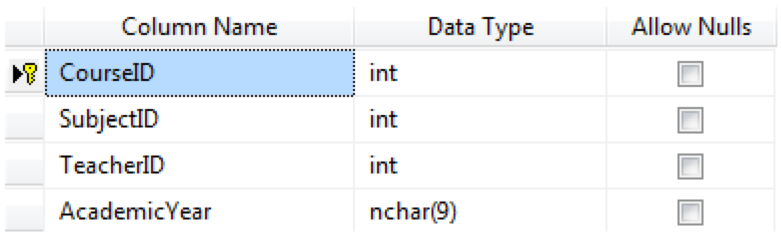
	Column Name	Data Type	Allow Nulls
▶🔑	GradeID	int	☐
	StudentID	int	☐
	CourseID	int	☐
	Grade	float	☐
	Description	nvarchar(64)	✓

Tabela GradeValue



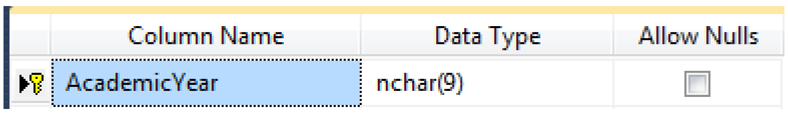
	Column Name	Data Type	Allow Nulls
▶🔑	Value	float	☐

Tabela Course



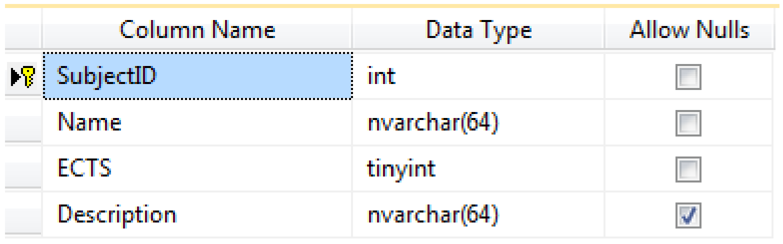
	Column Name	Data Type	Allow Nulls
▶🔑	CourseID	int	☐
	SubjectID	int	☐
	TeacherID	int	☐
	AcademicYear	nchar(9)	☐

Tabela AcademicYear



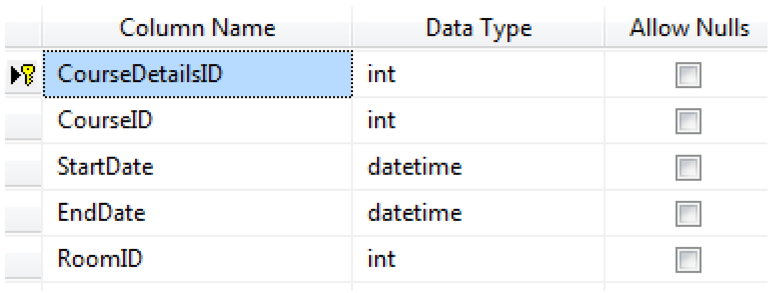
	Column Name	Data Type	Allow Nulls
▶🔑	AcademicYear	nchar(9)	☐

Tabela Subject



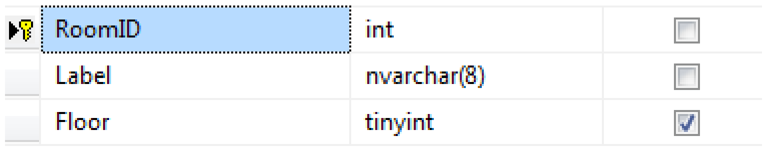
	Column Name	Data Type	Allow Nulls
🔑	SubjectID	int	☐
	Name	nvarchar(64)	☐
	ECTS	tinyint	☐
	Description	nvarchar(64)	✓

Tabela CourseDetails



	Column Name	Data Type	Allow Nulls
🔑	CourseDetailsID	int	☐
	CourseID	int	☐
	StartDate	datetime	☐
	EndDate	datetime	☐
	RoomID	int	☐

Tabela Room



🔑	RoomID	int	☐
	Label	nvarchar(8)	☐
	Floor	tinyint	✓

Cel projektu

Stworzenie bazy danych na wzór szkoły/uczelni. W bazie danych przechowujemy informacje o nauczycielach, uczniu i jego opiekunie, przedmiotach które zaliczył/aktualnie zalicza uczeń.

Główne założenia/ograniczenia przyjęte przy projektowaniu.

- Osoba może być jednocześnie byłym studentem, aktualnym nauczycielem jak i rodzicem innego ucznia.
- Kurs to po prostu dany przedmiot, podział przedmiotów na kursy jest po to aby był podział na lata akademickie, stąd np. kurs z przedmiotu Programowanie w roku 2021/2022 może być prowadzony przez inną osobę oraz mieć lekcje w innych dniach niż kurs z przedmiotu Programowanie w roku 2022/2023
- Nie ma podziału na klasy, każdy uczeń wybiera na jakie przedmioty chce się zapisać.
- Lekcje z danego kursu nie koniecznie odbywają się w ten sam dzień i o tej samej porze, zajęcia mogą np. odbywać się raz na 2 tygodnie, albo raz w jednej sali raz w drugiej itd.
- Student może mieć wiele ocen z danego kursu, ale ma jedną ocenę końcową, jeśli nie ma oceny końcowej to oznacza, że kurs jeszcze się nie zakończył

Opis widoków, procedur, wyzwalaczy, funkcji

Widoki

```sql
-- Widok nr 1 - Informacje o każdym nauczycielu, i jakie przedmioty
prowadzi
CREATE VIEW TeachersInfo
AS
SELECT P.PersonID, P.FirstName, P.LastName, T.Salary, T.HireDate,
S.Name, C.AcademicYear
FROM Teacher T JOIN Person P ON T.PersonID = P.PersonID
JOIN Course C ON T.PersonID = C.TeacherID
JOIN [Subject] S ON C.SubjectID = S.SubjectID;
```

```sql
-- Widok nr 2 - Policz ile każdy kurs ma spotkań oraz łączną długość
spotkań
CREATE VIEW Lessons
AS
      SELECT C.AcademicYear, S.Name, COUNT(*) as NumberOfMeetings,
SUM(DATEDIFF(minute, CD.StartDate, CD.EndDate))/60 as [Length]
      FROM Course C JOIN CourseDetails CD ON C.CourseID = CD.CourseID
      JOIN Subject S ON C.SubjectID = S.SubjectID
      GROUP BY C.AcademicYear, S.Name;
```

```sql
-- Widok nr 3 - Dla każdego rodzica wyświetl jego dzieci
CREATE VIEW ParentChildren
AS
      SELECT Pinfo.FirstName [Parent FirstName], Pinfo.LastName [Parent
LastName], Sinfo.FirstName [Child FirstName], Sinfo.LastName [Child
LastName]
      FROM Parent P JOIN Person Pinfo ON P.PersonID = Pinfo.PersonID
      JOIN Student S ON P.PersonID = S.ParentID
      JOIN Person Sinfo ON Sinfo.PersonID = S.PersonID;
```

```sql
-- Widok nr 4 - Dla każdej osoby kim jest (nauczycielem, studentem itp)
CREATE VIEW IdentifyPerson
AS
      SELECT P.FirstName, P.LastName,
      CASE
            WHEN (SELECT S.PersonID FROM Student S WHERE S.PersonID = 
P.PersonID) IS NOT NULL THEN 'YES'
            ELSE 'NO'
      END AS [StudentCheck],
      CASE
            WHEN (SELECT S.PersonID FROM Teacher S WHERE S.PersonID = 
P.PersonID) IS NOT NULL THEN 'YES'
            ELSE 'NO'
      END AS [TeacherCheck],
      CASE
            WHEN (SELECT S.PersonID FROM Parent S WHERE S.PersonID = 
P.PersonID) IS NOT NULL THEN 'YES'
            ELSE 'NO'
      END AS [ParentCheck]
      FROM Person P;
```

```sql
-- Widok nr 5 - Dla każdego ucznia oblicz średnią ocen w danym kursie, na 
którym zapisany był uczeń
CREATE VIEW AverageGrades
AS
      SELECT S.PersonID, P.FirstName, P.LastName, G.CourseID, 
CAST(AVG(G.Grade) as decimal(10,2)) as [Average]
      FROM Student S
      JOIN Person P ON S.PersonID = P.PersonID
      JOIN TakenCourse TC ON S.PersonID = TC.StudentID
      JOIN Grade G ON TC.StudentID = G.StudentID AND TC.CourseID = 
G.CourseID
      GROUP BY S.PersonID, P.FirstName, P.LastName, G.CourseID;
```

Procedury

```
-- Procedura nr 1 - Dla konkretnego ucznia wypisz jego plan lekcji w
przedziale pomiędzy zadanymi datami
CREATE PROCEDURE StudentSchedule @StudentID int, @StartDate datetime,
@EndDate datetime
AS
SET @EndDate = DATEADD(day, 1, @EndDate);--zwiekszam o jeden dzien, i
teraz tu będzie jeden dzien pozniej, ale godzina 00:00:00
SELECT * FROM Student S
JOIN TakenCourse TC ON S.PersonID = TC.StudentID
JOIN Course C ON C.CourseID = TC.CourseID
JOIN CourseDetails CD ON CD.CourseID = C.CourseID
WHERE TC.FinalMark IS NULL --jeszcze nie ma oceny końcowej więc to
oznacza, że kurs się jeszcze nie zakończył czyli powinien być w planie
lekcji
AND S.PersonID = @StudentID
AND CD.StartDate >= @StartDate AND CD.StartDate < @EndDate;
GO

--EXEC StudentSchedule @StudentID = 7, @StartDate='2020-04-04', @EndDate
= '2022-11-18';
```

```
-- Procedura nr 2 - Dla konkretnego ucznia zwraca jakie przedmioty już
ma zakończone
CREATE PROCEDURE StudentCompleted @StudentID int
AS
SELECT S.PersonID, P.FirstName, P.LastName, C.AcademicYear, SB.Name,
TC.FinalMark FROM Student S
JOIN TakenCourse TC ON S.PersonID = TC.StudentID
JOIN Course C ON C.CourseID = TC.CourseID
JOIN [Subject] SB ON C.SubjectID = SB.SubjectID
JOIN Person P ON S.PersonID = P.PersonID
WHERE TC.FinalMark IS NOT NULL
AND S.PersonID = @StudentID
GO

--EXEC StudentCompleted @StudentID = 7;
```

```sql
--Funkcja nr 1 (potrzebna do kolejnej procedury) - Zwraca daty z
zadanego przedziału, z odstępami o interwał
CREATE FUNCTION GenerateDatesInteval (@StartDate date, @EndDate date,
@Interval tinyint)
RETURNS TABLE
AS
RETURN
(
	WITH MY_CTE
	AS
	(SELECT @StartDate StartDate
	UNION ALL
	SELECT DATEADD(day, @Interval, StartDate)
	FROM MY_CTE
	WHERE DATEADD(day, @Interval, StartDate) <= @EndDate
	)
	SELECT * FROM MY_CTE
)
--SELECT * FROM dbo.GenerateDatesInteval('2023-08-09','2023-08-16',7);
```

```sql
-- Procedura nr 3 - Dodaje jakiś przedmiot np. w każdy wtorek o 12:00;
jeśli jest kolizja z salą to wtedy wyzwalacz zablokuje;
CREATE PROCEDURE AddCourseLesson @CourseID int, @DayOfTheWeek
nvarchar(16), @LessonStart time, @LessonEnd time, @StartDate date,
@EndDate date,
@RoomID int
AS
--Znalezienie pierwszego 'dobrego dnia'
WHILE(DATENAME(DW,@StartDate) != @DayOfTheWeek)
BEGIN
	SET @StartDate = DATEADD(day, 1, @StartDate)
END
IF @StartDate <= @EndDate
BEGIN
	INSERT INTO CourseDetails(CourseID, StartDate, EndDate, RoomID)
SELECT @CourseID, CAST(F.StartDate as datetime) + CAST(@LessonStart as
datetime),
	CAST(F.StartDate as datetime) + CAST(@LessonEnd as datetime),
@RoomID
	FROM dbo.GenerateDatesInteval(@StartDate, @EndDate, 7) F;
END
--EXEC AddCourseLesson @CourseID = 5, @DayOfTheWeek = 'Monday',
@LessonStart = '12:00:00', @LessonEnd = '13:00:00',
--@StartDate='2023-11-04', @EndDate = '2023-11-27', @RoomID = 1
```

```sql
-- Procedura nr 4 - dla podanego id studenta wypisuje informacje o nim,
jego rodzicu i jego rodzeństwu
CREATE PROCEDURE StudentFamily @StudentID int
AS
      DECLARE @ParentID int;
      SET @ParentID = (SELECT S.ParentID FROM Student S WHERE S.PersonID
= @StudentID);

            SELECT P.*, 'Student' as Relation FROM Student S
            JOIN Person P ON P.PersonID = S.PersonID
            WHERE S.ParentID = @ParentID
      UNION
            SELECT P.*, 'Parent' as Relation FROM Person P
            WHERE P.PersonID = @ParentID
            ORDER BY Relation;
GO

--EXEC StudentFamily 6;
```

```sql
-- Procedura nr 5 - dla podanego id studenta i id kursu wypisuje oceny
studenta, oraz średnią ocen w osobnym polu
CREATE PROCEDURE CourseGrades @StudentID int, @CourseID int
AS
      SELECT G.*, (SELECT AG.Average FROM AverageGrades AG WHERE
AG.PersonID = @StudentID AND AG.CourseID = @CourseID) AS [Average]
      FROM Grade G
      WHERE G.StudentID = @StudentID AND G.CourseID = @CourseID
GO

--EXEC CourseGrades @StudentID = 6, @CourseID = 1;
```

Wyzwalacze

```
-- Wyzwalacz nr 1 - Sprawdza czy student nie zaliczył już danego
przedmiotu w innym roku akademickim
CREATE TRIGGER SubjectAlreadyCompleted
ON TakenCourse
AFTER INSERT
AS
BEGIN
      DECLARE @counter int;
      SET @counter = (--zliczam ile razy student zapisał się na
przedmiot, jeśli jakikolwiek student zapisał się wiecej niż raz to
rollback
      SELECT MAX([counter])
            FROM (
                  SELECT TC.StudentID, C.SubjectID , COUNT(*) [counter]
                  FROM TakenCourse TC
                  JOIN Course C ON TC.CourseID = C.CourseID
                  WHERE TC.StudentID IN (SELECT StudentID FROM inserted
WHERE StudentID IS NOT NULL)--zeby sprawdzac tylko dla studentow ktorych
dotyczy zmiana
                  AND (TC.FinalMark IS NULL OR TC.FinalMark != 2) --jeśli
juz zaliczał, ale dostał ocene 2 to może poprawić więc jest ok
                  GROUP BY TC.StudentID, C.SubjectID
            )Subquery
      )

      IF @counter > 1
            ROLLBACK
END;
```

```
-- Wyzwalacz nr 2 - Sprawdza czy rodzic podał adres email jeśli nie podał
nr telefonu
CREATE TRIGGER ParentAnyInfo
ON Parent
AFTER INSERT
AS
      IF EXISTS(
            SELECT * FROM Person PE JOIN inserted PA ON PE.PersonID =
PA.PersonID
            WHERE PE.PhoneNumber IS NULL AND PA.Email IS NULL
      )
            ROLLBACK
;
```

```
-- Wyzwalacz nr 3 - Sprawdza czy sala nie jest już zajęta przez inne
zajęcia
CREATE TRIGGER RoomTaken
ON CourseDetails
AFTER INSERT
AS
BEGIN
	IF EXISTS(
		SELECT * FROM inserted I
		CROSS APPLY(
			SELECT * FROM CourseDetails CD
			WHERE CD.CourseDetailsID != I.CourseDetailsID--bo
oczywiście kolizja z samym soba zawsze bedzie
			AND I.RoomID = CD.RoomID
			AND ( (I.StartDate > CD.StartDate AND I.StartDate <
CD.EndDate) OR (I.EndDate > CD.StartDate AND I.EndDate < CD.EndDate))
		)Subquery
	)
	BEGIN
		RAISERROR('Room already taken!.', 11, 2)
		ROLLBACK
	END
END;
```

```
-- Wyzwalacz nr 4 - Sprawdza czy zajęcia które dodajemy dla danego kursu
rzeczywiście są w odpowiednim roku akademickim
CREATE TRIGGER AcademicYearLessons
ON CourseDetails
AFTER INSERT
AS
BEGIN
	IF EXISTS(
		SELECT * FROM inserted I
		JOIN Course C ON I.CourseID = C.CourseID
		WHERE CAST(StartDate as date) NOT BETWEEN
		CAST(LEFT(C.AcademicYear, 4) + '-09-01' as date) AND
CAST(RIGHT(C.AcademicYear, 4) + '-06-30' as date) OR
		CAST(EndDate as date) NOT BETWEEN
		CAST(LEFT(C.AcademicYear, 4) + '-09-01' as date) AND
CAST(RIGHT(C.AcademicYear, 4) + '-06-30' as date)
	)BEGIN
		RAISERROR('Wrong Academic Year !', 10, 1)
		ROLLBACK
	END
END;
```

```
--Wyzwalacz nr 5 - Sprawdzenie czy jeśli student dostaje ocene końcową z
kursu z roku akademickiego który już się skończył to nie jest to null
CREATE TRIGGER CorrectFinalMark
ON TakenCourse
AFTER INSERT
AS
BEGIN
      IF EXISTS(
            SELECT * FROM inserted I
            JOIN Course C ON I.CourseID = C.CourseID
            WHERE FinalMark IS NULL
            AND C.AcademicYear != (SELECT TOP 1 AC.AcademicYear FROM
AcademicYear AC ORDER BY LEFT(AC.AcademicYear, 4) DESC)
      )
            ROLLBACK;
END;
```

Skrypty tworzące wszystkie obiekty bazy danych:

a) Skrypt tworzący baze danych

```
USE [master]
GO
/****** Object:  Database [School]    Script Date: 12/25/2023 4:10:52 PM
******/
CREATE DATABASE [School]
 CONTAINMENT = NONE
 ON  PRIMARY
( NAME = N'School', FILENAME = N'C:\Program Files\Microsoft SQL
Server\MSSQL11.MSSQLSERVER\MSSQL\DATA\School.mdf' , SIZE = 4096KB ,
MAXSIZE = UNLIMITED, FILEGROWTH = 1024KB )
 LOG ON
( NAME = N'School_log', FILENAME = N'C:\Program Files\Microsoft SQL
Server\MSSQL11.MSSQLSERVER\MSSQL\DATA\School_log.ldf' , SIZE = 1024KB ,
MAXSIZE = 2048GB , FILEGROWTH = 10%)
GO
ALTER DATABASE [School] SET COMPATIBILITY_LEVEL = 110
GO
IF (1 = FULLTEXTSERVICEPROPERTY('IsFullTextInstalled'))
begin
EXEC [School].[dbo].[sp_fulltext_database] @action = 'enable'
end
GO
ALTER DATABASE [School] SET ANSI_NULL_DEFAULT OFF
```

```sql
GO
ALTER DATABASE [School] SET ANSI_NULLS OFF
GO
ALTER DATABASE [School] SET ANSI_PADDING OFF
GO
ALTER DATABASE [School] SET ANSI_WARNINGS OFF
GO
ALTER DATABASE [School] SET ARITHABORT OFF
GO
ALTER DATABASE [School] SET AUTO_CLOSE OFF
GO
ALTER DATABASE [School] SET AUTO_CREATE_STATISTICS ON
GO
ALTER DATABASE [School] SET AUTO_SHRINK OFF
GO
ALTER DATABASE [School] SET AUTO_UPDATE_STATISTICS ON
GO
ALTER DATABASE [School] SET CURSOR_CLOSE_ON_COMMIT OFF
GO
ALTER DATABASE [School] SET CURSOR_DEFAULT  GLOBAL
GO
ALTER DATABASE [School] SET CONCAT_NULL_YIELDS_NULL OFF
GO
ALTER DATABASE [School] SET NUMERIC_ROUNDABORT OFF
GO
ALTER DATABASE [School] SET QUOTED_IDENTIFIER OFF
GO
ALTER DATABASE [School] SET RECURSIVE_TRIGGERS OFF
GO
ALTER DATABASE [School] SET  DISABLE_BROKER
GO
ALTER DATABASE [School] SET AUTO_UPDATE_STATISTICS_ASYNC OFF
GO
ALTER DATABASE [School] SET DATE_CORRELATION_OPTIMIZATION OFF
GO
ALTER DATABASE [School] SET TRUSTWORTHY OFF
GO
ALTER DATABASE [School] SET ALLOW_SNAPSHOT_ISOLATION OFF
GO
ALTER DATABASE [School] SET PARAMETERIZATION SIMPLE
GO
ALTER DATABASE [School] SET READ_COMMITTED_SNAPSHOT OFF
GO
ALTER DATABASE [School] SET HONOR_BROKER_PRIORITY OFF
GO
ALTER DATABASE [School] SET RECOVERY FULL
```

```sql
GO
ALTER DATABASE [School] SET  MULTI_USER
GO
ALTER DATABASE [School] SET PAGE_VERIFY CHECKSUM
GO
ALTER DATABASE [School] SET DB_CHAINING OFF
GO
ALTER DATABASE [School] SET FILESTREAM( NON_TRANSACTED_ACCESS = OFF )
GO
ALTER DATABASE [School] SET TARGET_RECOVERY_TIME = 0 SECONDS
GO
EXEC sys.sp_db_vardecimal_storage_format N'School', N'ON'
GO
USE [School]
GO
/****** Object:  StoredProcedure [dbo].[AddCourseLesson]    Script Date:
12/25/2023 4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE PROCEDURE [dbo].[AddCourseLesson] @CourseID int, @DayOfTheWeek
nvarchar(16), @LessonStart time, @LessonEnd time, @StartDate date,
@EndDate date,
@RoomID int
AS
--Znalezienie pierwszego 'dobrego dnia'
WHILE(DATENAME(DW,@StartDate) != @DayOfTheWeek)
BEGIN
      SET @StartDate = DATEADD(day, 1, @StartDate)
END
INSERT INTO CourseDetails(CourseID, StartDate, EndDate, RoomID) SELECT
@CourseID, CAST(F.StartDate as datetime) + CAST(@LessonStart as
datetime),
CAST(F.StartDate as datetime) + CAST(@LessonEnd as datetime), @RoomID
FROM dbo.GenerateDatesInteval(@StartDate, @EndDate, 7) F;

GO
/****** Object:  StoredProcedure [dbo].[CourseGrades]    Script Date:
12/25/2023 4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE PROCEDURE [dbo].[CourseGrades] @StudentID int, @CourseID int
AS
```

```sql
      SELECT G.*, (SELECT AG.Average FROM AverageGrades AG WHERE
AG.PersonID = @StudentID AND AG.CourseID = @CourseID) AS [Average]
      FROM Grade G
      WHERE G.StudentID = @StudentID AND G.CourseID = @CourseID

GO
/****** Object:  StoredProcedure [dbo].[StudentCompleted]    Script
Date: 12/25/2023 4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE PROCEDURE [dbo].[StudentCompleted] @StudentID int
AS
SELECT S.PersonID, P.FirstName, P.LastName, C.AcademicYear, SB.Name,
TC.FinalMark FROM Student S
JOIN TakenCourse TC ON S.PersonID = TC.StudentID
JOIN Course C ON C.CourseID = TC.CourseID
JOIN [Subject] SB ON C.SubjectID = SB.SubjectID
JOIN Person P ON S.PersonID = P.PersonID
WHERE TC.FinalMark IS NOT NULL
AND S.PersonID = @StudentID

GO
/****** Object:  StoredProcedure [dbo].[StudentFamily]    Script Date:
12/25/2023 4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE PROCEDURE [dbo].[StudentFamily] @StudentID int
AS
      DECLARE @ParentID int;
      SET @ParentID = (SELECT S.ParentID FROM Student S WHERE S.PersonID
= @StudentID);

            SELECT P.*, 'Student' as Relation FROM Student S
            JOIN Person P ON P.PersonID = S.PersonID
            WHERE S.ParentID = @ParentID
      UNION
            SELECT P.*, 'Parent' as Relation FROM Person P
            WHERE P.PersonID = @ParentID
            ORDER BY Relation;

GO
/****** Object:  StoredProcedure [dbo].[StudentSchedule]    Script Date:
```

```
12/25/2023 4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE PROCEDURE [dbo].[StudentSchedule] @StudentID int, @StartDate
datetime, @EndDate datetime
AS
SET @EndDate = DATEADD(day, 1, @EndDate);--zwiekszam o jeden dzien, i
teraz tu będzie jeden dzien pozniej, ale godzina 00:00:00
SELECT * FROM Student S
JOIN TakenCourse TC ON S.PersonID = TC.StudentID
JOIN Course C ON C.CourseID = TC.CourseID
JOIN CourseDetails CD ON CD.CourseID = C.CourseID
WHERE TC.FinalMark IS NULL --jeszcze nie ma oceny końcowej więc to
oznacza, że kurs się jeszcze nie zakończył czyli powinien być w planie
lekcji
AND S.PersonID = @StudentID
AND CD.StartDate >= @StartDate AND CD.StartDate < @EndDate;

GO
/****** Object:  Table [dbo].[AcademicYear]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[AcademicYear](
      [AcademicYear] [nchar](9) NOT NULL,
 CONSTRAINT [PK_AcademicYear] PRIMARY KEY CLUSTERED
(
      [AcademicYear] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Course]    Script Date: 12/25/2023 4:10:52
PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Course](
      [CourseID] [int] IDENTITY(1,1) NOT NULL,
      [SubjectID] [int] NOT NULL,
      [TeacherID] [int] NOT NULL,
      [AcademicYear] [nchar](9) NOT NULL,
 CONSTRAINT [PK_Lesson_1] PRIMARY KEY CLUSTERED
(
      [CourseID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[CourseDetails]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[CourseDetails](
      [CourseDetailsID] [int] IDENTITY(1,1) NOT NULL,
      [CourseID] [int] NOT NULL,
      [StartDate] [datetime] NOT NULL,
      [EndDate] [datetime] NOT NULL,
      [RoomID] [int] NOT NULL,
 CONSTRAINT [PK_CourseDetails] PRIMARY KEY CLUSTERED
(
      [CourseDetailsID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Grade]    Script Date: 12/25/2023 4:10:52
PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Grade](
      [GradeID] [int] IDENTITY(1,1) NOT NULL,
      [StudentID] [int] NOT NULL,
      [CourseID] [int] NOT NULL,
      [Grade] [float] NOT NULL,
      [Description] [nvarchar](64) NULL,
 CONSTRAINT [PK_Grade] PRIMARY KEY CLUSTERED
(
      [GradeID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
```

```sql
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[GradeValue]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[GradeValue](
	[Value] [float] NOT NULL,
 CONSTRAINT [PK_GradeValue_1] PRIMARY KEY CLUSTERED
(
	[Value] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Parent]    Script Date: 12/25/2023 4:10:52
PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Parent](
	[PersonID] [int] NOT NULL,
	[Email] [nchar](64) NULL,
 CONSTRAINT [PK_Parent] PRIMARY KEY CLUSTERED
(
	[PersonID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Person]    Script Date: 12/25/2023 4:10:52
PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Person](
	[PersonID] [int] IDENTITY(1,1) NOT NULL,
	[FirstName] [nvarchar](64) NOT NULL,
	[LastName] [nvarchar](64) NOT NULL,
	[Gender] [nchar](1) NULL,
	[PESEL] [nchar](11) NOT NULL,
	[BirthDate] [date] NULL,
	[PhoneNumber] [nvarchar](16) NULL,
	[Street] [nvarchar](32) NULL,
	[City] [nvarchar](32) NULL,
	[PostalCode] [nchar](6) NULL,
 CONSTRAINT [PK_Person] PRIMARY KEY CLUSTERED
(
	[PersonID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY],
 CONSTRAINT [UNIQUE_PESEL] UNIQUE NONCLUSTERED
(
	[PESEL] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Room]    Script Date: 12/25/2023 4:10:52
PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Room](
	[RoomID] [int] IDENTITY(1,1) NOT NULL,
	[Label] [nvarchar](8) NOT NULL,
	[Floor] [tinyint] NULL,
 CONSTRAINT [PK_Room] PRIMARY KEY CLUSTERED
(
	[RoomID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Student]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Student](
	[PersonID] [int] NOT NULL,
	[ParentID] [int] NOT NULL,
	[DateOfAcceptance] [date] NOT NULL,
 CONSTRAINT [PK_Student] PRIMARY KEY CLUSTERED
(
	[PersonID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Subject]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Subject](
	[SubjectID] [int] IDENTITY(1,1) NOT NULL,
	[Name] [nvarchar](64) NOT NULL,
	[ECTS] [tinyint] NOT NULL,
	[Description] [nvarchar](64) NULL,
 CONSTRAINT [PK_Subject] PRIMARY KEY CLUSTERED
(
	[SubjectID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[TakenCourse]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[TakenCourse](
	[CourseID] [int] NOT NULL,
	[StudentID] [int] NOT NULL,
	[FinalMark] [float] NULL,
 CONSTRAINT [PK_CurrentSubject] PRIMARY KEY CLUSTERED
(
	[CourseID] ASC,
	[StudentID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
```

```
) ON [PRIMARY]

GO
/****** Object:  Table [dbo].[Teacher]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Teacher](
	[PersonID] [int] NOT NULL,
	[HireDate] [date] NOT NULL,
	[Salary] [money] NOT NULL,
 CONSTRAINT [PK_Teacher] PRIMARY KEY CLUSTERED
(
	[PersonID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY =
OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
/****** Object:  UserDefinedFunction [dbo].[GenerateDatesInteval]
Script Date: 12/25/2023 4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE FUNCTION [dbo].[GenerateDatesInteval] (@StartDate date, @EndDate
date, @Interval tinyint)
RETURNS TABLE
AS
RETURN
(
	WITH MY_CTE
	AS
	(SELECT @StartDate StartDate
	UNION ALL
	SELECT DATEADD(day, @Interval, StartDate)
	FROM MY_CTE
	WHERE DATEADD(day, @Interval, StartDate) <= @EndDate
	)
	SELECT * FROM MY_CTE
)

GO
/****** Object:  View [dbo].[AverageGrades]    Script Date: 12/25/2023
```

```sql
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE VIEW [dbo].[AverageGrades]
AS
      SELECT S.PersonID, P.FirstName, P.LastName, G.CourseID,
CAST(AVG(G.Grade) as decimal(10,2)) as [Average]
      FROM Student S
      JOIN Person P ON S.PersonID = P.PersonID
      JOIN TakenCourse TC ON S.PersonID = TC.StudentID
      JOIN Grade G ON TC.StudentID = G.StudentID AND TC.CourseID =
G.CourseID
      GROUP BY S.PersonID, P.FirstName, P.LastName, G.CourseID;

GO
/****** Object:  View [dbo].[IdentifyPerson]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE VIEW [dbo].[IdentifyPerson]
AS
      SELECT P.FirstName, P.LastName,
      CASE
            WHEN (SELECT S.PersonID FROM Student S WHERE S.PersonID =
P.PersonID) IS NOT NULL THEN 'YES'
            ELSE 'NO'
      END AS [StudentCheck],
      CASE
            WHEN (SELECT S.PersonID FROM Teacher S WHERE S.PersonID =
P.PersonID) IS NOT NULL THEN 'YES'
            ELSE 'NO'
      END AS [TeacherCheck],
      CASE
            WHEN (SELECT S.PersonID FROM Parent S WHERE S.PersonID =
P.PersonID) IS NOT NULL THEN 'YES'
            ELSE 'NO'
      END AS [ParentCheck]
      FROM Person P;

GO
/****** Object:  View [dbo].[Lessons]    Script Date: 12/25/2023 4:10:52
PM ******/
```

```
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE VIEW [dbo].[Lessons]
AS
      SELECT C.AcademicYear, S.Name, COUNT(*) as NumberOfMeetings,
SUM(DATEDIFF(minute, CD.StartDate, CD.EndDate))/60 as [Length]
      FROM Course C JOIN CourseDetails CD ON C.CourseID = CD.CourseID
      JOIN Subject S ON C.SubjectID = S.SubjectID
      GROUP BY C.AcademicYear, S.Name;

GO
/****** Object:  View [dbo].[ParentChildren]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE VIEW [dbo].[ParentChildren]
AS
      SELECT Pinfo.FirstName [Parent FirstName], Pinfo.LastName [Parent
LastName], Sinfo.FirstName [Child FirstName], Sinfo.LastName [Child
LastName]
      FROM Parent P JOIN Person Pinfo ON P.PersonID = Pinfo.PersonID
      JOIN Student S ON P.PersonID = S.ParentID
      JOIN Person Sinfo ON Sinfo.PersonID = S.PersonID;

GO
/****** Object:  View [dbo].[TeachersInfo]    Script Date: 12/25/2023
4:10:52 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE VIEW [dbo].[TeachersInfo]
AS
SELECT P.PersonID, P.FirstName, P.LastName, T.Salary, T.HireDate,
S.Name, C.AcademicYear
FROM Teacher T JOIN Person P ON T.PersonID = P.PersonID
JOIN Course C ON T.PersonID = C.TeacherID
JOIN [Subject] S ON C.SubjectID = S.SubjectID;

GO
ALTER TABLE [dbo].[Course]  WITH CHECK ADD  CONSTRAINT
[FK_Course_AcademicYear] FOREIGN KEY([AcademicYear])
```

```sql
REFERENCES [dbo].[AcademicYear] ([AcademicYear])
GO
ALTER TABLE [dbo].[Course] CHECK CONSTRAINT [FK_Course_AcademicYear]
GO
ALTER TABLE [dbo].[Course]  WITH CHECK ADD  CONSTRAINT
[FK_Course_Subject] FOREIGN KEY([SubjectID])
REFERENCES [dbo].[Subject] ([SubjectID])
GO
ALTER TABLE [dbo].[Course] CHECK CONSTRAINT [FK_Course_Subject]
GO
ALTER TABLE [dbo].[Course]  WITH CHECK ADD  CONSTRAINT
[FK_Lesson_Teacher] FOREIGN KEY([TeacherID])
REFERENCES [dbo].[Teacher] ([PersonID])
GO
ALTER TABLE [dbo].[Course] CHECK CONSTRAINT [FK_Lesson_Teacher]
GO
ALTER TABLE [dbo].[CourseDetails]  WITH CHECK ADD  CONSTRAINT
[FK_CourseDetails_Course] FOREIGN KEY([CourseID])
REFERENCES [dbo].[Course] ([CourseID])
GO
ALTER TABLE [dbo].[CourseDetails] CHECK CONSTRAINT
[FK_CourseDetails_Course]
GO
ALTER TABLE [dbo].[CourseDetails]  WITH CHECK ADD  CONSTRAINT
[FK_CourseDetails_Room] FOREIGN KEY([RoomID])
REFERENCES [dbo].[Room] ([RoomID])
GO
ALTER TABLE [dbo].[CourseDetails] CHECK CONSTRAINT
[FK_CourseDetails_Room]
GO
ALTER TABLE [dbo].[Grade]  WITH CHECK ADD  CONSTRAINT
[FK_Grade_GradeValue] FOREIGN KEY([Grade])
REFERENCES [dbo].[GradeValue] ([Value])
GO
ALTER TABLE [dbo].[Grade] CHECK CONSTRAINT [FK_Grade_GradeValue]
GO
ALTER TABLE [dbo].[Grade]  WITH CHECK ADD  CONSTRAINT
[FK_Grade_TakenCourse] FOREIGN KEY([CourseID], [StudentID])
REFERENCES [dbo].[TakenCourse] ([CourseID], [StudentID])
GO
ALTER TABLE [dbo].[Grade] CHECK CONSTRAINT [FK_Grade_TakenCourse]
GO
ALTER TABLE [dbo].[Parent]  WITH NOCHECK ADD  CONSTRAINT
[FK_Parent_Person] FOREIGN KEY([PersonID])
REFERENCES [dbo].[Person] ([PersonID])
NOT FOR REPLICATION
```

```sql
GO
ALTER TABLE [dbo].[Parent] CHECK CONSTRAINT [FK_Parent_Person]
GO
ALTER TABLE [dbo].[Student]  WITH CHECK ADD  CONSTRAINT
[FK_Student_Parent] FOREIGN KEY([ParentID])
REFERENCES [dbo].[Parent] ([PersonID])
GO
ALTER TABLE [dbo].[Student] CHECK CONSTRAINT [FK_Student_Parent]
GO
ALTER TABLE [dbo].[Student]  WITH CHECK ADD  CONSTRAINT
[FK_Student_Person] FOREIGN KEY([PersonID])
REFERENCES [dbo].[Person] ([PersonID])
GO
ALTER TABLE [dbo].[Student] CHECK CONSTRAINT [FK_Student_Person]
GO
ALTER TABLE [dbo].[TakenCourse]  WITH CHECK ADD  CONSTRAINT
[FK_TakenCourse_Course] FOREIGN KEY([CourseID])
REFERENCES [dbo].[Course] ([CourseID])
GO
ALTER TABLE [dbo].[TakenCourse] CHECK CONSTRAINT [FK_TakenCourse_Course]
GO
ALTER TABLE [dbo].[TakenCourse]  WITH CHECK ADD  CONSTRAINT
[FK_TakenCourse_GradeValue] FOREIGN KEY([FinalMark])
REFERENCES [dbo].[GradeValue] ([Value])
GO
ALTER TABLE [dbo].[TakenCourse] CHECK CONSTRAINT
[FK_TakenCourse_GradeValue]
GO
ALTER TABLE [dbo].[TakenCourse]  WITH CHECK ADD  CONSTRAINT
[FK_TakenCourse_Student] FOREIGN KEY([StudentID])
REFERENCES [dbo].[Student] ([PersonID])
GO
ALTER TABLE [dbo].[TakenCourse] CHECK CONSTRAINT
[FK_TakenCourse_Student]
GO
ALTER TABLE [dbo].[Teacher]  WITH CHECK ADD  CONSTRAINT
[FK_Teacher_Person] FOREIGN KEY([PersonID])
REFERENCES [dbo].[Person] ([PersonID])
GO
ALTER TABLE [dbo].[Teacher] CHECK CONSTRAINT [FK_Teacher_Person]
GO
USE [master]
GO
ALTER DATABASE [School] SET  READ_WRITE
GO
```

b) Przykładowe dane wejściowe

```sql
--Usuwanie przykładowych danych

DELETE FROM CourseDetails;
DBCC CHECKIDENT ('CourseDetails', RESEED, 0);

DELETE FROM Room;
DBCC CHECKIDENT ('Room', RESEED, 0);

DELETE FROM [Grade];
DBCC CHECKIDENT ('Grade', RESEED, 0);

DELETE FROM TakenCourse;

DELETE FROM Course;
DBCC CHECKIDENT ('Course', RESEED, 0);

DELETE FROM [Subject];
DBCC CHECKIDENT ('Subject', RESEED, 0);

DELETE FROM GradeValue;
DELETE FROM AcademicYear;

DELETE FROM Student;
DELETE FROM Parent;
DELETE FROM Teacher;

DELETE FROM Person;
DBCC CHECKIDENT ('Person', RESEED, 0);
```

```sql
--Wstawianie przykładowych danych

INSERT INTO Person(FirstName, LastName, PESEL) VALUES
--nauczyciele
('Jan', 'Kowalski', '01345678901'),
('Magda', 'Kwiatek', '02345678901'),
--rodzice
('Karolina', 'Małysz', '03345678901'),
('Patrycja', 'Rondo', '04345678901'),
--nauczyciel i rodzic jednoczesnie
('Piotrek', 'Grundwaldzki', '05345678901'),
--studenci
('Tomasz', 'Stoch', '06345678901'),
('Natalia', 'Jan', '07345678901'),
('Anna', 'Donn', '08345678901'),
('Mateusz', 'Święty', '09345678901');

INSERT INTO Parent(PersonID, Email) VALUES
(3, '3@gmail.com'),
(4, '4@gmail.com'),
(5, '5@gmail.com');


INSERT INTO Student(PersonID, ParentID, DateOfAcceptance) VALUES
(6, 3, '2021-08-31'),
(7, 3, '2021-08-31'),
(8, 4, '2022-08-31'),
(9, 5, '2022-08-31');

INSERT INTO Teacher VALUES
(1, '2021-03-23', 1100),
(2, '2018-03-23', 600),
(5, '2020-03-23', 1300);


INSERT INTO GradeValue VALUES
(2.0),
(3.0),
(3.5),
(4.0),
(4.5),
(5.0);

INSERT INTO AcademicYear VALUES
('2021/2022'),
('2022/2023');

INSERT INTO Room(Label, [Floor]) VALUES
('0053', 0),
('0056', 0),
('0059', 0),
('0089', 1);

INSERT INTO [Subject](Name, ECTS) VALUES
('Logika i teoria mnogości', 8),
('Algebra 1', 6),
('Programowanie 1', 6);

INSERT INTO Course(SubjectID, TeacherID, AcademicYear) VALUES
(1, 1,'2021/2022'),
(2, 1,'2021/2022'),
(3, 2,'2021/2022'),
(1, 5,'2022/2023'),
(2, 1,'2022/2023');


INSERT INTO CourseDetails(CourseID, StartDate, EndDate, RoomID) VALUES
--Lekcje dla kursu nr 1
(1, '2021-10-15 13:00','2021-10-15 13:45', 1),
(1, '2021-10-22 13:00','2021-10-22 13:45', 1),
(1, '2021-10-29 13:15','2021-10-29 14:00', 2),
(1, '2021-11-05 13:00','2021-11-05 13:45', 1),
(1, '2021-11-12 13:00','2021-11-12 13:45', 1),
(1, '2021-11-19 13:00','2021-11-19 13:45', 1),
--kurs nr 2
(2, '2021-10-15 10:00','2021-10-15 13:00', 1),
(2, '2021-10-22 10:00','2021-10-22 13:00', 1),
(2, '2021-10-29 10:00','2021-10-29 13:00', 1),
(2, '2021-11-05 10:00','2021-11-05 13:00', 1),
(2, '2021-11-12 10:00','2021-11-12 13:00', 1),
(2, '2021-11-19 10:00','2021-11-19 13:00', 1),
--kurs nr 3
(3, '2021-10-15 10:00','2021-10-15 13:00', 2),
(3, '2021-10-22 10:00','2021-10-22 13:00', 2),
(3, '2021-10-29 10:00','2021-10-29 13:00', 2),
(3, '2021-11-05 10:00','2021-11-05 13:00', 2),
(3, '2021-11-12 10:00','2021-11-12 13:00', 2),
(3, '2021-11-19 10:00','2021-11-19 13:00', 2),
--kurs nr 4
(4, '2022-10-15 10:00','2022-10-15 13:00', 3),
(4, '2022-10-22 10:00','2022-10-22 13:00', 4),
(4, '2022-11-12 10:00','2022-11-12 13:00', 4),
(4, '2022-11-19 10:00','2022-11-19 13:00', 4),
--kurs nr 5
(5, '2022-10-15 10:00','2022-10-15 13:00', 4),
(5, '2022-10-22 10:00','2022-10-22 13:00', 3),
(5, '2022-10-29 10:00','2022-10-29 13:00', 3),
(5, '2022-11-12 10:00','2022-11-12 13:00', 3),
(5, '2022-11-19 10:00','2022-11-19 13:00', 3);

INSERT INTO TakenCourse(CourseID, StudentID, FinalMark) VALUES
(1, 6, 5),
(2, 6, 3.5),
(3, 6, 3.5),
(4, 7, NULL),
(2, 7, 4.5),
(3, 7, 3.5),
(2, 8, 2.0),
(1, 9, 4.5),
(5, 9, NULL),
(3, 9, 3.5);


INSERT INTO Grade(StudentID, CourseID, Grade, [Description]) VALUES
(6, 1, 5, 'Sprawdzian nr 1'),
(6, 2, 5, 'Sprawdzian nr 1'),
(6, 3, 5, 'Sprawdzian nr 1'),
(6, 3, 5, 'Kartkówka');

INSERT INTO Grade(StudentID, CourseID, Grade) VALUES
(6, 1, 5),
(6, 1, 3.5),
(6, 1, 3.0),
(6, 2, 4.0),
(6, 2, 4.5),
(6, 2, 3.0),
(6, 3, 5),
(6, 3, 5),
(6, 3, 4.5),
(6, 3, 4.0),
(6, 3, 3.0),
(6, 3, 5),

(7, 4, 5),
(7, 2, 4.5),
(7, 3, 3.5),
(7, 4, 3.5),
(7, 2, 4.5),

(8, 2, 3.0),
(8, 2, 3.0),
(8, 2, 4.0),

(9, 1, 5),
(9, 1, 4.5),
(9, 3, 4.0),
(9, 3, 5),
(9, 3, 4.5);
```

Normalizacja, Zależności funkcyjne, Klucze potencjalne

Tabela Person

Klucze potencjalne: PersonID; PESEL
Zależności funkcyjne (nieodklucza): PostalCode -> City
(nieklucz -> nieklucz, zatem jest tylko w 2PN, zakładam, że adresy osób rzadko się powtarzają, dlatego nie normalizuje tej tabeli do BCNF, podobnie adresy są zapisane w bazie danych Northwind, więc raczej jest ok)

Tabela ParentID, Tabela TeacherID, Tabela StudentID

Klucze potencjalne: PersonID
Brak zależności funkcyjnych (nieodklucza)
Jest w BCNF.

Tabela Grade

Klucze potencjalne: GradeID; (StudentID, CourseID)
Zależności (nieodklucza): brak
Jest w BCNF

Tabela TakenCourse

Klucze potencjalne: (CourseID, StudentID)
Zależności funkcyjne (nieodklucza): Brak\
Jest w BCNF.

Tabela Course

Klucze potencjalne: CourseID, (SubjectID, AcademicYear) [może być 1 kurs w danym roku akademickim]
Zależności funkcyjne (nieodklucza): Brak
Jest w BCNF.

Tabela CourseDetails

Klucze potencjalne: CourseDetailsID, (StartDate, RoomID)
Zależności funkcyjne (nieodklucza): Brak
Jest w BCNF.

Tabela Room

Klucze potencjalne: RoomID, Label
Zależności funkcyjne (nieodklucza): Brak
Jest w BCNF.

Tabela Subject

Klucze potencjalne: SubjectID, (Name, Description)
Zależności funkcyjne (nieodklucza): Brak
Jest w BCNF.

Co można zmienić/dodać:

- Zmienić przechowywanie kiedy zaczynają i kończą się zajęcia (niepotrzebnie dla każdych zajęć przechowujemy rok bo i tak znamy rok z AcademicYear)
- Pole AcademicYear lepiej rozbic na 2 pola, zwłaszcza jeśli będzie sporo zapytań, które będzie wybierać początkowy rok i końcowy