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**AIT 524-002**

**Practice Problems**

Practice Problem 1:



Practice Problem 2:



Relationship between entities:

1. The relationship between entities CANDIDATE and QUALIFICATION is many-to-many (N:M) as the business rules say that each candidate has earned several qualifications. Each qualification may be earned by more than one candidate. Since the relationship is many-to-many, a bridge entity is created i.e. CAND\_QUAL to link these entities. The relationship between entities CANDIDATE and CAND\_QUAL is one-to-many (1: N) as each candidate can have one or more qualifications and each qualification refers to a single candidate. The relationship is mandatory on the “many” side because business rules say that each candidate “has” earned several qualifications. It is optional on the one side as business rules say that each qualification “may” be earned by one or more candidates. According to business rules the cardinality for CAND\_QUAL will be (1, N) because it is mandatory and (1,1) for CANDIDATE because it is mandatory. The relation between the entities is **strong**, but the entities are **weak** as the primary key of CAND\_QUAL is partially dependent on entity CANDIDATE.
2. The relationship between entities QUALIFICATION and CAND\_QUAL is one-to-many (1: N) as CAND\_QUAL is the bridge entity. The relationship is optional on the “many” side as business rules say that each qualification “may” be earned by one or more candidates. The relationship is mandatory on the “one” side as business rules say that every candidate “has” earned several qualifications. According to business rules, the cardinality for CAND\_QUAL will be (0, N) because it is optional and (1,1) for the CANDIDATE because it is mandatory. The relation between the entities is **strong**, but the entities are **weak** as the primary key of CAND\_QUAL is partially dependent on entity QUALIFICATION.
3. The relationship between entities CANDIDATE and OPENING will be many-to-many (N:M) as the business rules say that an opening can be filled by many candidates, and a candidate can fill many openings. Since the relationship is many-to-many, a bridge entity is created i.e. CAND\_OPEN to link these entities. The relationship between CANDIDATE and CAND\_OPEN will be one-to-many (1: N) as CAND\_OPEN is the bridge entity. The relationship is optional on the “many” side as business rules say that each candidate “can” fill many openings. It is mandatory on the “one” side as each opening must refer to a candidate. According to business rules, the cardinality for CAND\_OPEN will be (0, N) because it is optional and (1,1) for the CANDIDATE because it is mandatory. The relation between the entities is **strong**, but the entities are **weak** as the primary key of CAND\_OPEN is partially dependent on entity CANDIDATE.
4. The relationship between OPENING and CAND\_OPEN will be one-to-many (1: N) as CAND\_OPEN is the bridge entity. The relationship is optional on the “many” side as business rules say that openings “can” be filled by many candidates. It is mandatory on the “one” side as there “must” be a opening to which the candidates can refer. According to business rules, the cardinality for CAND\_OPEN will be (0, N) because it is optional and (1,1) for the OPENING because it is mandatory. The relation between the entities is **strong**, but the entities are **weak** as the primary key of CAND\_OPEN is partially dependent on entity OPENING.
5. The relationship between PLACEMENT RECORD and OPENING will be one-to-one (1:1) as according to business rules as each placement record must refer to a single opening and each opening refers to only one placement record. The relationship is mandatory on the “one” side as for each opening a record must be created in the placement record folder. It is optional on the “one” side as every opening may or may not be filled. According to business rules the cardinality for PLACEMENT RECORD will be (1,1) because it is mandatory and for OPENING will be (0,1) because it is optional. Entity OPENING will be weak entity as it is dependent on PLACEMENT record and a strong relationship will be represented between these two entities.
6. The relationship between OPENING and COMPANY will be one-to-many (1: N) because business rules say that each company can have many openings and each opening refers to a single company. The relationship is optional on the “many” side as each company “may” have any opening. The relationship is mandatory on the “one” side as each opening must refer to a company. According to business rules the cardinality for OPENING will be (0, N) because it is optional and (1,1) for COMPANY because it is mandatory. A strong relationship will be represented between these two entities as entity OPENING is dependent upon entity COMPANY.
7. The relationship between CANDIDATE and JOB HISTORY will be one-to-many (1: N) because business rules as every candidate may have many job history and each job history will belong to only one candidate. The relationship is mandatory one the “one” side as according to business rule each job history must refer to a candidate. It is optional on the “many” side as each candidate may have zero or more job history. According to business rules the cardinality for JOB HISTORY will be (0, N) because it is optional and (1,1) for CANDIDATE because it is mandatory. A strong relationship will be represented between these two entities as entity JOB HISTORY is dependent upon entity CANDIDATE.