5.3.2. Briefly differentiate between a (1 Mark each)

1. Super Key: A super key are any attribute or set of attributes that uniquely identifies a row of in a table.
2. Candidate Key: A candidate key is the minimal subset of a super key. It is any attribute that can uniquely identifies each row of in a table but cannot be subset further into more simplified data, meaning that if any proper subset of a super key is itself a super key, then it cannot be a candidate key. This also means that these the minimal subsets of super keys are all candidates to be chosen primary keys hence the name.
3. Foreign Key: A foreign key is an attribute or combination of attributes in a table which is used to define a relationship with some other table. The foreign key of one table must match the primary key of the table it has a relationship, or the attribute must be null.
4. Secondary Key: A secondary key is an attribute or combination of attributes that is used strictly for data retrieval purposes. This means it adds no meaning to the data but is instead used to identify the rows uniquely in a table.

5.3.3 Explain the difference between (2 Marks each):

1. Weak entity: A weak entity requires a relationship with another related entity in order to exist in the database which means it is existence dependent as it depends on the association between entities. This is in contrast to the independent existence of the strong entity as it can still exist in the database as an entity without any associations to another related entity.
2. Strong entity: A strong entity is an entity that has existence independence which means that this entity can exist apart from one or more entities meaning it doesn’t need to have a relationship with another entity to exist. This is in contrast to how a weak entity requires a relationship with another related entity in order for it to exist in the database.
3. Weak relationship: A weak relationship exists relationship exists when the child table can be uniquely identified without its parent. This means it can exist functionally independent and can exist if the primary key of the related entity does not contain the primary key component of the parent entity.
4. Strong relationship: A strong relationship exists when the child table cannot be uniquely identified without its parent meaning that it can only exist when the primary key of a related entity contains the primary key component of the parent entity meaning they both have the same primary key, thus making it functionally dependent.
5. Optional relationship: An optional relationship is when the participation in a relationship between one entity and another can occur but is not compulsory meaning that the minimum number of occurrences of one entity that may be related to a single occurrence of the other entity is 0. This is the opposite of a contingent relationship.

|  |  |
| --- | --- |
| **TABLE** | CANDIDATE KEY |
| CHARTER |  |
| AIRCRAFT |  |
| MODEL |  |
| PILOT |  |
| EMPLOYEE |  |
| CUSTOMER |  |

Table

Description automatically generated