Western Illinois University
Bus Scheduler

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Class:

CS470

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This application and database is made with the purpose of creating an easy to use Java application that can allow employees, managers, and administrators of the company to view and manipulate(given the required credentials) the data within.

School Bus System

The main entity for the schema is defined as a “run.” Each run houses an employee to work the run, routes, and their respective stops, bus, and the start and finish times. Users with the “rank” of employees should only be able to see the current tables, while managers have more options when it comes to users. Administrators would have the ability to modify everything in the database. All users have the ability to “view” each item in the database.

Entities:

Employee-

Rank_ID - auto incremented primary key

Name - String, used as the login username

rank_ID - foreign key that points to the RANK table

0 is set to Employee - view privileges

1 is set to Manager - view and some manage privileges

2 is set to Admin - all view and manage privileges

Stops -

Stop_ID - auto incrementing primary key

Street - String value for the street part of the address

Location - where on the street (400 block, library building, ect)

Pickup time - time that the bus reaches the stop

Route -

Route_ID - auto incrementing ID of the routes

Route_name - name of the route

Route_time - amount of time the route takes to do a full circuit

Route_stop_list -

Relational entity that keeps track of how many stops there are to each route

Run -

Run_ID - auto increment primary key

Start_time, Finish_time - gives the start and finish time of the run

Day_id - foreign key for which day the run is being worked on

emp_ID - foreign key for the employee working the run

Bus_ID - foreign key for which bus is being used

Run_route_list -

Relational entity for listing each route to the designated run

Start_finish_time -

Entity to keep track of the total time of the runs and when it starts and stops

Bus -

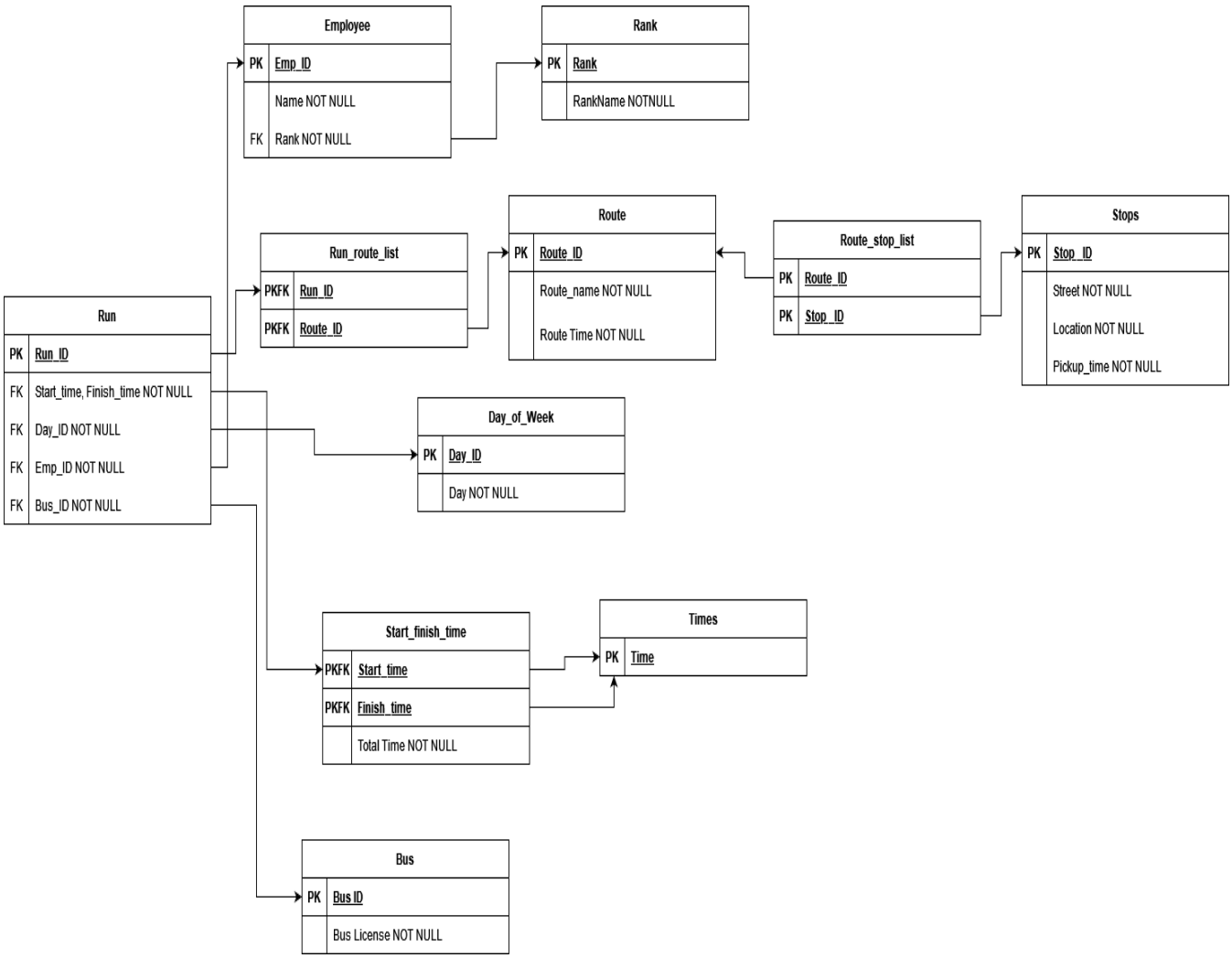
Bus ID - auto increment primary key

Bus License - licence for the specific bus

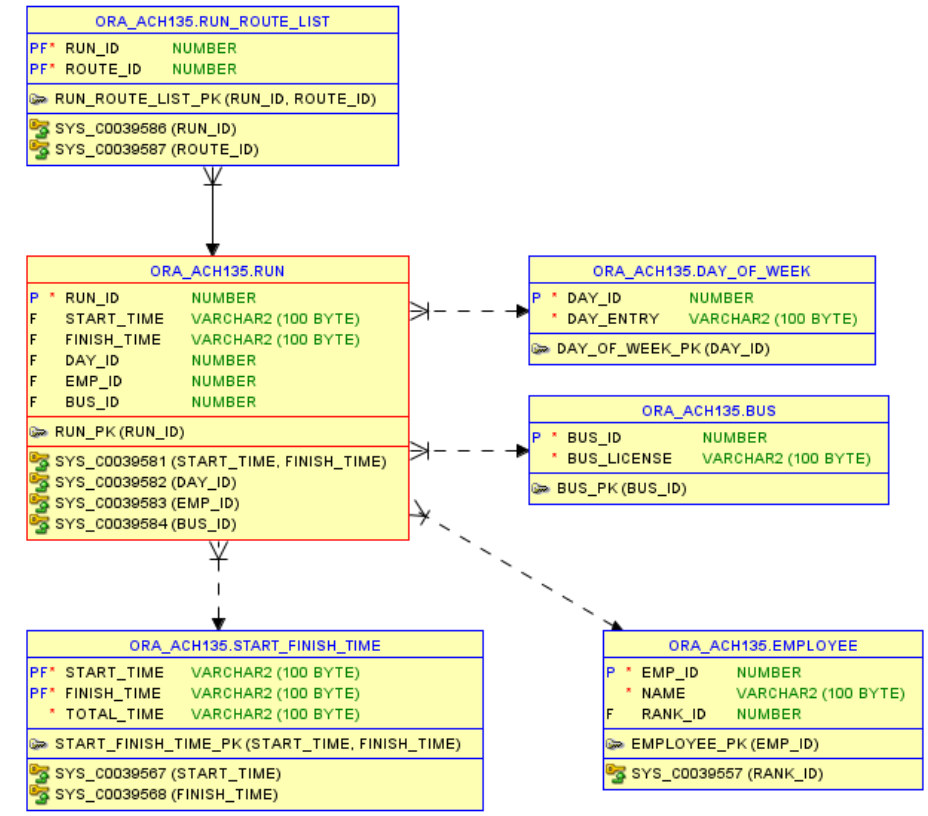
Day _of_week -

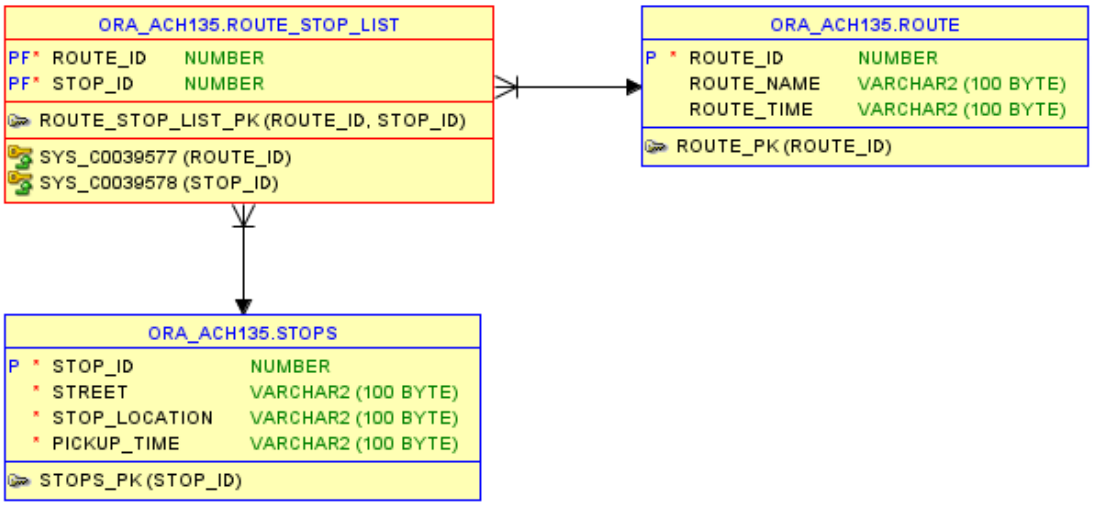
Static entity that relates to the run to say which day it is running on.

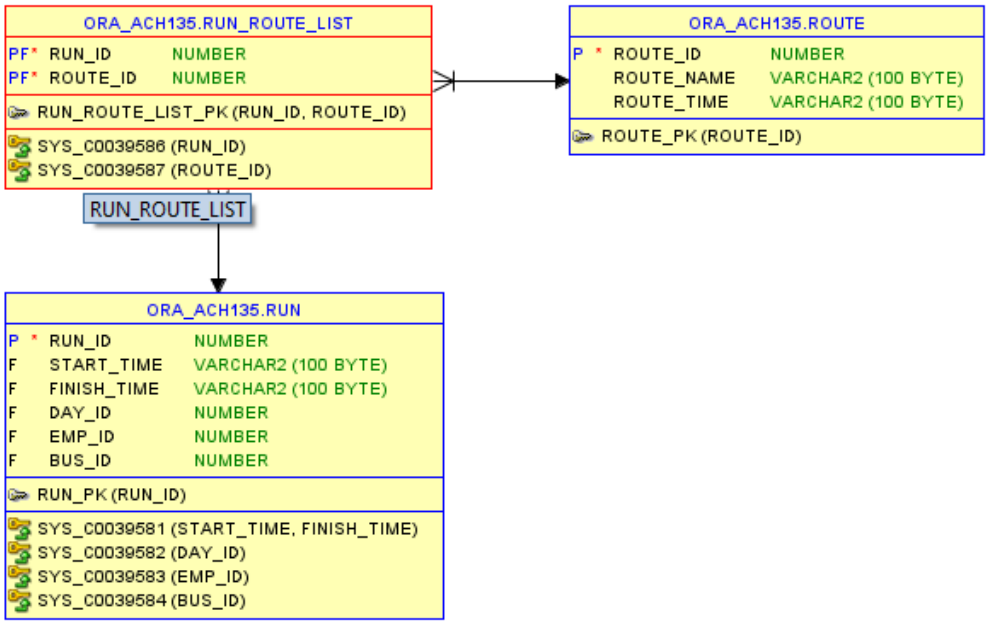
Diagram:

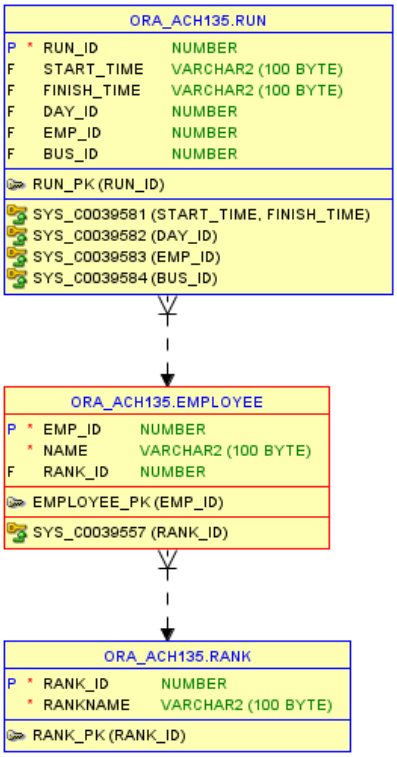

Employee
PK Emp_ID
Name NOT NULL
FK Rank NOT NULL
Rank
PK Rank
RankName NOTNULL
Run
PK Run_ID
FK Start_time, Finish_time NOT NULL
FK Day_ID NOT NULL
FK Emp_ID NOT NULL
FK Bus_ID NOT NULL
Run_route_list
PKFK Run_ID
PKFK Route_ID
Route
PK Route_ID
Route_name NOT NULL
Route Time NOT NULL
Route_stop_list
PK Route_ID
PK Stop_ID
Stops
PK Stop_ID
Street NOT NULL
Location NOT NULL
Pickup_time NOT NULL
Day_of_Week
PK Day_ID
Day NOT NULL
Start_finish_time
PKFK Start_time
PKFK Finish_time
Total Time NOT NULL
Times
PK Time
Bus
PK Bus ID
Bus License NOT NULL

Internal view:






ORA_ACH135.RUN_ROUTE_LIST
PF* RUN_ID NUMBER
PF* ROUTE_ID NUMBER
RUN_ROUTE_LIST_PK (RUN_ID, ROUTE_ID)
SYS_C0039586 (RUN_ID)
SYS_C0039587 (ROUTE_ID)
RUN_ROUTE_LIST
ORA_ACH135.ROUTE
P * ROUTE_ID NUMBER
ROUTE_NAME VARCHAR2 (100 BYTE)
ROUTE_TIME VARCHAR2 (100 BYTE)
ROUTE_PK (ROUTE_ID)
ORA_ACH135.RUN
P * RUN_ID NUMBER
F START_TIME VARCHAR2 (100 BYTE)
F FINISH_TIME VARCHAR2 (100 BYTE)
F DAY_ID NUMBER
F EMP_ID NUMBER
F BUS_ID NUMBER
RUN_PK (RUN_ID)
SYS_C0039581 (START_TIME, FINISH_TIME)
SYS_C0039582 (DAY_ID)
SYS_C0039583 (EMP_ID)
SYS_C0039584 (BUS_ID)


ORA_ACH135.RUN
P * RUN_ID NUMBER
F START_TIME VARCHAR2 (100 BYTE)
F FINISH_TIME VARCHAR2 (100 BYTE)
F DAY_ID NUMBER
F EMP_ID NUMBER
F BUS_ID NUMBER
RUN_PK (RUN_ID)
SYS_C0039581 (START_TIME, FINISH_TIME)
SYS_C0039582 (DAY_ID)
SYS_C0039583 (EMP_ID)
SYS_C0039584 (BUS_ID)
ORA_ACH135.EMPLOYEE
P * EMP_ID NUMBER
* NAME VARCHAR2 (100 BYTE)
F RANK_ID NUMBER
EMPLOYEE_PK (EMP_ID)
SYS_C0039557 (RANK_ID)
ORA_ACH135.RANK
P * RANK_ID NUMBER
* RANKNAME VARCHAR2 (100 BYTE)
RANK_PK (RANK_ID)