CS6852 Assignment 3 - Hotel Ontology

Group 7

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March 2023

1 OWL Reasoner Check

The OWL reasoner was run on the developed ontology. The consistency checks passed, and the verification screenshot has been added below.

```
INFO  21:38:32  ------------------------------ Running Reasoner ------------------------------
INFO  21:38:33  Pre-computing inferences:
INFO  21:38:33      - class hierarchy
INFO  21:38:33      - object property hierarchy
INFO  21:38:33      - data property hierarchy
INFO  21:38:33      - class assertions
INFO  21:38:33      - object property assertions
INFO  21:38:33      - same individuals
INFO  21:38:33  Ontologies processed in 457 ms by HermiT
INFO  21:38:33
```

2 Comments regarding the Ontology

1. The hotel concept will have their respective names as elements. Since a hotel ID uniquely identifies a hotel, a hotel can have only one hotel ID, and each ID can correspond to only one hotel. Only a hotel can have a rating, So the Rating is given as the HotelRating concept, which has 5 instances (the only possible rating values). Only hotels can have a website, so we made website as a data property whose range is a string.

2. The qualified number restrictions used in the DL ontology have been translated to OWL ontology using qualified cardinality.

3. A new class called NiceHotel has been introduced to make the representation easier since Protege does not have a provision for adding superclass to a class. It represents those hotels that offer some amenities or services to their customers. This will be a subclass of the Hotel class.

4. The slotTime and slotDate properties of the Booking concept have been combined into one SlotDateTime data property of the Booking class in the OWL ontology. This change was made due to the availability of the more appropriate XML Schema Datatype xsd:DateTime. slotDateTime was made a data property instead of an object property with range Time since storing many dates as instances of a Time class does not make much sense. Having it as a data property makes it more like an attribute.

5. We made noOfPpl as a data property instead of an object property because it is more appropriate for Booking to have a functional data property noOfPpl with xsd:integer as the built-in datatype as a range rather storing all the integers inside a concept.

6. The Cost concept has 2 main subconcepts RoomCost and ServiceCost, where RoomCost has only 3 instances 10000,15000,20000 since the hotel has only 3 types of rooms, each with a specific corresponding cost.