Maturity Assessment through Questionnaires

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In this article, we will go through the procedure of maturity assessment by simply answering few questions through a form.

Audience

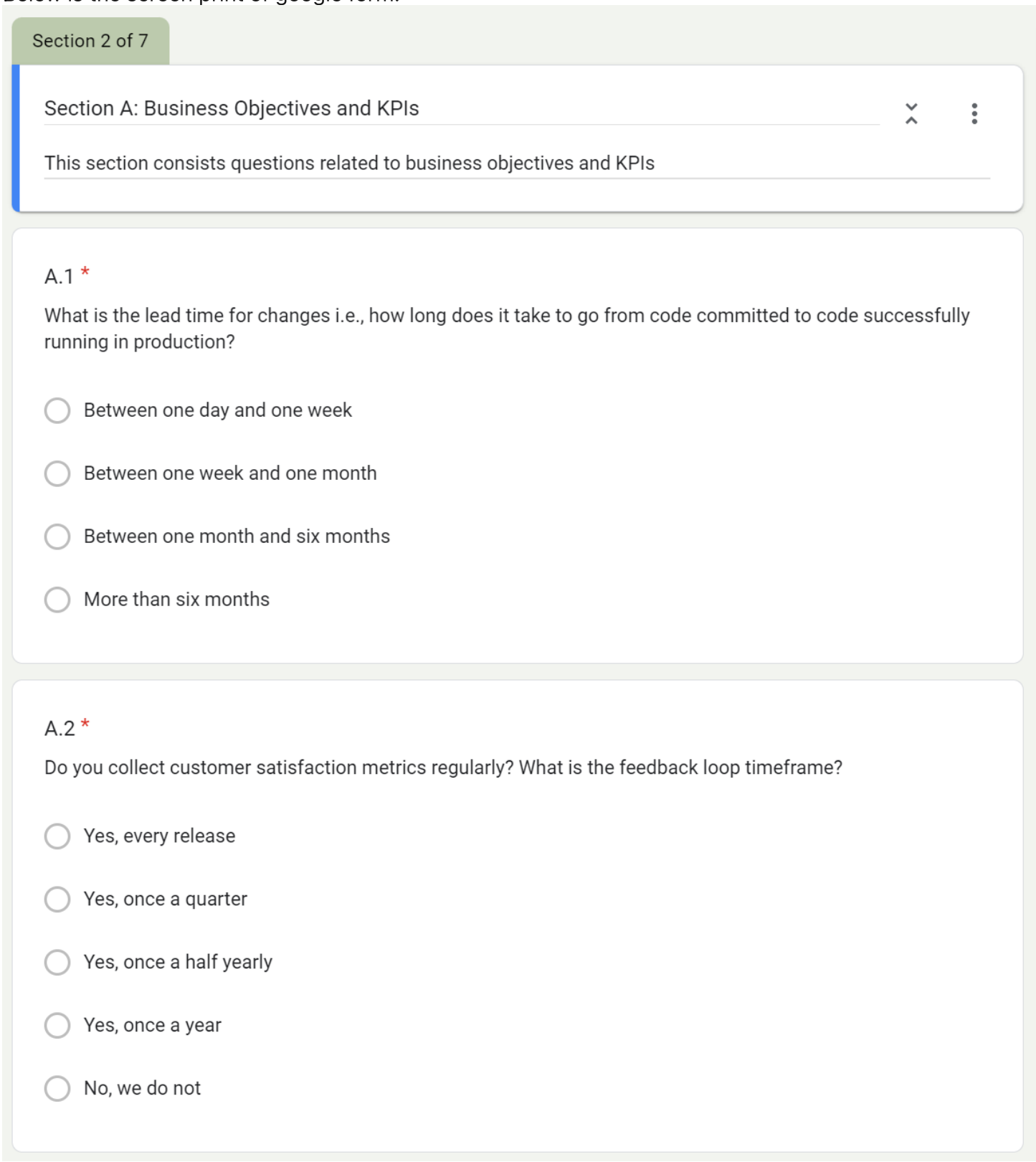
This article is intended for those who will create, maintain and make updates to the google form which hosts the questionnaire for the maturity assessment and associated **app script** to automate the process of calculating the scores for each section and store the responses and scores in the database which further will be used to display the results through dashboards.

1. Google Form

Adding and managing the questions is quite straight forward and google form has different types of question forms. We made all questions are mandatory by default and these questions are divided into different sections depends on the category they belong including the basic details.
The main reason for choosing the google form out of all other form services available in the market is the ease of accessing responses through the apps scripts which is a back-end automation service for the google applications. It offers the easy methods to access the response APIs, trigger options and great community support which makes the obvious choice for our need. These scripts can be written in Google's native scripting language which resembles the traditional Java Script and easy to adopt.
All questions in the form except generic details in the beginning section are formatted as below:

- Question Section: Question number which is a combination of Section character and question number in order (For example, 2nd section in section A is "A.2"). We have kept the question number instead of question in this format to make the automation decisions according to the need.
- Description Section: It contains the actual question and following description if needed.
- Answer Section: Multiple choice options or blanks depends on the question.

Below is the screen print of google form.



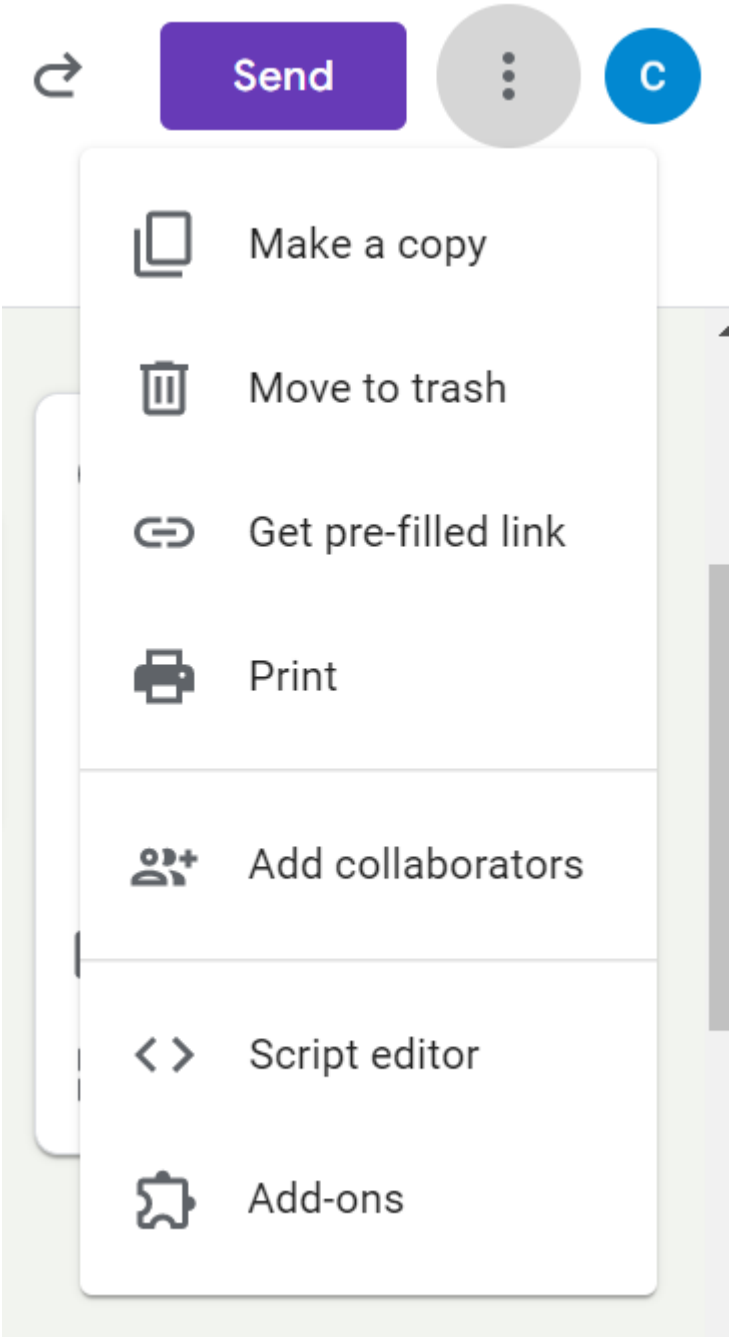
2. Google Apps Script

Though form has option to score the responses by converting the form to "quiz", scoring is limited to only valid answer and there is no customization for assigning different scores for different options. It always expects one valid answer for scoring which is not our requirement. In this case, we have to follow a bit programmatical approach rather validating within the form.

Google provides apps script which can easily integrate and work with various google applications and third party services. The integration of google form and enabling the triggers is quite easy process and responses can be accessed through the script.

Here are the steps to integrate google form with apps script and enable the triggers.

1. Click on options on the top right corner while you are in the editing screen of google form for which you would like to integrate the apps script and select the 'script editor' option from it.



2. It will take you through the Google Apps Script page, where you can assign a new name for the apps script project and select the 'Triggers' option from the left side navigation menu to enable the triggers.
3. Click on 'Add Trigger' button on bottom right corner of the screen, from the pop up choose the function that you would like to run on trigger, evert source and event type. Optionally, you cane set the various notification for triggers and click on 'Save' to save the changes.
4. Now on wards, script will be triggered based on the event type you have chosen. If any change required, you can edit the trigger from the same page.

This apps script files have the extension of '.gs' and you can even add HTML templates to support your flows. To write the script to fetch the responses and execute your custom operations on it, please follow the official documentation provided by Google.

https://developers.google.com/apps-script/overview

Once you have written your scripts, you can see the executions through 'Executions' tab from the left side navigation menu. It logs each type of execution, console logs and other information. This will help you debug your flows.

The flow

To automate the process of calculating the scores of each individual sections and derive the global score to identify the maturity level, we have followed below process:

1. Create the google form as mentioned in the above section with individual sections and question numbers for each question.
2. Create a linked apps script for the form and enable trigger 'on form submit' as event type.
3. In the app script, write the logic to get the last response of the form because we need to process only for the last submitted form response.
4. Split the item response into different arrays based on the section they belong including initial item responses i.e. personal details.
5. Process these item responses individually to perform following tasks:
   a. Loop through each response and store each response in the database.
   b. Assign maximum score for each question and scores for each individual option.
   c. Calculate the maximum score for the entire section and actual scores and calculate the percentage from them.
   d. Store these percentages against each section in the database.
6. Take the average of all these sections and derive the overall percentage and based on the percentage determine the maturity level. Store these values to the database as well.
7. You can send a plain text/ HTML based email to the responder with details and next steps through app script.

** For the database operations, we have chosen the Azure SQL and can be connected by using JDBC method.
** You can leverage the 'User/ Script Properties' for storing sensitive data such as database details.