Student Name: Ang Qiao Xin
Student ID: 33520054

Task 1 Assumptions
Every **SHIP** must have at least one **CABIN**, because cabins are fundamental to passenger accommodation. Ships without cabins are not meaningful in the Ocean Odyssey business model.

A **SHIP** can be entered into the system before it is assigned to any **CRUISE**. This supports administrative workflows where ships are created first, and cruise schedules are added later.

A **CRUISE** can be created before any **MANIFEST** entries exist. This allows the company to define cruise offerings before any passengers have booked.

A **CABIN** can exist without being assigned to any **MANIFEST** record. This reflects the real-world situation where not all cabins are booked for every cruise.

Task 3 Assumptions
A surrogate key `address_id` was added to the ADDRESS entity to avoid using a composite primary key(add_street_no, add_town, add_postcode, add_country) and to simplify foreign key relationships from PASSENGER. This is because there are more than two attributes in a primary key. Not only that, the composite primary key is too long or cumbersome. The DBMS can create values for it to guarantee that unique numbers are always supplied. The natural key (street, town, postcode, country) is protected using a UNIQUE constraint and mandatory.

CHECK constraints were used for fields with fixed and limited value sets: 'cabin_class' (Interior, Ocean View, Balcony, Suite) ,'iti_depart_type' (A=Arrive, D=Depart).
I created a **GENDER** lookup table to support a broader and more inclusive list of gender identities, such as Non-Binary, Transgender, etc. This allows for future extensibility and centralized control.

In the PASSENGER entity, a self-referencing foreign key guardian_id is used to represent the guardian of a minor. This attribute is optional and will be left NULL for adult passengers and only used when a passenger is a minor. Although guardian_id is nullable, minors must have a guardian. This constraint will be enforced at the application or schema level using a trigger or validation logic.

Every **CRUISE** must have at least one **ITINERARY** entry. This ensures that cruises always have scheduled port activities. A cruise without any itinerary is not considered valid in operations.

Each itinerary record must refer to exactly one port. However, a **PORT** can exist independently before it is assigned to any **ITINERARY**, allowing ports to be pre-registered.

The logical model allows **COUNTRY** to exist independently before any **PORT** are registered. This supports flexible data management like future expansion or reference in other entities (e.g., address). Not only that, we might preload countries before entering port data, some countries may be planned for future expansion or a country may have ports removed

temporarily (maintenance, war, etc.). Country can also produce the ship but it does not have any port. Hence, the cardinality between COUNTRY and PORT is modelled as 1..1 : 0..M

Each **SHIP** is registered in exactly one **COUNTRY** as per the project brief. Therefore, a country_code foreign key is stored in the SHIP entity. This ensures standardized and consistent recording of ship registration locations. The relationship is modelled as COUNTRY 1..1 → SHIP 0..M, allowing countries to exist before any ships are registered to them or country is referenced in other entities (e.g. address).

Each **passenger** must identify with exactly one gender from the **GENDER** lookup table. A gender entry (e.g., Non-Binary, Transgender) may exist without passengers currently linked to it.

The cruise_cost attribute was defined as NUMERIC(6,2) to support cents and provide accurate pricing. While the brief provides integer examples, actual cruise pricing may involve decimal values.

The `contact_number` attribute was defined as VARCHAR2(20) to accommodate international dialing codes, including country prefix, area code, and optional symbols (e.g., +60-12-3456789). This allows for flexibility in formatting while remaining within a reasonable length.