

DASC 5333 Database Systems for Data Science
CSCI 4333 Design of Database Systems
Spring 2023
Suggested Solution to Homework #4

This is a sample design. Other reasonable designs are acceptable.

The relation schema:

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| 1 | Country(<u>CountryCode</u> , Name) |
| Candidate Keys | [1] CountryCode, [2] Name |
| Foreign Keys | |
| Nullable Attributes | |
| Non-nullable Attributes | CountryCode, Name |
| Notes | |
| 2 | Address(<u>AddressId</u> , Street, City, State, ZipCode, CountryCode) |
| Candidate Keys | [1] AddressId |
| Foreign Keys | [1] CountryCode references Country(CountryCode) |
| Nullable Attributes | State, ZipCode |
| Non-nullable Attributes | AddressId, Street, City, CountryCode |
| Notes | |
| 3 | Organization(<u>OrganizationId</u> , Name, Phone, AddressId, OriginCountryCode) |
| Candidate Keys | [1] OrganizationId |
| Foreign Keys | [1] AddressId references Address(AddressId), [2] OriginCountryCode references Country(CountryCode). |
| Nullable Attributes | Phone, AddressId, OriginCountryCode |
| Non-nullable Attributes | OrganizationId, Name |
| Notes | |
| 4 | Account(<u>AccountId</u> , Username, Password) |
| Candidate Keys | [1] AccountId, [2] Username |
| Foreign Keys | |
| Nullable Attributes | |
| Non-nullable Attributes | AccountId, Username, Password |
| Notes | [1] AccountId is created as the surrogate primary key. |
| 5 | Person(<u>PersonId</u> , LName, FName, Email, Phone, AccountId, OrganizationId) |
| Candidate Keys | [1] PersonId |
| Foreign Keys | [1] AccountId references Account(AccountId), [2] OrganizationId references Organization(OrganizationId) |
| Nullable Attributes | Phone, OrganizationId, AccountId |
| Non-nullable Attributes | PersonId, LName, FName, Email |
| Notes | [1] PersonId is created as the surrogate primary key. |
| 6 | Conference(<u>ConferenceId</u> , Name, StartDate, EndDate, VenueName, VenueAddressId, ChairId, LeadOrganizationId) |
| Candidate Keys | [1] ConferenceId |
| Foreign Keys | [1] VenueAddressId references Address(AddressId), [2] ChairId references Member(MemberId), [3] LeadOrganizationId references |

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| | Organization(OrganizationId) |
| Nullable Attributes | ChairId, VenueAddressId |
| Non-nullable Attributes | ConferenceId, Name, StartDate, EndDate, VenueName, LeadOrganizationId |
| Notes | |
| 7 | SupportOrganization(SO_Id, ConferenceId, OrganizationId) |
| Candidate Keys | [1] SO_Id, [2] ConferenceId, OrganizationId |
| Foreign Keys | [1] ConferenceId references Conference(ConferenceId), [2] OrganizationId references Organization(OrganizationId) |
| Nullable Attributes | |
| Non-nullable Attributes | SO_Id, ConferenceId, OrganizationId |
| Notes | [1] SO_Id is created as the surrogate primary key. |
| 8 | Staff(StaffId, ConferenceId, PersonId, Role, Description) |
| Candidate Keys | [1] StaffId, [2] ConferenceId, PersonId |
| Foreign Keys | [1] ConferenceId references Conference(ConferenceId), [2] PersonId references Person(PersonId) |
| Nullable Attributes | Description |
| Non-nullable Attributes | StaffId, ConferenceId, PersonId, Role |
| Notes | [1] StaffId is created as the surrogate primary key. |
| 9 | Track(TrackId, TrackName, ConferenceId) |
| Candidate Keys | [1] TrackId |
| Foreign Keys | [1] ConferenceId references Conference(ConferenceId) |
| Nullable Attributes | |
| Non-nullable Attributes | TrackId, TrackName, ConferenceId |
| Notes | |
| 10 | Paper(PaperId, Title, SubmissionDate, TrackId) |
| Candidate Keys | PaperId |
| Foreign Keys | [1] TrackId references Track(TrackId) |
| Nullable Attributes | |
| Non-nullable Attributes | PaperId, Title, SubmissionDate, TrackId |
| Notes | |
| 11 | Authorship(AuthorshipId, AuthorId, PaperId, position) |
| Candidate Keys | [1] AuthorshipId, [2] PaperId, position, [3] PaperId, AuthorId |
| Foreign Keys | [1] PaperId references Paper(PaperId) |
| Nullable Attributes | |
| Non-nullable Attributes | AuthorshipId, PersonId, PaperId, position |
| Notes | [1] AuthorshipId is created as the surrogate primary key. [2] Candidate keys [2] and [3] are optional. |
| 12 | Outcome(OutcomeId, OutcomeCode, Outcome, Description) |
| Candidate Keys | [1] OutcomeId |
| Foreign Keys | |
| Nullable Attributes | Description |
| Non-nullable Attributes | OutcomeId, Outcome, OutcomeCode |
| Notes | |
| 13 | Review(ReviewId, ReviewerId, PaperId, OutcomeId, Comment) |
| Candidate Keys | [1] ReviewId, [2] ReviewerId, PaperId |
| Foreign Keys | [1] ReviewerId references Person(PersonId), [2] PaperId references |

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| | Paper(PaperId), [3] Outcomeld references Outcome(Outcomeld). |
| Nullable Attributes | |
| Non-nullable Attributes | ReviewId, ReviewerId, PaperId, Outcomeld, Comment |
| Notes | [1] ReviewId is created as a surrogate primary key. [2] ReviewerId, PaperId. Candidate key [2] is optional. |
| 14 | Keyword(KeywordId, Keyword) |
| Candidate Keys | [1] KeywordId, [2] Keyword |
| Foreign Keys | |
| Nullable Attributes | |
| Non-nullable Attributes | KeywordId, Keyword |
| Notes | [1] KeywordId is created as the surrogate primary key. |
| 15 | AssociatedKeyword(AK_Id, PaperId, KeywordId) |
| Candidate Keys | [1] AK_Id, [2] PaperId, KeywordId |
| Foreign Keys | [1] PaperId references Paper(PaperId), [2] KeywordId references Keyword(KeywordId) |
| Nullable Attributes | |
| Non-nullable Attributes | AK_Id, PaperId, KeywordId |
| Notes | [1] AK_Id is created as the surrogate primary key. |
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