CSDS 341: Final Project Report
Questionnaire Website

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1 BCNF

Users
This entity represents users of the questionnaire website. All types of users, including people who create questionnaires or answer questionnaires, are in this table. first_name, last_name, email, subscription_id are attributes of the User and there is no FD between them.
R1 = (user_id, first_name, last_name, email, subscription_id)
F1 = {user_id $\rightarrow$ first_name, last_name, email, subscription_id; email $\rightarrow$ user_id, first_name, last_name, subscription_id}
Since, both user_id and email are superkeys Users is in BCNF form.

Permissions
This entity describes the permission level of a user for each questionnaire, this is part of a ternary relationship between users, questionnaire, and permission. user_id, questionnaire_id, role_id are attributes of Permission and there is no FD in between them.
R2 = (permission_id, user_id, questionnaire_id, role_id)
F2 = {permission_id $\rightarrow$ user_id, questionnaire_id, role_id}
Since permission_id is a superkey Permissions is in BCNF form.

Roles
This entity describes the roles that are allowed for each permission evel. For each role there are different permissions that are dependent on a true or false value (BIT) in SQL. For each tuple of user and survey the permission level determines what roles they have. edit_perm, resp_perm, view_resp_perm are all attributes of a role with no FD between them.
R3 = (role_id, edit_perm, resp_perm, view_resp_perm)
F3 = {role_id $\rightarrow$ edit_perm, resp_perm, view_resp_perm}
Since role_id is a superkey Roles is in BCNF form.

Subscription
Describes the subscription level and how many surveys users are allowed to create at each subscription level.
R4 = (subscription_id, survey_limit)
F4 = {subscription_id $\rightarrow$ survey_limit}
Since subscription_id is a superkey Subscription is in BCNF form.

Questionnaires
Defines a questionnaire with the unique id that will be bound to a user using the permissions table.

R5 = (questionnaire_id, number_of_questions)
F5 = {questionnaire_id, number_of_questions}
Since questionnaire_id is a superkey Questionnaires is in BCNF form.

Questions
Determines questions as they are related to each questionnaire. questionnaire_id, question_text are attributes of Question with no FD between them.
R5 = (question_id, questionnaire_id, question_text)
F5 = {question_id → questionnaire_id, question_text}
Since question_id is a superkey Questions is in BCNF form.

Possible_Answers
Defines possible answers to each question. e.g. for multiple choice questions, this will have entries for each possible answer, while for questions like rating questions, this place will have the range of rankings available. question_id, possible_answer are attributes of an response option with no FD between them.
R6 = (option_id, question_id, possible_answer)
F6 = {option_id → question_id, possible_answer}
Since option_id is a superkey Possible_Answers is in BCNF form.

Responses
Defines the user response to each of the questions and ties them to the unique response option identifier and user id. user_id, option_id, date_time have no FD between them.
R7 = (response_id, user_id, option_id, date_time)
F7 = {response_id → user_id, option_id, date_time}
Since response_id is a superkey Responses is in BCNF form.