GRANFIELD

A Database for the college

SCENARIO

The government requires the college to record licensing for each software that the college are owning. College has the data in different tables but some with written note such as installation problems.
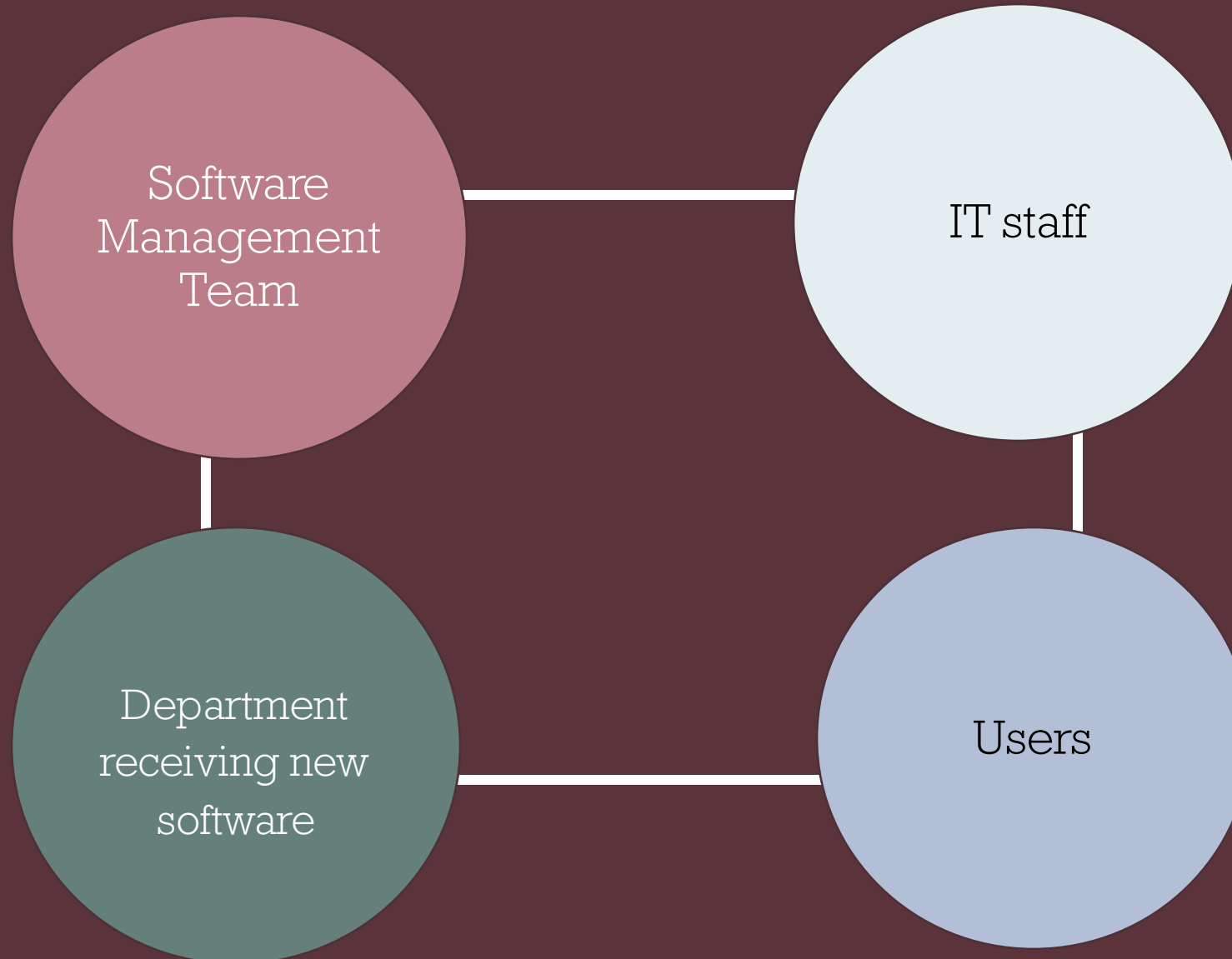
The goal of the database is to organize data into one database where

the software management team can view information about software and license.

IT staff can find information about hardware and troubleshooting in installation problem.

Users can view whether their requests were approved and their ranking in the waiting list.

STAKEHOLDERS

Software Management Team

IT staff

Department receiving new software

Users

DATA REQUIREMENTS

Software management team	IT staff	Department receiving new software	Users
• Each user and the software they own • Location of software installed • Software information • Software requests	• Tracking of database	• Licenses the school owns • Licenses that need to be bought	• Request software • Request Information on their license • Cancel their software license

ER DIAGRAM

Domain tables | **Linking tables** | **Lookup tables**

License

PK	LicenseID	INTEGER
FK	SoftwareID	INTEGER
	LicenseType	TEXT
	Terms	TEXT
	Pricing	NUMERIC
	PricingUnit	TEXT
	StartDate	DATE
	EndDate	DATE

Software

PK	SoftwareID	INTEGER
	SoftwareName	TEXT
	Version	TEXT
	Company	TEXT

Users

PK	UserID	INTEGER
	StartDate	DATE
	EndDate	DATE
	Profession	TEXT

MachineSoftware

PK,FK	MachineID	INTEGER
PK,FK	SoftwareID	INTEGER

Response

|		
PK	ReponseID	INTEGER
	ResponseDescription	TEXT
	ResponseDate	DATE
	Status	TEXT

PersonalData

PK,FK	UserID	INTEGER
	FirstName	TEXT
	LastName	TEXT
	PhoneNumber	INTEGER
FK	Ethnicitykey	INTEGER
	Email	TEXT

Ethnicity

PK	EthnicityKey	INTEGER
	EthnicityDescription	TEXT

RequestForms

PK	RequestID	INTEGER
	RequestDate	DATE
FK	ResponseID	INTEGER
	SoftwareName	TEXT
FK	UserID	INTEGER

Machine

PK	MachineID	INTEGER
	Location	TEXT
	MachineRetireDate	DATE
	SoftwareInstallationDate	DATE
	SoftwareUninstallationDate	DATE

MachineUsers

PK,FK	MachineID	INTEGER
PK,FK	UsersID	INTEGER

CONSTRAINTS
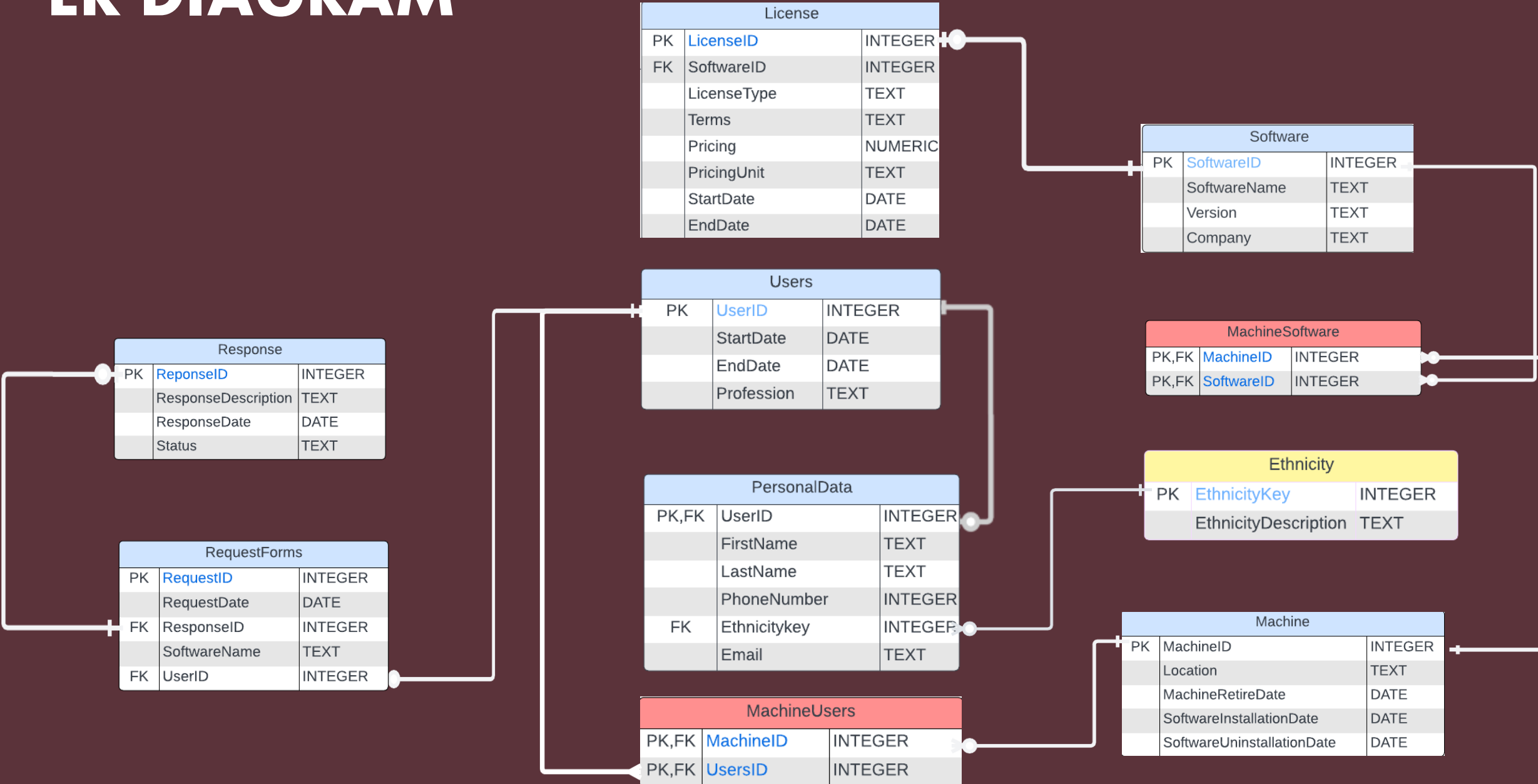
- Date constraints
- ...nts
- ...ts

```sql
CREATE TABLE `PersonalData` (
    `UserID` INTEGER,
    `FirstName` TEXT,
    `LastName` TEXT,
    `PhoneNumber`
    `Ethnicitykey`
    `Email` TEXT
    PRIMARY KEY (
    FOREIGN KEY (
);
```

```sql
CREATE TABLE `MachineUsers` (
    `MachineID` INTEGER,
    `UserID` INTEGER,
    PRIMARY KEY (`MachineID`, `UserID`),
    FOREIGN KEY (`MachineID`) REFERENCES `Machine`(`MachineID`) ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY (`UserID`) REFERENCES `Users`(`UserID`) ON DELETE CASCADE ON UPDATE CASCADE)
;
```

```sql
CREATE TABLE `Lic
    ....
    `Pricing` N
    ....
    `StartDate`
    `EndDate` D
    ....
);
```

```sql
CREATE TABLE `MachineSoftware` (
    `MachineID` INTEGER,
    `SoftwareID` INTEGER,
    PRIMARY KEY (`MachineID`, `SoftwareID`),
    FOREIGN KEY (`SoftwareID`) REFERENCES `Software`(`SoftwareID`) ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY (`MachineID`) REFERENCES `Machine`(`MachineID`) ON DELETE CASCADE ON UPDATE CASCADE
);
```

```sql
CREATE TABLE `Us
    `UserID` INT
    `StartDate` DATE Check (( `StartDate` <= `EndDate` ) and (`StartDate` like `____-__-__`)),
    `EndDate` DATE Check ((`EndDate` >= `StartDate`) and (EndDate like '____-__-__')),
    `Profession` TEXT CHECK (`Profession` in ("Instructor", "Staff")),
    PRIMARY KEY (`UserID`)
);
```

SIMULTANEOUS MEASURES OF DEALING WITH PARENT
& CHILD TABLES

```sql
CREATE TABLE `Response` (
    `ResponseID` INTEGER,
    .....
    `Status` TEXT CHECK (`Status` in ('Pending', 'Accepted', 'Denied')),
    PRIMARY KEY (`ResponseID`) );
```

VALUES

Many to many relation

MachineID	Location	MachineRetireDate	SoftwareInstallationDate	SoftwareUninstallationDate
1234	Library	2026-12-31	2023-12-21	2026-09-31
1235	Boone	2030-12-31	2024-12-31	2028-09-31
1236	Mccain	2031-12-31	2025-12-31	2029-09-31
1237	Covell	2032-12-31	2026-12-31	2030-09-31

UserID	StartDate	EndDate	Profession
1	2020-08-24	2028-05-22	Instructor
2	2020-01-01	2024-05-22	Staff
3	2020-12-05	2021-12-05	Staff
4	2020-12-04	2021-01-04	Instructor
5	2019-11-01	2020-11-01	Staff

MachineID	UserID
1234	1
1235	1
1236	3
1237	4

VIEWS

User_Name	Phone_Number	Email	Ethnicity_Description	Start_Date_of_Software_use	End_Date_of_Software_use	Profession	Location	Machine_Retire_Date	Software_Installation_Date	Software_Uninstallation_Date
Jonny Comes	2084532345	Jcomes@collegeofidaho.edu	American	2020-08-24	2028-05-22	Instructor	Library	2026-12-31	2023-12-21	2026-09-31
Jonny Comes	2084532345	Jcomes@collegeofidaho.edu	American	2020-08-24	2028-05-22	Instructor	Boone	2030-12-31	2024-12-31	2028-09-31
Rakeb Abraham Jabessa	3568933344	rabraham@collegeofidaho.edu	Ethiopian	2020-12-05	2021-12-05	Staff	Mccain	2031-12-31	2025-12-31	2029-09-31
Bob Marley	3451203444	bmarley@yahoo.com	Jamaican	2020-12-04	2021-01-04	Instructor	Covell	2032-12-31	2026-12-31	2030-09-31

```
CREATE VIEW PersonalInformation AS
SELECT
  PD.FirstName || ' ' || PD.LastName AS "User_Name",
  PD.PhoneNumber AS "Phone_Number",
  PD.Email,
  E.EthnicityDescription AS "Ethnicity_Description",
  U.StartDate AS "Start_Date_of_Software_use",
  U.EndDate AS "End_Date_of_Software_use",
  U.Profession,
  M.MachineID,
  M.Location,
  M.MachineRetireDate AS "Machine_Retire_Date",
  M.SoftwareInstallationDate AS "Software_Installation_Date",
  M.SoftwareUninstallationDate AS "Software_Uninstallation_Date"
FROM PersonalData AS PD
JOIN Users AS U ON PD.UserID = U.UserID
JOIN Ethnicity AS E ON PD.Ethnicitykey = E.Ethnicitykey
JOIN MachineUsers AS MU ON MU.UsersID = U.UserID
JOIN Machine AS M ON MU.MachineID = M.MachineID;
```

To meet the data requirement of the Software management team.

- *Allow keeping of data on each user and the software they are using*

- *Allow keeping of data on the location where the software is installed*

- *Allow keeping information on software information, like problems with the installation*

- *Allow tracking software requests*

EVERYTHING ABOUT SOFTWARE

User_Name	SoftwareName	Version	Company	LicenseType	Terms	Pricing	PricingUnit	License_Start_Date	License_End_Date	Location	MachineRetireDate	Software_Installation_Date	Software_Unstallation_Dat
Jonny Comes	MS office	2007	Microsoft	MS Site	Can install as many copies as needed on campus and on laptops controlled by the school. Includes all service patches, updates, and version changes	12500	5 yrs	2009-07-01	2013-07-01	Library	2026-12-31	2023-12-21	2026-09-31
Jonny Comes	PhotoShop	CSS3	Adobe	Adobe1	Reduced price per installed copy, maximum of 25 active copie	450	Per active copy	2009-07-01	2015-07-01	Library	2026-12-31	2023-12-21	2026-09-31

Purpose:

To give details about the software that is being used by users.

```
CREATE VIEW everything_about_software AS
SELECT
        pd.FirstName || ' ' || pd.LastName AS "User_Name",
        s.softwareName,
        s.Version,
        s.company,
        l.LicenseType,
        l.Terms,
        l.Pricing,
        l.PricingUnit,
        l.StartDate AS "License_Start_Date",
        l.EndDate AS "License_End_Date",
        m.MachineID,
        m.Location,
        m.MachineRetireDate,
        m.SoftwareInstallationDate AS "Software_Installation_Date",
        m.SoftwareUninstallationDate AS "Software_Unstallation_Date"
FROM software AS s
JOIN License AS l ON s.SoftwareID = l.SoftwareID
JOIN MachineSoftware AS ms ON s.SoftwareID = ms.SoftwareID
JOIN Machine AS m ON m.MachineID = ms.MachineID
JOIN Users AS u ON u.UsersID = mu.UsersID
JOIN MachineUsers AS mu ON m.MachineID = mu.MachineID
JOIN PersonalDate AS pd ON u.UserID = pd.UserID;
```

RESPONSE REQUEST FOR USERS

Request_Date	User_Name	Software_Name	Start_Date_of_Software_use	End_Date_of_Software_use	Profession	Response_Date	Response_Description	Status
2009-05-20	Jonny Comes	Camtasia	2020-08-24	2028-05-22	Instructor	2009-05-24	We dont currently have a license for Camtasia but will explore acquiring one	Pending
2009-05-22	Zaynab El Hakour	MathType	2020-01-01	2024-05-22	Staff	2009-05-26	MathType is in the planning list and will send out information once software package is arrived.	Accepted
2009-05-24	Rakeb Abraham Jabessa	Grammarly	2020-12-05	2021-12-05	Staff	2009-05-28	Unfortunately, Grammarly is for more personal use so we will reject the proposal	Denied

Purpose: To meet the data requirement of the users

- *Allow potential users to request software.*

- *Allow them to request for information regarding software*

```sql
CREATE VIEW Response_Requests_for_users AS
SELECT
    Rq.RequestDate AS "Request_Date",
    Ps.FirstName || ' ' || Ps.LastName AS "User_Name",
    Rq.SoftwareName AS "Software_Name",
    U.StartDate AS "Start_Date_of_Software_use",
    U.EndDate AS "End_Date_of_Software_use",
    U.Profession,
    Rs.ReponseDate AS "Response_Date",
    Rs.ResponseDescription "Response_Description",
    Rs.Status
FROM Response as Rs
JOIN RequestForms as Rq on Rq.ResponseID = Rs.ResponseID
JOIN Users as Us on Rq.UserID = Us.UserID
JOIN PersonalData as Ps on Ps.UserID = Us.UserID;
```

Department Receiving New Software

Software_Name	Software_Version	Software_Company	License_Type	License_Terms	License_Pricing	License_pricing_Unit	License_startDate	License_endDate
Windows Vista	Business Service Pack 2	Microsoft	MS Site	Can install as many copies as needed on campus and on laptops controlled by the school. Includes all service patches, updates, and version changes	12500	5 yrs	2009-07-01	2013-07-01
MS office	2007	Microsoft	MS Site	Can install as many copies as needed on campus and on laptops controlled by the school. Includes all service patches, up	12500	5 yrs	2009-07-01	2013-07-01

To meet the data requirements of DRNS
- *Allow keeping of data on what licenses, software the school owns*
- *Keep track of what licenses need to be bought*

```sql
Create View Department_receiving_Software AS
SELECT
    S.SoftwareName AS "Software_Name",
    S.Version AS "Software_Version",
    S.Company As "Software_Company",
    L.licensetype AS "License_Type",
    L.terms AS "License_Terms",
    L.pricing AS "License_Pricing",
    L.pricingunit AS "License_pricing_Unit",
    L.startDate AS "License_startDate",
    L.endDate AS "License_endDate"
FROM Software as S
JOIN License as L on S.softwareid = L.softwareid;
```

DIFFICULTIES

- Table relations among users, software licenses and machine
    - One users can use/own different machine and some professors have **privileges**
    - Keep track of the date of software **installation and uninstallation** in one machine
    - Numbering the machine
    - Understanding **software licensing**
    - Defining stakeholders

Questions?