1.

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| --- | --- | --- |
| **Entity Sets** | **Keys** | **Other attributes** |
| Passengers | ticketno | Name, phoneno, bagno, seatno |
| Flight | flightno | Date, time, Gateno, |
| Airport | airportno | Location, terminalno |
| Staff | staffno | Name, job |
| Planes | companyID | Company, numofseats, type |

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| --- | --- | --- |
| **Relationship Sets** | **Between which entity sets** | **Attributes of relationship set** |
| Fly | Staff, planes |  |
| Buy | Passengers, flights | cost |
| offers | Airport, flights |  |
| work | Staff, airport | Time, day |

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| --- | --- | --- |
| **Relationship Sets** | **Cardinality Constraints** | **Participation/Other** |
| Fly | One-Many (A pilot can fly one plane. Many planes are flown by different pilots) | Staff -total, Planes – Total  (There needs to be a pilot for the plane to fly. There needs to be a plane so a pilot can fly it.) |
| Buy | Many-Many (A passenger can buy many flights. Many flights are sold to passengers.) | Passengers – partial, Flights – total  (Passengers may not buy a ticket. Flights need passengers to fly) |
| offers | One-Many (One airport offers many flights. Many flights are offered by one airport.) | Airport – total, flights – partial  (An airport must offer plane tickets. Some flights may be cancelled) |
| work | One-Many (a worker works in one position. many workers work the same position) | Staff – partial, Airport -total  (Staff may or may not turn up to work. An airport must have workers) |

2.

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| **Entity Sets** | **Keys** | **Other attributes** |
| born\_in\_city | Citizen\_ID | registno |
| born\_elsewhere | Citizen\_ID | POB, state, country |
| Resident | Citizen\_ID | Name, gender, DOB |
| Family | Family\_ID | Name, address, head |
|  |  |  |

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| --- | --- | --- |
| **Relationship Sets** | **Between which entity sets** | **Attributes of relationship set** |
| Member of | Resident, family |  |
| Head of | Resident, family |  |
| born | Resident, Born\_in\_city |  |
| born | Resident, Born\_elsewhere |  |

|  |  |  |
| --- | --- | --- |
| **Relationship Sets** | **Cardinality Constraints** | **Participation/Other** |
| Member of | Many- one | Resident – Total. Family -Total |
| Head of | Many- one | Resident – Total. Family -Total |
| born | Many-one | Resident-total, Born\_in\_city- total |
| born | Many- Many | Resident - Total, Born\_elsewhere - total |

3.

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| **Entity Sets** | **Keys** | **Other attributes** |
| driver | licenceNO | Firstname,lastname,webpage,address,phoneno |
| team | teamID | Teamname,Sponsor,contactname,contactaddress,phoneno |
| Races | raceID | Country, name |
| Car | carNo | makeofcar |
| contactperson | contactname | address,phoneno |

|  |  |  |
| --- | --- | --- |
| **Relationship Sets** | **Between which entity sets** | **Attributes of relationship set** |
| Plays in | Driver, team |  |
| has | Driver, car |  |
| Must have | Team, contactperson |  |
| competes | Driver,races |  |

|  |  |  |
| --- | --- | --- |
| **Relationship Sets** | **Cardinality Constraints** | **Participation/Other** |
| Play in | N:1 | Driver- total, team-total |
| has | 1:1 | Driver-total, car-total |
| Must have | 1:1 | Team-total, contactperson-total |
| competes | 1:N | Driver-partial, races-total |

4.

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| **Entity Sets** | **Keys** | **Other attributes** |
| patient | pID | Firstname, surname, dob |
| doctor | regNo | Surname,firstname,specialisation,graddate |
| medicine | IDcode | Name, cost |
| illness | illnessID | IllnessName, description |
| consultation | consultID | Time, day |

|  |  |  |
| --- | --- | --- |
| **Relationship Sets** | **Between which entity sets** | **Attributes of relationship set** |
| meets | Doctor, patient |  |
| diagnosed | Patient, illness |  |
| prescribe | Patient, medicine |  |
| May have | Patient, consultation |  |

|  |  |  |
| --- | --- | --- |
| **Relationship Sets** | **Cardinality Constraints** | **Participation/Other** |
| meets | 1:1 | Doctor – total , patient - total |
| diagnose | 1:N | Patient – partial, illness -partial |
| prescribe | 1:N | Patient – partial , medicine - partial |
| May have | 1:N | Patient -total, consultation- total |