

Student Elective Course Allocation Documentation

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Purpose

The Student Elective Course Selection Management system is designed to simplify the process of managing student elective course selections in Excel using Google Apps Script. It provides administrators with a tool to streamline the allocation of elective courses to students efficiently.

NOTE : Do not fill or alter any other cells or sheet names other than user-input cells.

1 Getting Started

To initiate the system, an admin email address must be provided. This email address will have complete access to the student response data. So,

first open the excel spreadsheet and enter the admin email address beside the "Administrative Email" field

Before generating the template, the admin needs to define the number of baskets and the number of courses in each basket for each branch. Only integers are accepted. Follow these steps:

- For each branch beside the Basket-Course Input field, provide a list of integers. Each integer corresponds to the number of baskets for the branch and the number of courses in each basket.

CSE	
Baskets-Courses Input	[2,3]

- E.g., [2,3] which means that we have two baskets and Basket-1 has two courses whereas Basket-2 has three courses.
- If the values are not filled within the list it means that particular branch has no electives for this semester and it won't be considered for further functions. A sample is shown below where we have empty input for ECE branch and thus the ECE students won't be considered for allocation.

ECE	
Baskets-Courses Input	[]

2 Generate Template

The "Generate Template" trigger represents the initial option within the "Triggers" dropdown menu in Google Sheets. By selecting this option, the system retrieves data from the "Basket-Courses Input" for each branch, determining the number of baskets and the quantity of courses within each

basket based on the provided input. Subsequently, it generates an output, enabling users to specify the names of the courses.

	CSE
Baskets-Courses Input	[2,3]

As depicted in the image above, indicating '[2,3]' for courses signifies the presence of two baskets, with two courses contained in the first basket and three in the second basket. Consequently, this indicates the appropriate input choices for naming all these courses which will be generated by this trigger, as illustrated in the image below.

	CSE
Baskets-Courses Input	[2,3]
Basket 1	Courses
Course 1:	
Course 2:	
Basket 2	Courses
Course 1:	
Course 2:	
Course 3:	

Now, the user is required to complete the input of these course names while adhering to the following guidelines:

1. Course names should only consist of **alphanumeric** characters.
2. Course names are **not** case-sensitive.
3. It is important to ensure that any trailing spaces are eliminated to prevent any unintended system disruptions.

Sample input:

	CSE
Baskets-Courses Input	[2,3]
Basket 1	Courses
Course 1:	Computer Architecture
Course 2:	Data Structures
Basket 2	Courses
Course 1:	Operating Systems
Course 2:	Software Engineering
Course 3:	Linear Algebra

3 Send Forms

The “Send Forms” trigger is present within the "Triggers" dropdown menu in Google Sheets. Once the course name is entered correctly in the template, the admin can proceed on clicking further by clicking on this particular trigger. Note that form will not be sent to the branches with no electives and those particular branches will not be considered for further triggers.

After the execution of “Send Forms” trigger, the administrator will receive the elective preferences forms with admin access which means he/she can edit the form to add new sections such as declaration, student’s cgpa etc. Default fields like student’s name, student’s roll number, subject preferences grid should not be altered by the administrator. A sample form is shown below where the three main fields shall not be edited and rather the administrator can create new fields along with them.

To learn how to edit the form, please click on the following link [\[Link\]](#)

Sample Form:

Student Name: *
Short answer text

Student Roll No.: *
Short answer text

Subject Preferences

	computer architecture	data structures
Preference 1	<input type="radio"/>	<input type="radio"/>
Preference 2	<input type="radio"/>	<input type="radio"/>

Once the administrator has edited the forms, he/she needs to link the response form to the current excel sheet. The admin can do this by clicking on the response option on top of the admin access form and then clicking on a link to sheets.

Questions
Responses
Settings

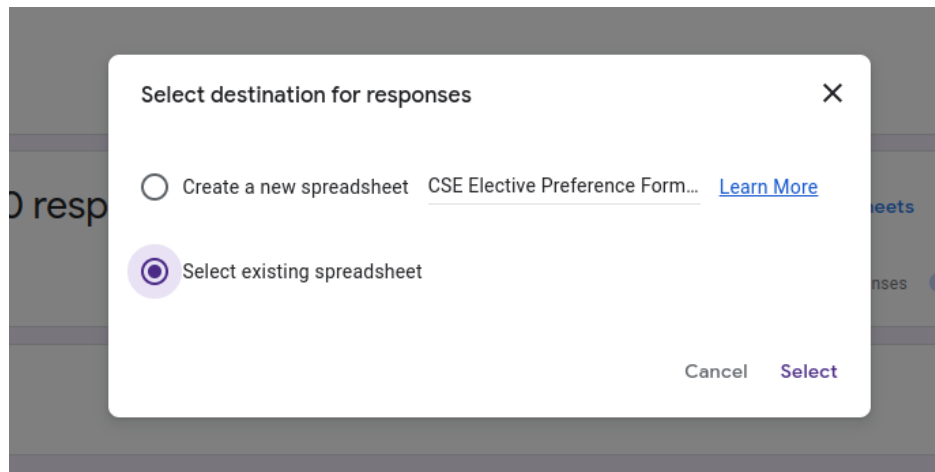
0 responses

Link to Sheets

Accepting responses

Waiting for responses

Upon clicking on the link to sheets the admin need to select existing spreadsheet and select the name of the main excel sheet. Upon selections of the spreadsheet a new tab will be created for each branch which will store the students responses



4 Create Config

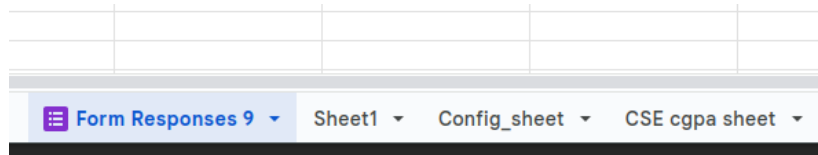
This function is integrated in the “Send Forms” trigger and no need to explicitly call it. This function creates three types of sheets namely a configuration sheet for allocation, a CGPA sheet and Course sheet for each branch which are having electives.

4.1 Config Sheet

This sheet contains all the necessary parameters which will be used for further functions. The parameters are listed below:

- **No. of seats** : Number of seats available for each elective need to be filled here. This is a mandatory field which needs to be filled with integer values

- **Pre-requisites** : Prerequisite courses for each elective. By default an empty list is present in the cells which can be filled with required prerequisite course codes. This field is not mandatory and can be left with empty list if an elective has no prerequisites.
- **Response sheet name** : The administrator is required to input the name of the response sheet containing students' elective preferences for each branch having electives in the respective slots, this is nothing but the name of the tab created by forms once the sheet is linked to the student forms. This field is mandatory, and the sheet's name can be found in the tabs located at the bottom of the Excel sheet once linked to the form. In the image below, "Form Responses 9" is an example of a sheet name, where the elective preferences of CSE students are stored.



In the below example image we have entered the response sheet name for CSE and DSAI branch as the electives are present for this branch whereas ECE branch has no elective for that semester hence the ECE branch details are not present in the template.

CSE Form response sheet name	Form Response 9
DSAI Form response sheet name	Form Response 10

- **Time Stamp Index** : Fill the column alphabet of the timestamp column in the student's response sheet. Instead of Alphabet number, column number can also be used but make sure to follow 0-based indexing. By default the "A" is present which means that timestamp is the first column in the response sheet. Number '0' can also be used instead of "A". A sample image is shown at below
- **RegNo Index** : Fill the column alphabet for the RegNo column in the student's response sheet. Column number can also be used instead of alphabet and make sure to follow 0 based indexing. In the below shown image RegNo is present in second column so either 1 or B can filled in the config sheet
- **Preferences starting index** : Identify and fill in the column alphabet where the course preferences begin within the student's response sheet. Column number can also be used instead of alphabet and make sure to follow 0 based indexing. Typically, these preferences are located immediately after the student's demographic information. In the below shown image the elective preferences starts from the third column hence either 'C' or 2 can be filled in the config sheet.

A	B	C	D	E	F
Timestamp	RegNo	on to Virtualization	d : Trends in Industri	Advanced Optimization	Advanced Computer
2023-07-07 20:00:56	20bcs140	Fourth Preference	First Preference	Second Preference	Third Preference
2023-07-07 20:01:06	20bcs141	Fourth Preference	Third Preference	Second Preference	First Preference
2023-07-07 20:01:06	20bcs089	Fourth Preference	Second Preference	Third Preference	First Preference
2023-07-07 20:01:09	20bcs138	First Preference	Second Preference	Third Preference	Fourth Preference
2023-07-07 20:01:10	20bcs081	Second Preference	First Preference	Fourth Preference	Third Preference
2023-07-07 20:01:15	20bcs047	Fourth Preference	First Preference	Third Preference	Second Preference

- **Preferences** : There are two preferences for allocation namely First Come First Serve(FCFS) and CGPA. By default the preferences is [0,1] which means that the allocation will be done based on preference with code 0(FCFS) and if there is a tie then based on the preference with code 1(CGPA). The valid inputs for this field are either [0,1] or [1,0].

Sample Input:

A	B	C	D	E	F	G	H
Type @ to insert							
Elective Name	No of seats	Pre-requisites		CSE Form response sheet name	Form Response 9		
b1s1	50	[]		ECE Form response sheet name	Form Response 11		
b1s2	50	[MA101,CS102]		DSAI Form response sheet name	Form Response 10		
b2s1	50	[]					
b2s2	50	[EC202]		Time Stamp Index	RegNo Index	Preferences Starting Index	
b2s3	50	[]		A	1	C	
b3s1	50	[]					
b3s2	50	[]		preferences	pref name	FCFS	CGPA
				[0,1]	pref code	0	1

4.2 CGPA-SHEET

This feature allows administrators to assign courses to students depending on their CGPA. Note that individual sheets will be created for every branch with electives. In the first column registration numbers should be entered, and in the second column CGPA should be entered.

	A	B
1		
2	Reg No	CGPA
3	20bcs001	9
4	20bcs002	8.6
5	20bcs003	8.4
6	20bcs004	6.7
7	20bcs005	9.1
8	20bcs006	8.5
9	20bcs007	8.2
10	20bcs008	7.8
11	20bcs009	7.2

If administrators prefer not to allocate courses based on CGPA, they can choose to set the CGPA for all students to the same value. However, it's important to note that providing a CGPA is a mandatory requirement in both scenarios.

	A	B
1		
2	Reg No	CGPA
3	20bcs001	9
4	20bcs002	8.6
5	20bcs003	8.4
6	20bcs004	6.7
7	20bcs005	9.1
8	20bcs006	8.5
9	20bcs007	8.2
10	20bcs008	7.8
11	20bcs009	7.2

Conditions to follow while entering the data into the sheet and these conditions apply to all the branch sheets.

1. Registration numbers are not case sensitive, you can either provide lowercase or uppercase. For example :- 20BCS056, 20Bcs056 are treated same
2. All the student registration numbers should be included, any missing student-registration number will lead to an error and the reason why

default value is taken is that if the administrator forgets to enter the registration number of some students then taking default values might lead to partial results.

3. The CGPA column for all the branches should only and only contain float values, any other characters will lead to errors.

4.3 Course-Sheet

Since some courses require prerequisites, the course allocation program uses this sheet to check if a particular prerequisite has been taken by the student. Note that individual sheets will be created for every branch with electives. In the sheet there are two columns, in the first column the registration number has to be filled and in the second column the course name should be filled.

	A	B
1		
2	Reg No	Course Code
3	20bcs001	Operating System
4	20bcs001	Compter Architecture
5	20bcs001	Statistics
6	20bcs002	Operating System
7	20bcs002	Compter Architecture
8	20bcs003	Data Networks
9	20bcs003	Security Engineering

Conditions to follow while entering the data into the sheet and these rules apply to every branch

1. Registration numbers as well as the courses are not case sensitive.
2. If any registration number is not mentioned in the course sheet, then it is assumed that there are no courses taken by that student previously.
3. If a particular student has taken n courses previously then there should be n rows for that particular student where in each row, there

should be registration number in one column and one course in another column, so there will be n number of rows with same registration number but different course names.

	A	B
1		
2	Reg No	Course Code
3	20bcs001	Operating System
4	20bcs001	Compter Architecture
5	20bcs001	Statistics
6	20bcs002	Operating System
7	20bcs002	Compter Architecture
8	20bcs003	Data Networks
9	20bcs003	Security Engineering

5 Start Allocation

The “Start Allocations” trigger is present within the dropdown menu in Google Sheets. By selecting this option, the system starts allocating the elective preference to respective students. It is recommended to unlink all the sheets attached to the student forms before starting this trigger, this process is explained in [section 6.1](#).

After we finish the allocation process, a new sheet for each branch is created. This sheet has information about each student, like their registration number and the courses allocated to him/her. The first column contains the registration number of the student and later the subsequent columns contains different baskets and the respective course allocated to the student from that particular basket.

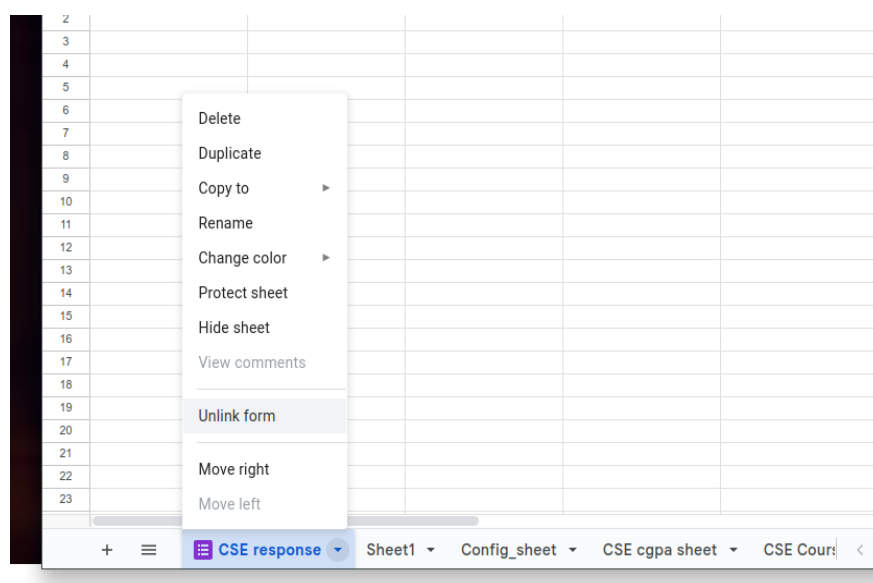
Registration Number	Basket-1	Basket-2
20bcs002	Computer Architecture	Computer Networks
20bcs005	Computer Architecture	Statistics
20bcs004	Graph Theory	Computer Networks
20bcs003	Graph Theory	Statistics

6 Reset

6.1 Unlinking the Response Form:

Before resetting the sheet, it's crucial for the administrator to unlink all the response forms from the sheet. This ensures a clean separation of data. To achieve this, Locate the respective sheet tab at the bottom of the document. Click on the arrow mark associated with the sheet tab.

The option to unlink the form can be found in this menu. Refer to the image below for a visual guide on how to perform this task.



6.2 Resetting the Sheet:

Once the administrator has completed the allocations and is ready to proceed, the next step involves downloading the sheet containing student details along with their allocated preferences. It is advisable to download all available sheets for each branch. Following the successful download, the administrator can clear the entire sheet by selecting the "Reset" option. This can be conveniently found in the triggers menu within the toolbar.

Reset can also be used in case there is an error while generating the template or any other step to start from scratch.

7 External Links


“Student Elective Course Allocation” system link -

 Student Elective Course Allocation

Error documentation of “Student Elective Course Allocation” -

 Student Elective Course Allocation - Error Handling

Report of “Student Elective Course Allocation” -

 Student Elective Course Allocation Report

Google Sheets documentation -

<https://www.google.com/sheets/about/>

Google Forms documentation - <https://www.google.com/forms/about/>