3.1 Explanation for format design

Assumption:

* Data format for all Employee ID is an integer with length of 9.
* Age is an integer without any further restriction.
* Salary\_rate is a number within [0, 9999999.99].
* Event\_deposit is a number within [0, 99999.99]. (Max deposit is roughly one hundred thousand dollars.)
* Room number is a 4 digits number.
* Membership number is a 11 digits number.
* Direct bill account is a 20 char-long string.
* Length of stay is an integer greater than 0.

3.2 Format for Every Relation

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| Relation Name | Attributes | Data Type |
| Employee | EmployeeID | Numeric(9,0) |
| Age | Integer |
| Salary\_rate | Numeric(9,2) |
| Name | String<=20 |
| State | String<=2 |
| City | String<=20 |
| Street\_name | String<=20 |
| Street\_number | String<=20 |
| Zipcode | String<=10 |
| Event\_staff\_ID | Numeric(9,0) |

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| Relation Name | Attributes | Data Type |
| Dinning | EmployeeID | Numeric(9,0) |
| Shift | String<=10 |
| Type | String<=20 |

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| Relation Name | Attributes | Data Type |
| Concierge | EmployeeID | Numeric(9,0) |
| Concierge\_experience\_year | Interger |

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| Relation Name | Attributes | Data Type |
| Housekeeping | EmployeeID | Numeric(9,0) |
| Housekeeping\_experience\_year | Interger |

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| Relation Name | Attributes | Data Type |
| Receptionist | EmployeeID | Numeric(9,0) |
| Language | String<=10 |

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| Relation Name | Attributes | Data Type |
| Tech\_support | EmployeeID | Numeric(9,0) |
| Tech\_support\_licence | String<=100 |

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| Relation Name | Attributes | Data Type |
| Management | EmployeeID | Numeric(9,0) |
| Title | String<=20 |

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| Relation Name | Attributes | Data Type |
| Catering | EmployeeID | Numeric(9,0) |

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| Relation Name | Attributes | Data Type |
| Accountant | EmployeeID | Numeric(9,0) |
| Accountant\_licence | String<=20 |

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| Relation Name | Attributes | Data Type |
| Event | Event\_ID | Numeric(4,0) |
| Event\_date | MM/DD/YYYY, STRING = 10 CHARS |
| Event\_time | hh-mm-ss, string = 8 chars |
| Event\_manager\_ID | Numeric(9,0) |
| Event\_deposit | Numeric(7,2) |

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| Relation Name | Attributes | Data Type |
| Client | CustomerID | Numeric(6,0) |

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| Relation Name | Attributes | Data Type |
| Organization | CustomerID | Numeric(6,0) |

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| Relation Name | Attributes | Data Type |
| Individual | CustomerID | Numeric(6,0) |
| Birthdate | MM/DD/YYYY, STRING = 10 CHARS |
| Individual\_name | String<=20 |
| Individual\_sex | String<=20 |

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| Relation Name | Attributes | Data Type |
| Membership | Membership\_number | Numeric(11,0) |

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| Relation Name | Attributes | Data Type |
| Room | Room\_number | Numeric(4,0) |
| Bed\_type | String<=20 |
| Room\_type | String<=20 |
| Per\_night\_price | Integer |

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| Relation Name | Attributes | Data Type |
| Clear | EmployeeID | Numeric(9,0) |
| Room\_number | Numeric(4,0) |
| Date | MM/DD/YYYY, STRING = 10 CHARS |
| Time | hh-mm-ss, string = 8 chars |

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| Relation Name | Attributes | Data Type |
| Check\_out\_bill | Room\_number | Numeric(4,0) |
| CustomerID | Numeric(6,0) |
| Check\_out\_bill\_amount | Integer |
| Check\_out\_bill\_issued\_date | MM/DD/YYYY, STRING = 10 CHARS |
| Check\_in\_date | MM/DD/YYYY, STRING = 10 CHARS |
| Check\_out\_date | MM/DD/YYYY, STRING = 10 CHARS |

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| Relation Name | Attributes | Data Type |
| Has | CustomerID | Numeric(6,0) |
| Membership\_number | Numeric(11,0) |

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| Relation Name | Attributes | Data Type |
| Holds | CustomerID | Numeric(6,0) |
| Event\_ID | Numeric(4,0) |

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| Relation Name | Attributes | Data Type |
| Serve | Event\_ID | Numeric(4,0) |
| EmployeeID | Numeric(9,0) |
| On\_call\_speaker | String<=20 |
| On-call\_number | Numeric(4,0) |

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| Relation Name | Attributes | Data Type |
| Bill\_event\_payment | CustomerID | Numeric(6,0) |
| Event\_bill\_ID | Numeric(6,0) |
| Date | MM/DD/YYYY, STRING = 10 CHARS |
| Time | hh-mm-ss, string = 8 chars |
| Amount\_of\_event\_payment | Numeric(8,2) |
| Date\_of\_payment | MM/DD/YYYY, STRING = 10 CHARS |

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| Relation Name | Attributes | Data Type |
| Direct\_bill\_account | CustomerID | Numeric(6,0) |
| Direct\_bill\_account | String=20 |

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| Relation Name | Attributes | Data Type |
| Phone | CustomerID | Numeric(6,0) |
| Phone | Numeric(10,0) |

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| Relation Name | Attributes | Data Type |
| Bill\_event\_payment | CustomerID | Numeric(6,0) |
| Room\_number | Numeric(4,0) |
| COP\_time | hh-mm-ss, string = 8 chars |
| COP\_date | MM/DD/YYYY, STRING = 10 CHARS |
| COP\_amount\_of\_payment | Numeric(8,2) |

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| Relation Name | Attributes | Data Type |
| Check\_in | CustomerID | Numeric(6,0) |
| EmployeeID | Numeric(9,0) |
| Room\_number | Numeric(4,0) |
| Check\_in\_date | MM/DD/YYYY, STRING = 10 CHARS |
| Key\_type | String<=20 |
| Check\_in\_time | hh-mm-ss, string = 8 chars |
| Lounge | Boolean |
| Length\_of\_stay | Integer>0 |

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| Relation Name | Attributes | Data Type |
| Bill\_for\_event | CustomerID | Numeric(6,0) |
| Event\_bill\_ID | Numeric(6,0) |
| Event\_ID | Numeric(4,0) |
| EmployeeID | Numeric(9,0) |
| Bill\_event\_date\_issued | MM/DD/YYYY, STRING = 10 CHARS |
| Bill\_event\_amount | Numeric(8,2) |