

University of Sargodha

BS 4th Term Examination 2016

Subject: I. T/Computer Sc. Paper: Database System (CMP: 3450)

Time Allowed: 2:30 Hours

Maximum Marks: 60

Note: Objective part is compulsory. Attempt any four questions from subjective part.

Objective Part (Compulsory)

- Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*12)
- What is anomaly?
 - Shortly Explain Referential integrity constraint
 - What is anomaly in database?
 - What's meant by Transitive dependency?
 - What is Hash Index Table?
 - What is three tier architecture?
 - Explain the difference between logical and physical data independence.
 - Define Integrity Constraints?
 - What is a transaction?
 - What's the purpose of Data Model?
 - Define Aggregation?
 - What's the difference between Degree and Cardinality in relation?

Subjective Part (4*9)

- Q.2. a) List five disadvantages of file processing systems.
b) List the nine major components in a database system environment
- Q.3. Explain the differences between user views, a conceptual schema, and an internal schema as different perspectives of the same database

✓ Q.4. The following tables form part of a database held in a RDBMS.

STAFF (StaffNo, Name, Address, Gender)

ASSIGN (StaffNo, DeptNo, Postition)

DEPT (DeptNo, Description, MaxNoStaff, MinNoStaff)

MaxNoStaff indicates the maximum number of staff a department should have before the department is considered over-staffed. Staff count below MinNoStaff will therefore indicate under-staffing. Due to the lack of staff, the database above is design in such a way that each staff can be assigned to more than 1 department.

Assuming the above, give SQL statements to retrieve the following information:

- Names of all the staff.
- Department description for all departments that could have staff count of 10 (based on MaxNoStaff and MinNoStaff). Assuming that all departments are not over-staffed and not under-staffed.
- The total number of staff for each department.
- The total number of staff who had already being assigned department(s). You are NOT allowed to use sub-queries or the group by option.
- The name of staffs that are not yet assigned any department.
- The staff number of staffs that are assigned to more than 3 departments.

✓ Q.5. The Little Hampton Air Company publishes a weekly flight log report, which tracks each aircraft and the number of hours that were flown by an individual pilot in each aircraft. A separate report is prepared for each pilot and is used to monitor flight proficiency for the two types of aircrafts (Fixed Wing and Rotary Wing) which a pilot may be qualified to fly. The following business rules apply to this report. Pilots may be assigned to fly different aircraft each day by the flight-scheduling manager. Each aircraft has a single crew chief permanently assigned to perform maintenance on the aircraft, although a crew chief may crew more than one aircraft. An aircraft number identifies each aircraft. There are several aircraft in the fleet.

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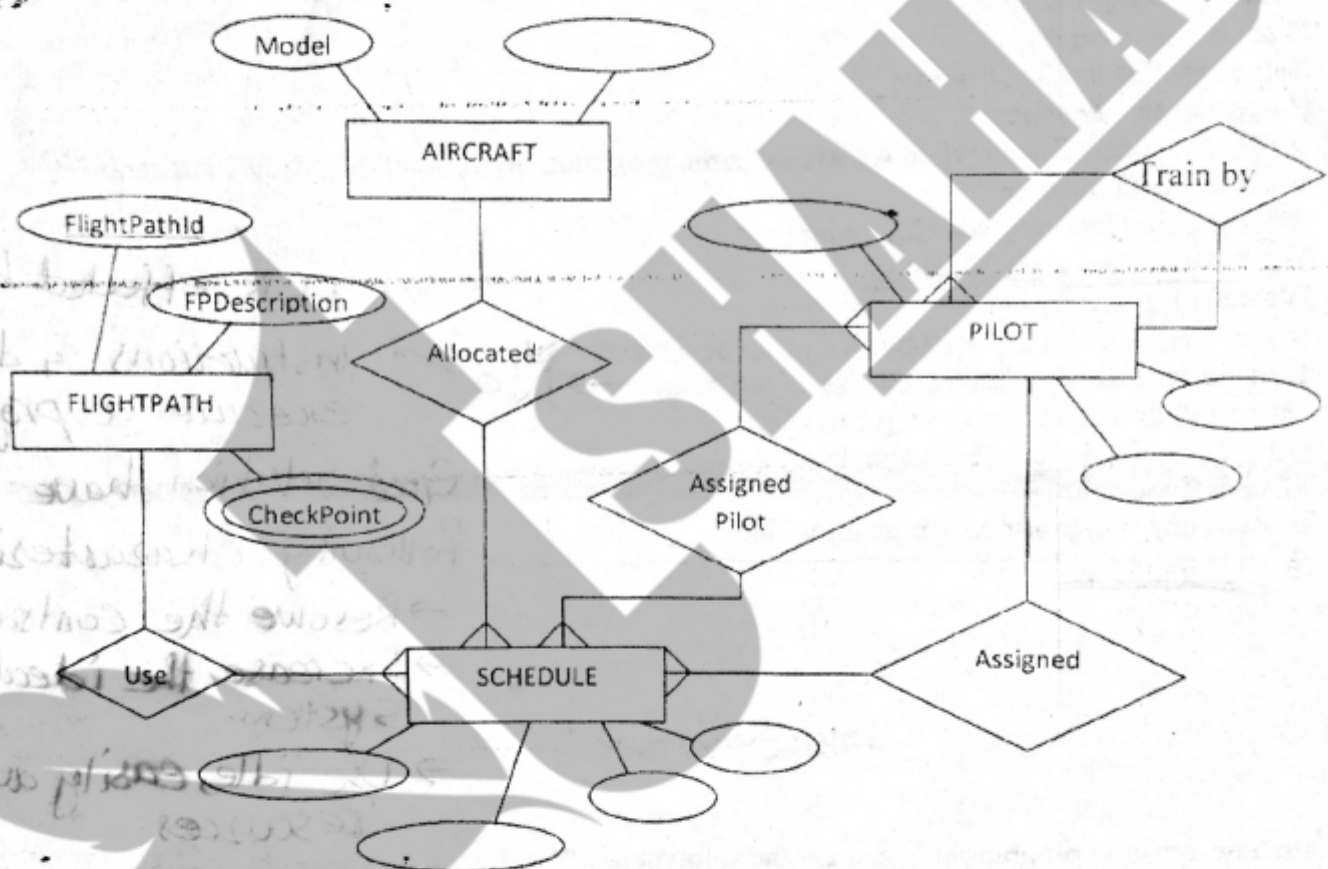
Additional information:

- All aircraft have seating-capacity data.
- Fixed wing aircraft have number-of-engine data and Rotary aircraft have speed-of-blade data.

(a) Identify the entities in this scenario.

(b) Draw an ER diagram of the entities to include their relationships and any attributes identified.

Q6



Above shows a conceptual data model of a small airline. SCHEDULE is used to keep track on schedule flights. On every flights, the airline needs to know the aircraft, pilots and flightpaths. Pilots in this airline are normally training in-house by their own senior pilots. If the pilots are trained in-house, airline wants to know who is the assigned trainer. The SCHEDULE is printed daily starting from the earliest date (sort by date and time ascending order).

(a) Convert the above ER diagram into relations.

Q.NO 7: Write SQL commands for the following relation?

Relations: Classes(class, type, country, numGuns, bore, displacement)

Ships(name, class, launched) Battles(name, date) Outcomes(ship, battle, result)

Queries: a) Find the number of battleship classes.

b) Find the average number of guns of battleship classes.

c) Find the average of guns of battleships.

d) Find for each class the year in which the first ship of that class was launched.

e) Find for each class the number of ships of that class sunk in battle *Visit tShahab.com for more.*