1. **The Granite Sales Company:**

   Create a Crow's Foot ERD using the following scenario.

   Granite Sales Company keeps data about departments and the employees working for the department. A department has many employees, and each employee works for only one department. Each department has data about the department name, mail box number, and office phone extension. (talks about Cardinality)

   All employees have an employee number, the employee's name, and his/her address(**supertype**). Each employee must be one of the following three types (cannot be two types simultaneously): hourly, salaried, or contract (**Subtype**).

   For hourly employees, hourly wages and target weekly hours are kept in the system. For all salaried employees, the yearly salary is recorded in the system. **Some salaried employees are salespeople who can earn a commission in addition to their base salary. Salespeople's sales commission and profit commission are stored in the system.** For contract employees, the beginning date and end date of their contracts are stored along with the billing rate for their hours.

   A diagram is sufficient for the answer ((super are more general and common attributes) and sub (specific relationships)).

My Notes:

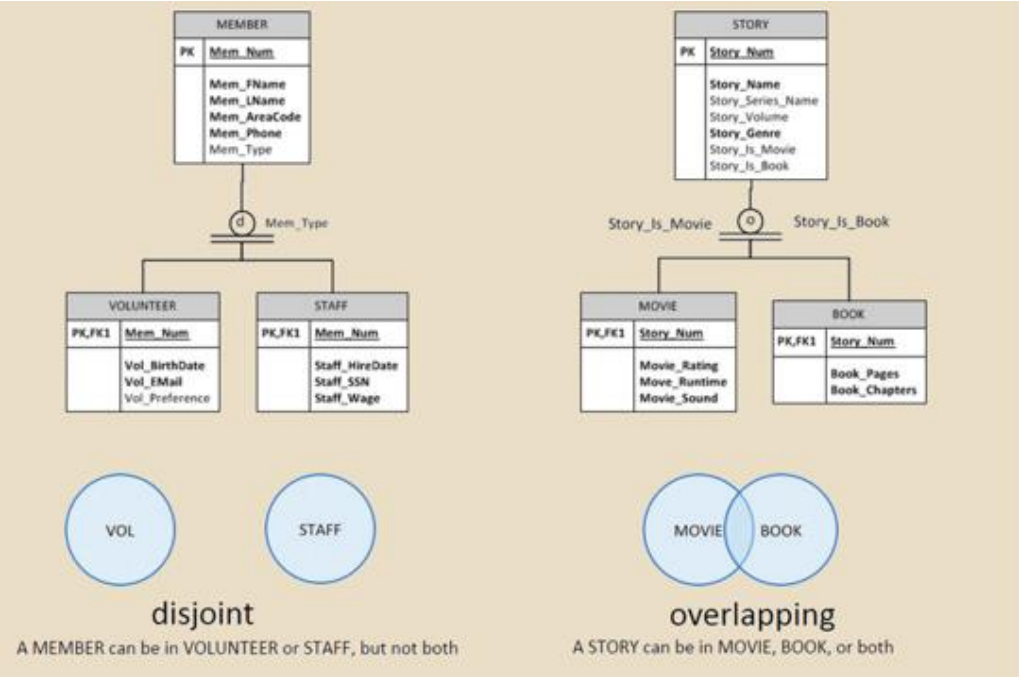
- Don't just put name (need last and first), not just address (need street city and state and zip)
- Primary key still EmpID, but is also FK as well, the subtypes
- Set FK to the child table (many side)
- Parent is the one-to-one side
- Need one discriminatory or one that distinguished the tables (like EmpType different kinds)
- Add disjoint because cannot have two employees type (add textbox D into circle)
- Not every salaried are salesperson
- **All discriminatory are linked as are solid lines**
- Overlap means have several subtypes (Might be A and B…) = O
- Disjoint means only one type of one subtype = D
- Salary employee may or not be a salesperson; no D or O, since there is only one subtype

Disjoint/nonoverlapping subtype: each entity instance of the supertype can appear in only one of subtypes. (**One discriminator** in supertype)

- Disjoint: "D" in circle. Add 1 subtype discriminator into the supertype

Overlapping subtype: each entity instance of the supertype may appear in more than one subtype (Requires **multiple discriminators** in supertype.)

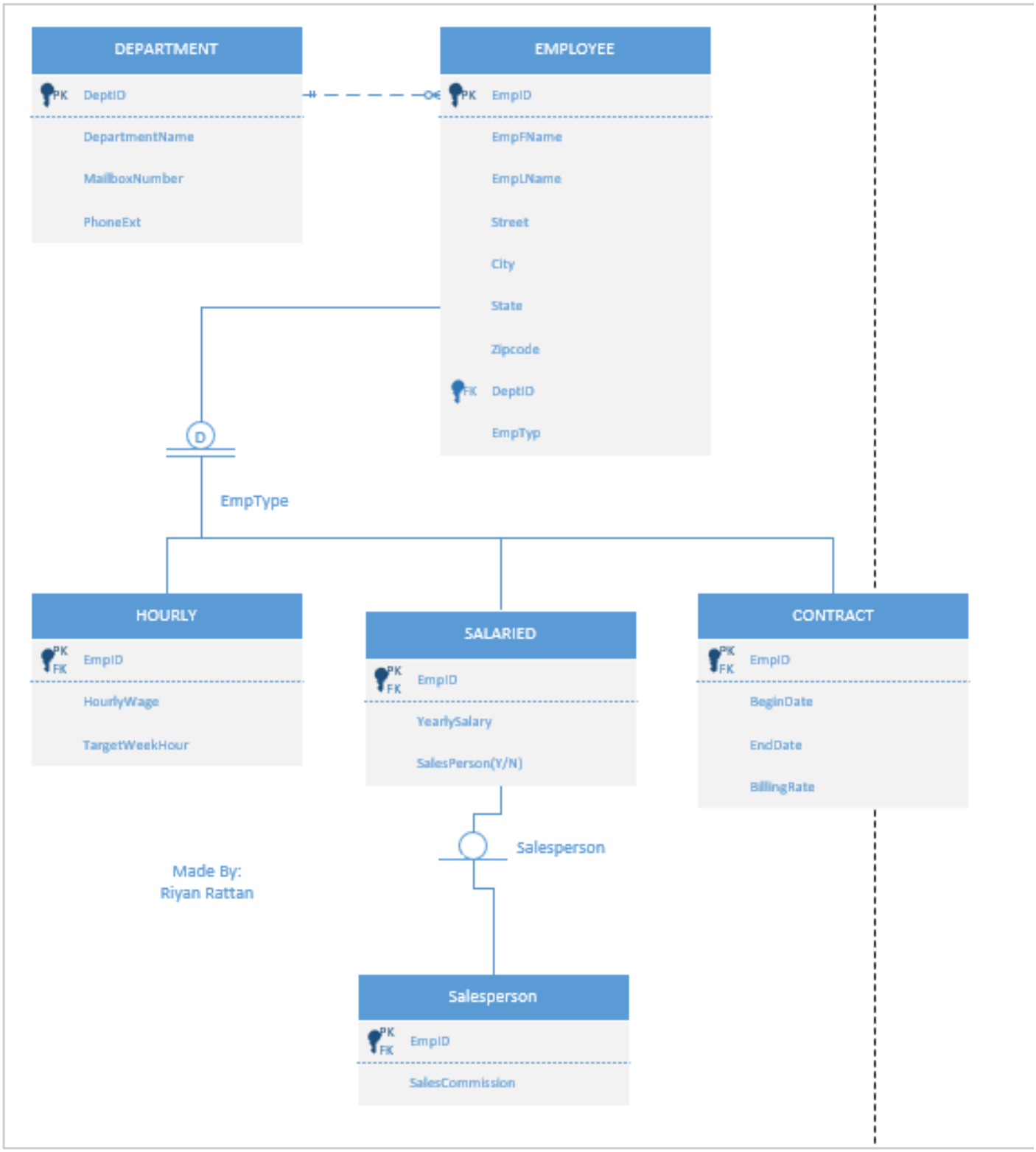
- Overlap: "O" in circle. Add several subtype discriminators into the supertype



- Total completeness: every single employee has a subtype (double-line circle); every employee relates to one subtype or another; you right-click on the circle and make sure checked "Complete Category" to show this in Visio

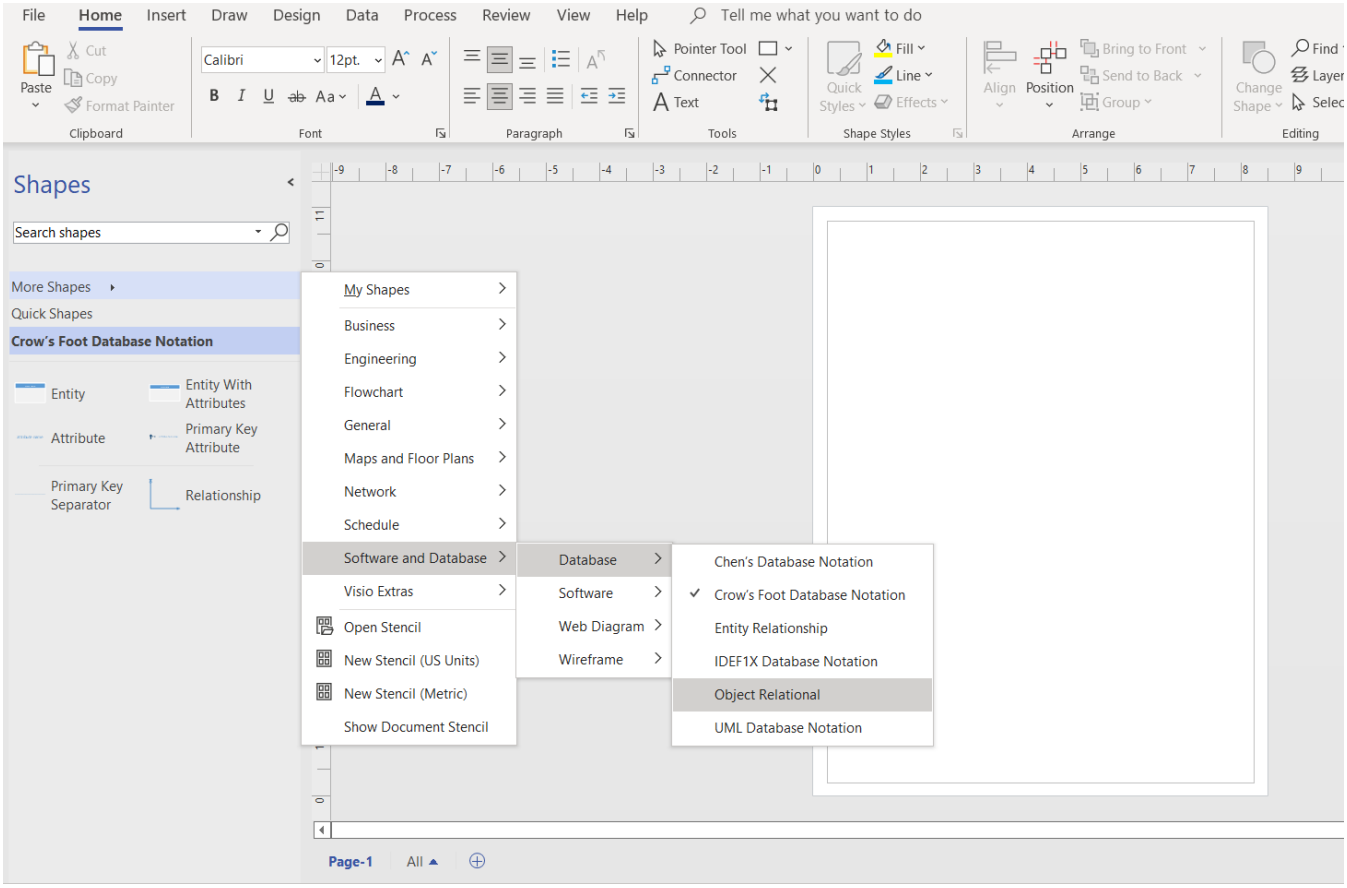
- Partial Complete: some are simple and they have attributes but not special or relates to (like here nothing relates to salary type); but has attributes like name, address, general info, etc.; right-click the circle and uncheck "Complete Category" to show this in Visio

SPECIALIZATION HIERARCHY CONSTRAINT SCENARIOS		
TYPE	**DISJOINT CONSTRAINT**	**OVERLAPPING CONSTRAINT**
Partial 	Supertype has optional subtypes. Subtype discriminator can be null. Subtype sets are unique.	Supertype has optional subtypes. Subtype discriminators can be null. Subtype sets are not unique.
Total 	Every supertype occurrence is a member of only one subtype. Subtype discriminator cannot be null. Subtype sets are unique.	Every supertype occurrence is a member of at least one subtype. Subtype discriminators cannot be null. Subtype sets are not unique.

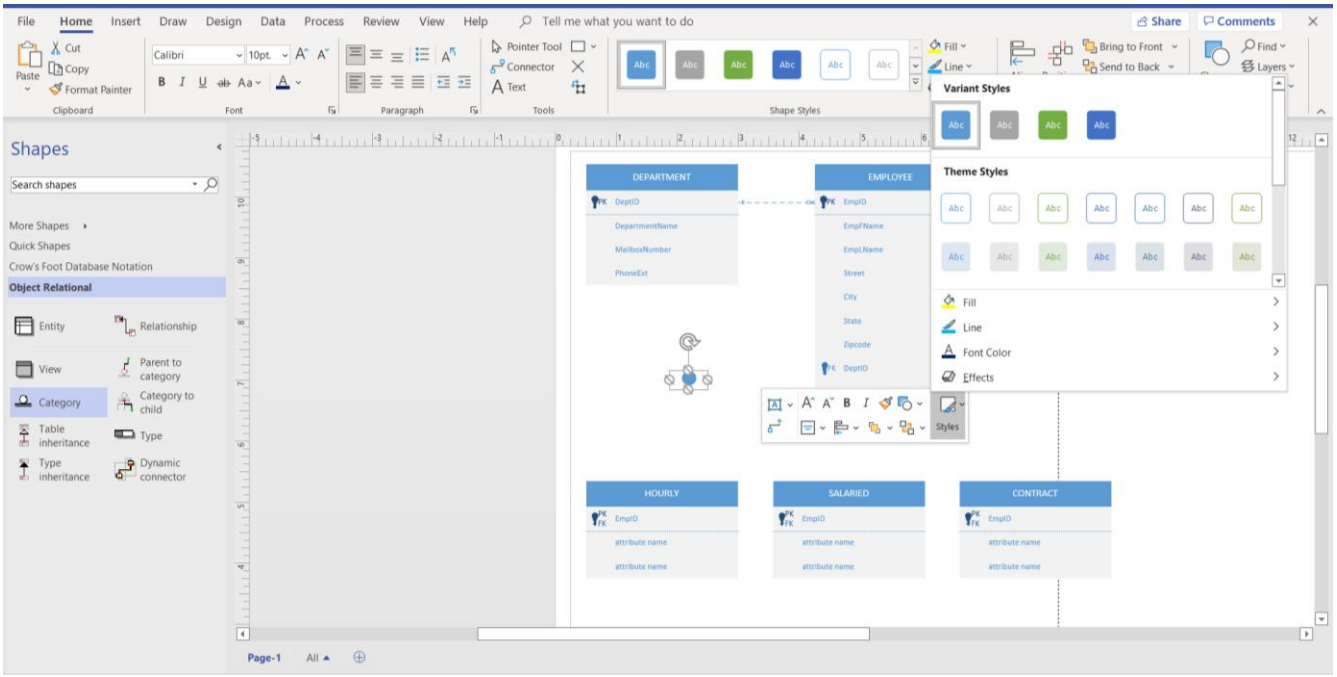

DEPARTMENT
PK DeptID
DepartmentName
MailboxNumber
PhoneExt
EMPLOYEE
PK EmpID
EmpFName
EmpLName
Street
City
State
Zipcode
FK DeptID
EmpTyp
D
EmpType
HOURLY
PK FK EmpID
HourlyWage
TargetWeekHour
SALARIED
PK FK EmpID
YearlySalary
SalesPerson(Y/N)
CONTRACT
PK FK EmpID
BeginDate
EndDate
BillingRate
Salesperson
Made By:
Riyan Rattan
Salesperson
PK FK EmpID
SalesCommission

How to add Object-oriented in Visio:

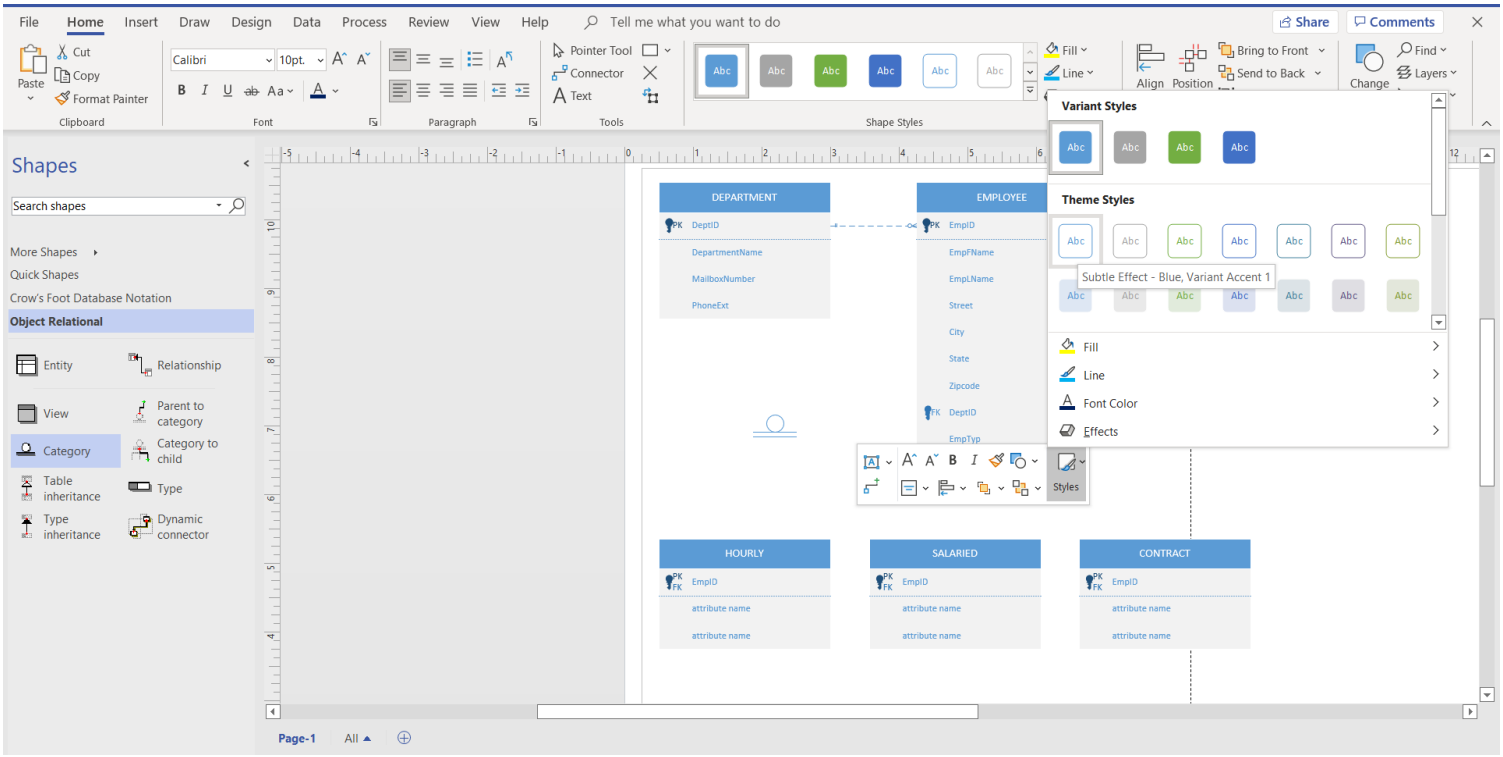
Click Crow's, then more shape



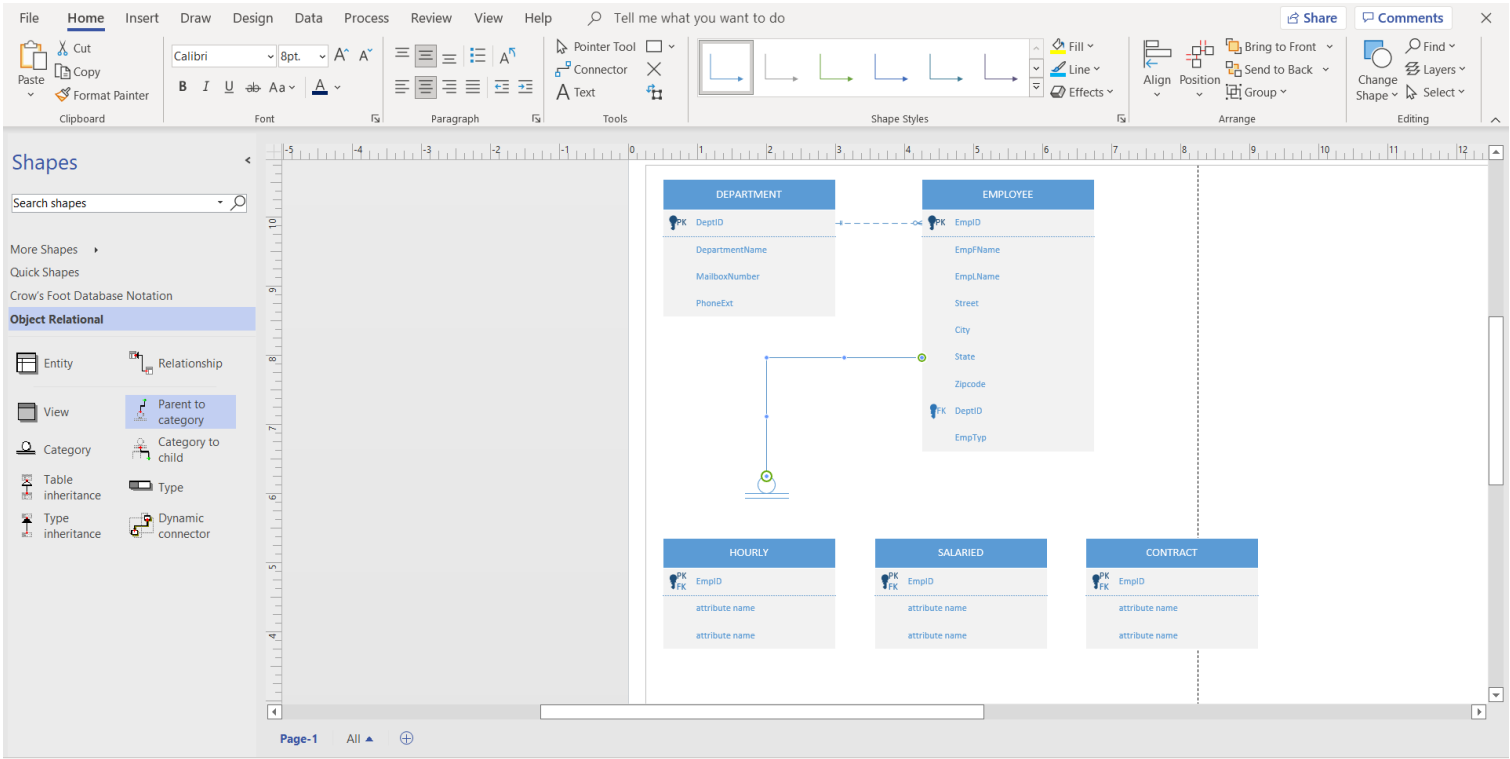
Now go to Object, Category (pastes the circle), right click the circle and select Styles



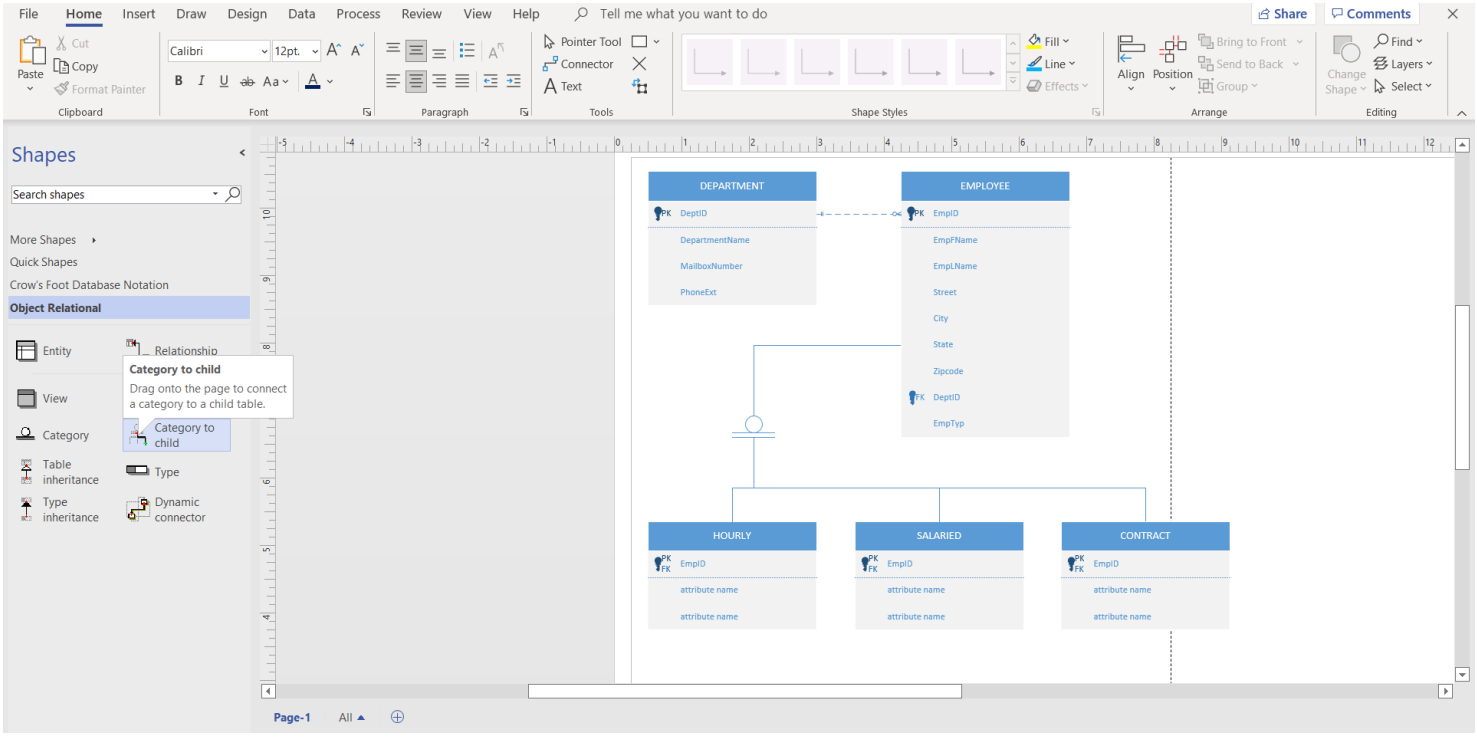
Select first option under Themed Styles



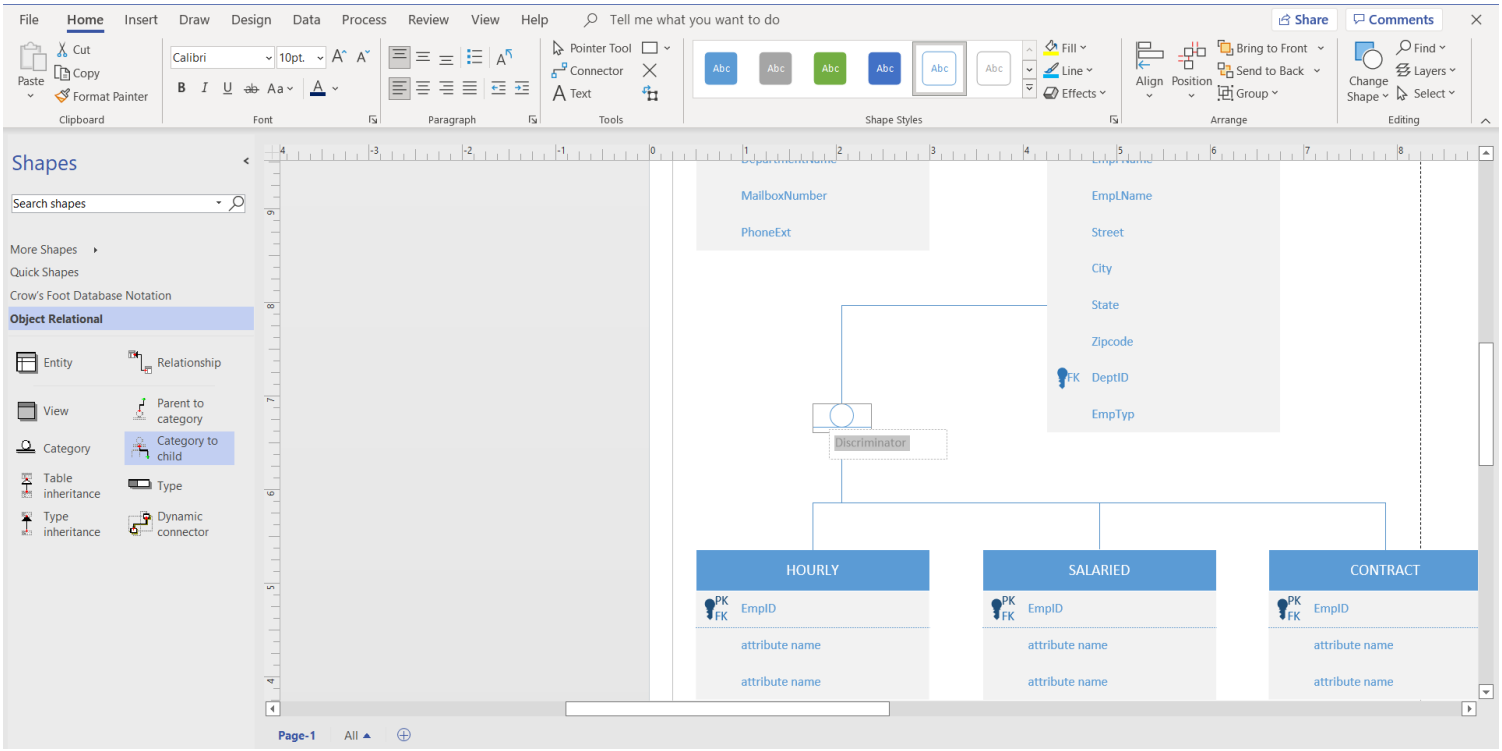
For making the lines, select Parent to category and connect to Circle



Now Category to child to connect to the other end of Circle



INSERT Textbox to label the Discriminator and another to add the “D”



Add disjoint because cannot have two employees type (add textbox D into circle) in this case and make sure to name the discriminator: EmpType