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BROOKFLY PRIVATE MIDDLE SCHOOL

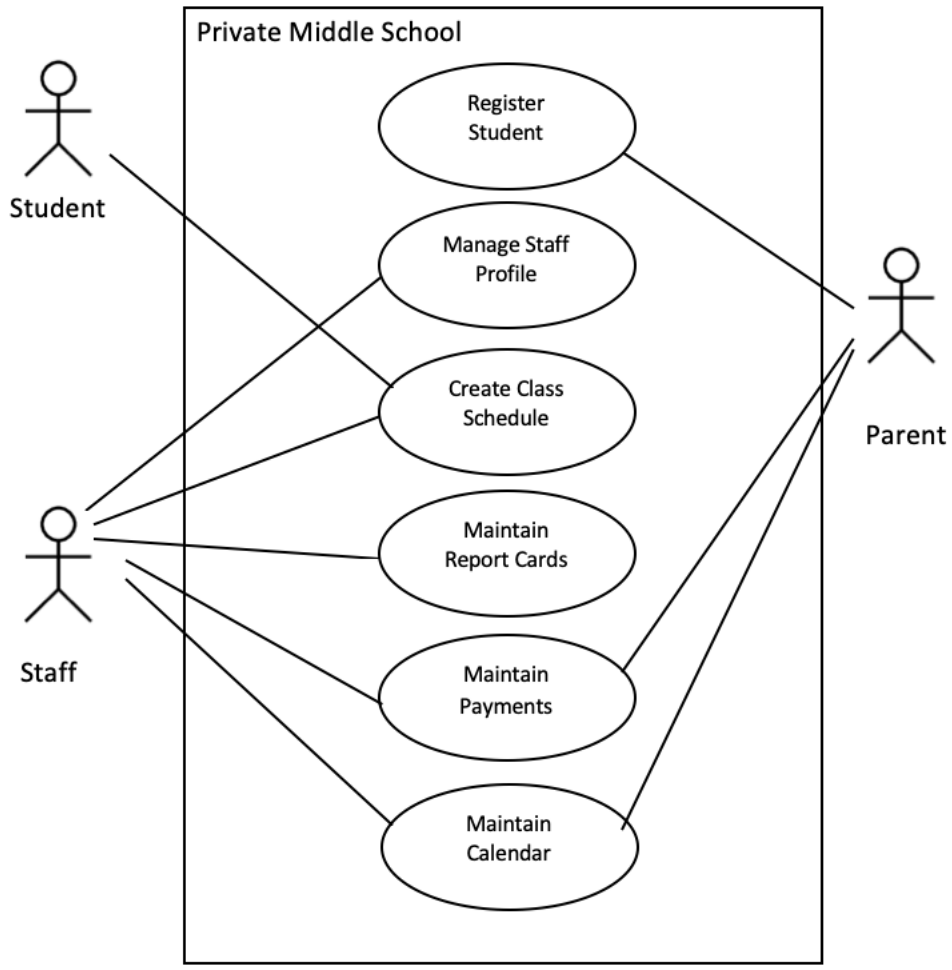
PROJECT SCENARIO

Based in Castle Pines, Colorado is an exclusive, elite private middle school known as Brookfly. This middle school was created for top ranked academic student to help challenge their abilities more than any other middle school. Currently the middle school only accepts a maximum of 200 student applications, making the school very competitive.

Each student that is accepted will become a registered student. All student information is recorded, which includes names, contact information, address, etc. This middle school is unique because students are allowed to choose the classes they take, but they are required to take at least 4 classes per semester.

In addition, Brookfly currently has a small staff. The staff consists of one principal, one assistant principal, two office administration, ten faculty members, and one custodian. Since Brookfly is so competitive, and is one of the best in the nation; parents must be able to make large payments per semester for their child to attend. To keep everything in alignment, the school maintains a calendar that both parent and administration can update. This includes field trips, personal vacations, and even special holidays.

USE CASE DIAGRAM



Use case name: Register Student	**ID** 1	**Importance level** High
Primary actor: Parent		
Short description: This use case contains the records need to enter a student into the school's system		
Trigger: Parent enrolls student **Type:** External		

Major Inputs:

Description	Source
firstName	Parent
lastName	Parent
gender	Parent
DOB	Parent
emergencyContact	Parent
parentFirstName	Parent
parentLastName	Parent
address	Parent
phone	Parent
email	Parent
immunizationDate	Parent

Major Outputs:

Description	Destination
studentID	Student Data Store
Student Profile	Student Data Store
parentID	Parent Data Store
Parent Profile	Parent Data Store

Major Steps Performed:	**Information for Steps**
1. Register New Student	=> studentID
1.1. Input student information	<= firstName, lastName, gender, DOB, emergencyContact, immunizationDate
1.2. Create student profile	=> Student Profile
1.3. Input parent information	<= parentFirstName, parentLastName, address, phone, email
1.4. Create parent profile	=> parentID, Parent Profile
2. Returning Student	
2.1. Update student profile	<= emergencyContact, immunizationDate
2.2. Return student profile	=> Student Profile
2.3. Update parent profile	<= address, phone, email
2.4. Return parent profile	=> Parent Profile

Use case name: Maintain Staff Profile	**ID** 2	**Importance level** High
Primary actor: Staff		
Short description: This use case describes how the admin office maintains the staff profile		
Trigger: Staff member is hired or information changes **Type:** External		

Major Inputs:

Description	Source
position	Staff
firstName	Staff
lastName	Staff
gender	Staff
DOB	Staff
address	Staff
phone	Staff
password	Staff
salary	Staff
hireDate	Date

Major Outputs:

Description	Destination
staffID	Staff Data Store
Staff Profile	Staff Data Store

Major Steps Performed:

1. If new staff, create profile	
1.1. Staff info input into system	=> staffID <= position, firstName, lastName, gender, dob, address, phone, password, salary, hireDate
1.2. Return Staff Profile	=> Staff Profile
2. If existing staff, make changes	
2.1. Update staff info	<= position, lastName, gender, address, phone, password, salary
2.2. Return Staff Profile	=> Staff Profile

Use case name: Create Class Schedule	**ID** 3	**Importance level** High
Primary actor: Student		
Short description: This use case describes how a student selects his/her class schedule.		
Trigger: Student logs into online portal and selects class schedule. **Type:** External		

Major Inputs:

Description	**Source**
studentID	Student
password	Student
classNo	Class Data Store
className	Class Data Store
staffID	Class Data Store
registrationDate	Staff
registrationTime	Staff

Major Outputs:

Description	**Destination**
Final Schedule	Class Data Store
Class and Section	Cart

Major Steps Performed:	**Information for Steps**
1. Student logs into online portal	
1.1. Input Student ID	<= studentID
1.2. Input Password	<= password
1.3. Select Class Schedule page	
2. Find desired classes	
2.1. Input class details into search box	<= classNo, className, staffID
2.2. Select desired class and section	=> Class and Section
2.3. Add selected class to cart	
2.4. Repeat steps 2.1-2.3 until all desired classes are in the cart	
3. Check registration eligibility	
3.1. Validate registration credentials	<= registrationDate, registrationTime
3.2. Check for at least four classes in cart	
3.2.1. If less than four, halt registration	
3.2.1.1. Return to cart to fix schedule	
3.2.2. If at least four, continue to step 3.3	
3.3. Check for schedule conflicts	
3.3.1. If conflict exists, halt registration	
3.3.1.1. Return to cart to fix schedule	
3.3.2. If no conflict, continue to step 4	
4. Process class schedule	=> Final Schedule

Use case name: Maintain Report Cards	**ID** 4	**Importance level** High
Primary actor: Staff		
Short description: This use case describes how grade reports are created.		
Trigger: Instructor adds an assignment to the grade book. **Type:** External		

Major Inputs:

Description	Source
staffID	Staff
password	Staff
assignmentType	Staff
assignmentName	Staff
assignmentDescription	Staff
assignmentDueDate	Staff
assignmentScore	Staff
assignmentMaxScore	Staff
studentID	Student
firstName	Student
lastName	Student

Major Outputs:

Description	Destination
Assignment Info	Assignment Data Store
assignmentID	Assignment Data Store
Assignment Percentage	Report Card
Assignment Grade	Report Card
Overall Percentage	Report Card
Overall Grade	Report Card
Report Card	Grade Data Store
	Student
	Parent

Major Steps Performed:	**Information for Steps**
1. Instructor logs into staff portal	
1.1. Input Staff ID	<= staffID
1.2. Input Password	<= password
1.3. Select Grades page	
2. Create assignment	=> assignmentID
2.1. Select Assignment Type	<= assignmentType
2.2. Input assignment information	<= assignmentName, assignmentDescription, assignmentDueDate, assignmentMaxScore
3. Input grades	
3.1. Find student whose assignment is graded	<= studentID, firstName, lastName
3.2. Input Assignment Score	<= assignmentScore
3.3. Input Assignment ID	<= Assignment Data Store
3.4. Calculate Assignment Percentage	=> Assignment Percentage
3.4.1. Calculate Assignment Grade	=> Assignment Grade
3.5. Calculate Overall Percentage and Grades	=> Overall Percentage and Overall Grade
4. Submit grades	=> Report Card to Grade Data Store
5. Print Report Card	=> Report Card to Student and Parent

Use case name: Maintain Payments	**ID** 5	**Importance level** High
Primary actor: Parent, Staff		
Short description: This use case describes how parents are notified about and complete payments.		
Trigger: Every quarter, emails are sent to parents with currently enrolled students for payment. **Type:** Temporal		

Major Inputs:

Description	Source
studentID	Student Data Store
classNo	Class Data Store
paymentDueDate	Calendar Data Store
paymentNotification	Calendar Data Store
triggerDate	Calendar Data Store
parentEmail	Parent Data Store
parentID	Parent Data Store
billingInfo	Parent

Major Outputs:

Description	Destination
Confirmation Email	Parent Email
Mark Paid	Parent Data Store
Billing Information	Parent Data Store

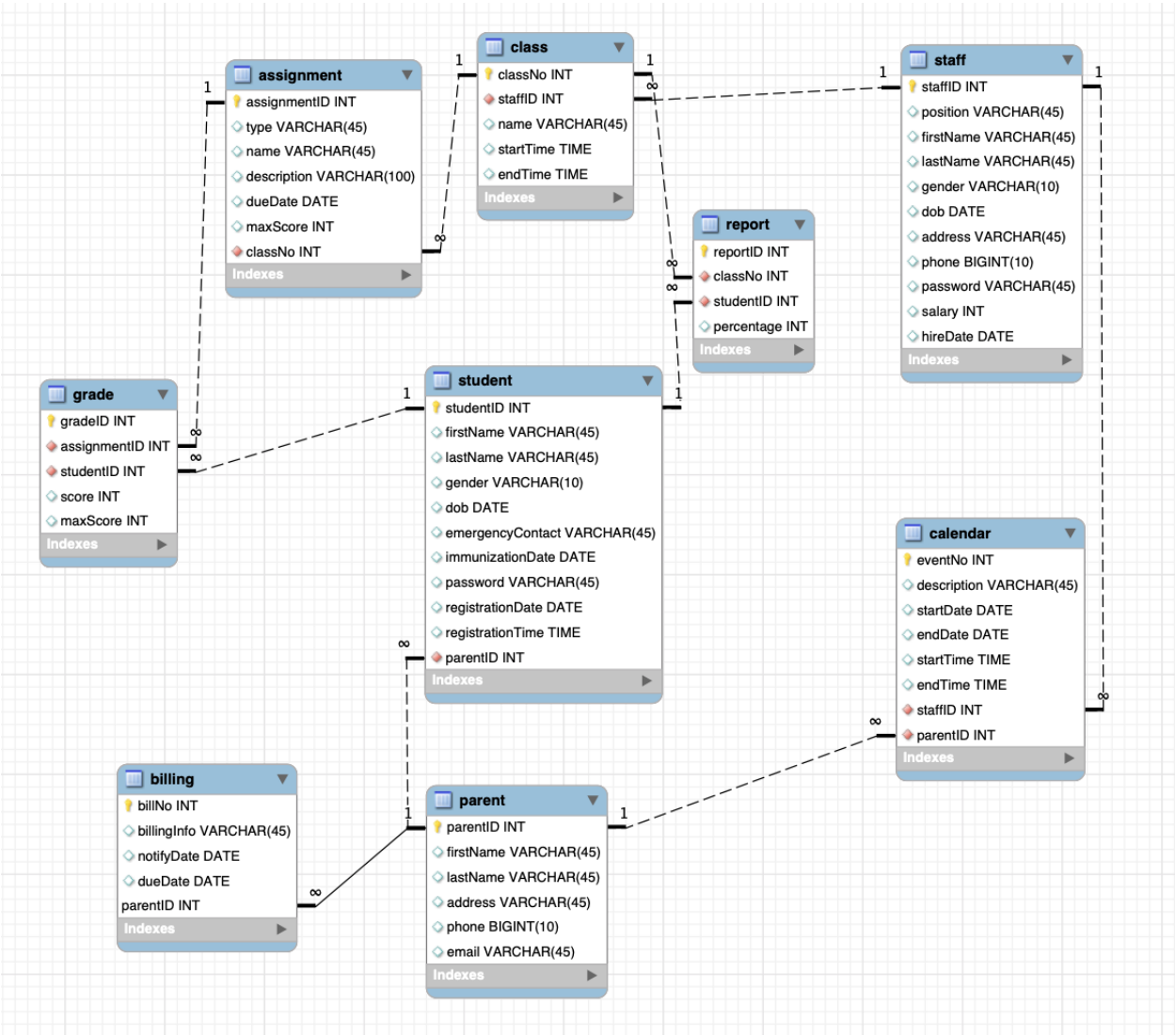
Major Steps Performed:	**Information for Steps**
1. Every quarter, email is sent to parents	<= triggerDate
1.1. Input Parent Email	<= parentEmail
1.2. Input Student ID	<= studentID
2. Check current enrollment for each Student ID	<= studentID
3. Bill displays for each student connected to Parent ID	<= parentEmail, parentID
3.1. Calculate number of classes for each student ID	<= classNo
3.1.1. Check scholarship or financial assistance for student	
3.2. Display due date from Calendar Database	<= paymentDueDate, paymentNotification, triggerDate
4. Process billing information from Parent Database or from online form	<= billingInfo => Mark Paid, Confirmation Email, Billing Information

Use case name: Maintain Calendar	**ID** 6	**Importance level** High
Primary actor: Parent, Staff		
Short description: This use case describes how the staff maintain the calendar regarding student schedules, class schedules and staff schedules for a private middle school.		
Trigger: Organizing events and individual schedules each month **Type:** Temporal		

Major Inputs:		**Major Outputs:**	
Description	**Source**	**Description**	**Destination**
studentID	Student Data Store	Monthly Calendar	Calendar Data Store
classNo	Class Data Store	Meeting Info	Calendar Data Store
staffID	Staff Data Store		Staff Emails
ptoRequest	Staff		
classSchedules	Class Data Store		
holidays	Calendar Data Store		
meetingDate	Staff		
meetingTime	Staff		

Major Steps Performed:	**Information for Steps**
1. Enter Staff ID or Student ID	<= studentID, staffID
1.1. If Student ID, display class numbers from course load	<= classNo, classSchedules
1.1.1. Holidays grayed out	<= holidays
1.1.2. Populate Calendar Database with ties to Class Data Store	
1.2. If Admin ID enter days for PTO requests	<= ptoRequest
2. Determine substitute needs based on PTO requests	<= meetingTime, meetingDate
3. Meeting times determined by staff	=> Meeting Info
3.1. Schedule meeting in Calendar Data Store	
3.2. Send email ahead of time alerting employees of mandatory meetings	
4. Confirm Calendar	=> Monthly Calendar

INTERNAL ER MODEL



INTERESTING BUSINESS QUESTIONS

1. Who are the three students with the highest report card per class?
    a. Since Brookfly Private Middle School is such a prestigious school, we are specifically interested in which students at Brookfly have the best grades. Knowing who our top students are will help recruit them for high school and college in the future. Having it be based on class type helps us acknowledge the curriculum the student is best at and where they should direct their attention

Class_Number	Class_Name	Student_ID	Student_First_Name	Student_Last_Name	Grade_Percentage	Student_Rank	dummyclass	dummygrade
1	Treeflex	87	Salvatore	Heephy	100	1	1	100
1	Treeflex	164	Twila	Coleborn	95	2	1	95
1	Treeflex	200	Barbabra	Struan	94	3	1	94
2	Veribet	104	Alberik	Bestiman	90	1	2	90
2	Veribet	73	Brody	Bartlosz	89	2	2	89
2	Veribet	60	Cristabel	Sygroves	88	3	2	88
3	Rank	191	Waite	Halliday	99	1	3	99
3	Rank	80	Marvin	Shadfourth	97	2	3	97
3	Rank	87	Salvatore	Heephy	96	3	3	96
4	Regrant	172	Yankee	Butland	88	1	4	88
4	Regrant	23	Hershel	Dudlestone	88	1	4	88
4	Regrant	136	Tarah	Ogilvy	79	2	4	79
4	Regrant	81	Janek	Eadmead	77	3	4	77
5	Home Ing	105	Constantine	Overpool	99	1	5	99
5	Home Ing	53	Melinda	Kabsch	97	2	5	97
5	Home Ing	184	Ester	Sotheby	95	3	5	95
6	Tres-Zap	191	Waite	Halliday	100	1	6	100
6	Tres-Zap	164	Twila	Coleborn	96	2	6	96
6	Tres-Zap	110	Eleni	Dawidowicz	91	3	6	91
7	Zontrax	174	Scotti	Iacovazzi	99	1	7	99
7	Zontrax	79	Redd	Troubridge	98	2	7	98
7	Zontrax	171	Danice	Ormshaw	96	3	7	96
8	Vagram	56	Hailee	O'Hern	99	1	8	99
8	Vagram	191	Waite	Halliday	99	1	8	99
8	Vagram	76	Faustina	Romain	98	2	8	98
8	Vagram	159	Jamie	Gilder	94	3	8	94
9	Lotlux	152	Wenda	Nutter	97	1	9	97

2. Which student has a birthday today?
    a. The principal wants to wish each student on his/her birthday. This report allows the principal to run every morning to show the student whose birthday it is. This allows each student to be recognized and admired on their special day.

Student ID	First Name	Last Name	Birthday
25	Carmelina	Roggero	2005-12-09

3. Which two days of the week are the least assignments due?
    a. Since this school is so elite, a lot of work is required from our students. With this being said we want to know when the least number of assignments are due during the school week. With this in mind, we can structure school events

around the time where the least assignments are due to help with our students' stress levels.

Day of Week	Number of Assignments
Tuesday	61
Saturday	64

4. What is the parent email information of the students that are currently failing?
    a. This email information is useful because the school needs to notify the parents that their students are failing overall and are in danger of being dismissed from the school due to academic probation.

Student ID	Student Name	Grade	Letter Grade	Parent ID	Parent Name	Parent Email
104	Bestiman, Alberik	34.02	F	17	Champneys, Michell	mchampneysg@photobucket.com
126	Slorach, Gay	34.22	F	70	Folkard, Neill	nfolkard1x@icq.com
78	Tomaszek, Davon	39.08	F	29	Cleeves, Margy	mcleevess@msu.edu
151	Screaton, Francesca	40.66	F	27	Maun, Nikolaos	nmaunq@cargocollective.com
35	Whiting, Tessa	48.74	F	122	Mundie, Christabel	cmundie3d@newsvine.com
130	Jansie, Ivor	54.81	F	80	Leaming, Waite	wleaming27@eepurl.com
153	Truswell, Lind	57.27	F	122	Mundie, Christabel	cmundie3d@newsvine.com
77	L'Episcopio, Isabeau	57.38	F	110	Wetherick, Rochelle	rwetherick31@usatoday.com
52	Quade, Dee dee	58.76	F	145	Dirr, Hobie	hdirr40@mtv.com
60	Sygroves, Cristabel	59.45	F	21	Goforth, Clyde	cgoforthk@yahoo.com
72	Straine, Susanne	59.86	D	66	Tiner, Linoel	ltiner1t@virginia.edu
43	Langlais, Brandie	62.20	D	44	Capron, Billie	bcapron17@lycos.com
183	Laraway, Royall	62.79	D	99	Gillis, Mildred	mgillis2q@twitpic.com

5. What parents do not have bills due?
    a. These are the parents that should be excluded from billing emails and other notifications. More parents do not pay bills than not so this is a useful exclusion list.

Parent ID	Name
2	Goter, Talbert
5	Dumblton, Maressa
32	Whetnell, Deedee
36	Daish, Oswell
56	Lefeaver, Jacky
66	Tiner, Linoel
69	Alenin, Erinn
79	Steddall, Andrea
81	Marushak, Kyla
88	Donkersley, Dot
91	Sworder, Isiahi
104	Headford, Forrest

6. What are the highest scorers on each assignment?
    a. These students did the best on each assignment. They might receive a small prize for being the best at that certain assignment.

First Name	Last Name	Assignment ID	Description	Score
Abbey	Geraud	153	Innovative encompassing info-mediaries	152.73%
Abbey	Geraud	146	Ameliorated dynamic budgetary management	167.74%
Abbey	Geraud	205	Reduced holistic projection	404.55%
Adam	Ship	340	Ergonomic explicit archive	264.71%
Adam	Ship	371	De-engineered composite process improvement	111.39%
Adam	Ship	430	Future-proofed bottom-line architecture	260.53%
Adore	Lidgett	424	Centralized optimal pricing structure	181.48%
Adore	Lidgett	255	Multi-channelled needs-based complexity	2733.33%
Ahmad	Hantusch	264	Decentralized holistic algorithm	140.58%
Alberik	McCorkindale	488	Mandatory solution-oriented software	166.67%
Alberik	McCorkindale	425	Sharable discrete adapter	156.86%
Alberik	McCorkindale	444	Enterprise-wide intangible matrix	200.00%
Alberta	Eade	350	Configurable didactic alliance	241.18%
Amalea	Gargett	282	Down-sized encompassing structure	1285.71%

7. What is the total staff cost?
    a. This is useful information to know so that the school can make administrative decisions regarding tuition increases and other costs.

Position	Total Cost per Position
Principal	$45,000
Assistant Principal	$40,000
Office Administration	$74,000
Faculty	$357,000
Custodian	$30,000

8. How many calendar events did each staff member make? Who made the most?
    a. Having a calendar that the entire Brookfly staff and faculty uses is important for organization and scheduling. Staff may request PTO or schedule a meeting, so it's important to make sure Brookfly staff doesn't take too much time off or schedule conflicting meetings or school events.

9. What is the average grade in each class?
    a. Averaging the grades of all the students in a class provides an aggregated overall grade that can be used for teacher evaluations. Faculty can adjust course material as necessary to improve their classes. Unfortunately, the highest class average is only 61.2%.

Class Number	Class Name	Instructor First Name	Instructor Last Name	Average Percentage
5	Home Ing	Lisa	Baker	61.2000
18	It	George	Turner	61.0313
12	Opela	Carrie	Bradshaw	58.0645
6	Tres-Zap	Bradley	Cooper	57.3714
14	Konklab	Lee	America	55.5714
1	Treeflex	Lisa	Baker	54.2500
26	Bitwolf	Lee	America	54.1818
13	Solarbreeze	Lisa	Baker	53.8571
11	Bigtax	George	Turner	53.5556
23	Alpha	Harry	Potter	53.4783
10	Treeflex	Lee	America	53.3600
3	Rank	Matt	Miller	53.3421
15	Stringtough	Micheal	Scott	53.2333
8	Vagram	Greg	Harrberger	52.7083
24	Treeflex	Matt	Miller	52.1316

10. What is the letter grade for every class that each student is in?
    a. Grades are a way for faculty to gauge the learning success of their students. Creating a list of each student's grades generates a report card that is used to determine the student's overall success.

Student ID	Class Number	Grade
1	24	A
1	11	B
1	12	F
1	24	B
1	7	F
1	20	F
2	26	D
3	19	B
3	18	B
3	25	F
3	5	D

11. What is the class average of faculties hired between a period of time.
    a. This table can give us information about which faculty's class performed better on an average between the year 2007 - 2008. Also this can be a good source of information to figure out which faculty has relatively better teaching skills compared to their peers.

Name	Average Score	hireDate
Micheal	52.0430	2007-12-04
Tony	NULL	2008-05-18
George	48.7500	2008-09-02

12. Categorize the staff based on their salaries. Display leading zeros before maximum and minimum salary.
    a. This query gives us information regarding faculty's respective salaries, categorized as 'Handsomely paid', 'just paid', and underpaid.It can perhaps tell us how senior and perhaps more qualified each faculty is with respect to each other.

Name	Pay grade	Normalized Salary
Greg Harrberger	Hansomely paid	0045000
Lisa Baker	Hansomely paid	0040000
Austin Powers	Hansomely paid	0040000
Luke Skywalker	Hansomely paid	0040000
Kim West	Hansomely paid	0040000
Lee America	Hansomely paid	0040000
Shakey Graves	Hansomely paid	0040000
Matt Miller	Hansomely paid	0040000
Harry Potter	Just paid	0037000
Carrie Bradshaw	Just paid	0037000
Tony Cookson	Just paid	0036000
Mostafa Permedhi	Just paid	0035000
George Turner	Just paid	0030000
Micheal Scott	Underpaid	0021000
Bradley Cooper	Underpaid	0025000
Mostafa Permedhi	Underpaid	0035000
George Turner	Underpaid	0030000

13. Display the distribution of student grades over range of percentages?
    a. Here we are trying to display the distribution of student grades over three range of percentages,which we interpret as average, below average and excellent. This table can help us understand how students are performing in each course. It can be inferred that the average scores for it and Tin are the least ,students performed the worst in Treeflex and surprisingly the best scores are also from the same class.

Class Name	AverageCount	BelowAverageCount	Excellent
Lotlux	2	19	6
Tin	1	19	7
Home Ing	7	12	9
Fix San	4	22	4
Domainer	2	23	6
Treeflex	8	60	27
It	1	17	13
Zamit	4	16	5
Vagram	2	13	8
Tres-Zap	4	19	12
Aerified	4	20	5
Opela	2	17	12
Veribet	3	23	10