Batch Mode

A tool designed for educators and learners to analyze and compare Scratch projects, highlighting strengths and weaknesses; supporting continuous project evaluation, helping users track improvements and understand if their design choices can be improved or not.

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Introduction

In the world of education, it is well-known that performing a thorough analysis of tasks is a demanding and laborious job, yet it is crucial for making a comprehensive evaluation and ensuring that standards are met. Therefore, to facilitate this process, a tool has been developed that allows for the mass and precise analysis of Dr. Scratch projects.

Goals

The tool is designed to analyze multiple projects simultaneously and return a folder containing multiple *CSV* files with the results of each project's analysis, as if it were an individual analysis, thereby saving a significant amount of time and effort.

How it works

To use the tool, you need to find the section corresponding to this mode, *Batch Mode*, on the Dr. Scratch *homepage*. Once found, you will have the option to choose between two methods explained below.

- **URLs in a TXT file:** To use this method, you need to upload a *TXT* file containing a list of *URLs* of the Scratch projects you want to analyze in batch, one per line.
- **ZIP with SB3 projects:** To use this method, you need to upload a *ZIP* file containing all the *SB3* files you want to analyze in batch.

Once the project collection method is chosen, you must enter an email address where a report summarizing the analysis will be sent, along with a download link for the aforementioned *CSV* files containing more detailed information.

After this, you only need to click the analyze button, and once the analysis of all collected projects is complete, you will be notified at the provided email address.

Once the analysis is successfully completed, you will receive a notification via email. In the structure of this email, there will be an embedded *HTML* file that provides a link to a page on Dr. Scratch. On this page, you can download the *CSV* files containing more detailed and extensive results of the analysis.

It is worth noting that this mode can also be used complementarily with the *Personal Mode*, allowing for batch analysis of projects while considering the evaluation criteria selected during the creation of the rubric.
The results for the batch of analyzed projects contain the following *CSV* files:

- **main.csv**: This file contains information about the total and dimension-specific scores for the *Extended* and *Vanilla* modes, as well as a quantitative summary of the bad smells present in each project. Note that these scores may vary if a rubric selected in *Personal Mode* is used.
- **backdropNaming.csv**: This file contains information about the total number of backdrops that retain the default name in each project, as well as the names being referenced.
- **spriteNaming.csv**: This file contains information about the total number of sprites that retain the default name in each project, as well as the names being referenced.
- **deadCode.csv**: This file contains information about the total number of dead scripts in each project, as well as the blocks that make them up.
- **duplicateScript.csv**: This file contains information about the total number of duplicate scripts in each project, as well as the blocks that make them up.

In addition to the download page link, the email will include a preliminary summary with the average scores for each dimension of the *Extended* mode (if the analysis was conducted using *Personal Mode*, the summary will be adapted to the scores of that rubric) and the average mastery of the analyzed projects.

When accessing the download page, you will again see the summary previously shown in the email, with the difference that now, by clicking on the download link, you will start downloading a *ZIP* file containing the four *CSV* files mentioned above.

Usage Examples

In order to use this mode, the first thing you need to do is find the section in the Dr. Scratch Main Page (Figure 1).
The next step is to upload the *ZIP folder* containing the .sb3 files or the *TXT file* with the URLs of the Scratch projects, and to write your email address in order to receive the results.

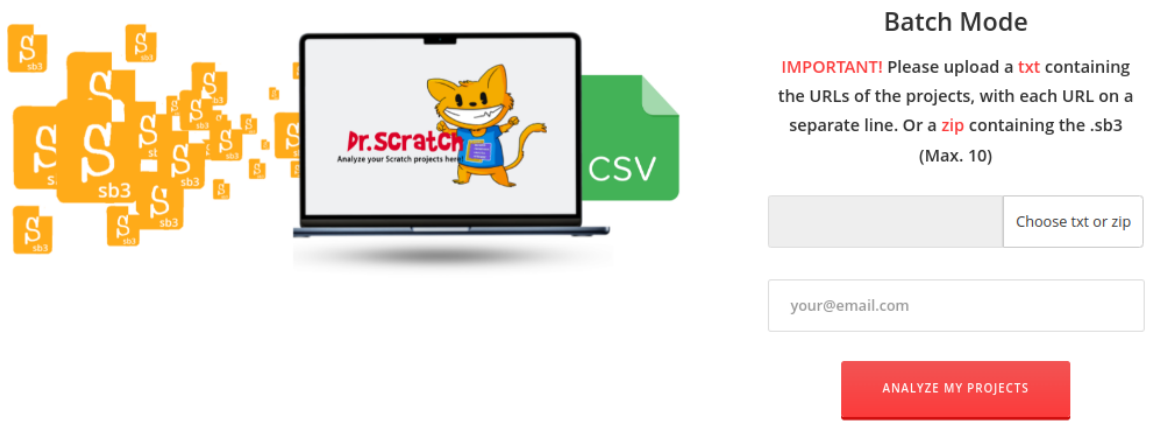


Figure 1: "Batch Mode" section on the Dr. Scratch homepage

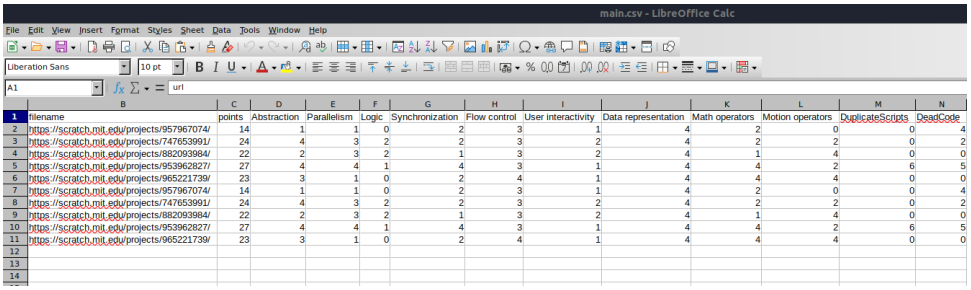
Once you have submitted your projects, you will be redirected to a page where you will see the estimated time for the analysis of your projects (Figure 2).

Figure 2: Estimated time message for analysis.

When the analysis is completed, you will receive an email notification with a summary of the competencies in each dimension, as shown in Figure 3.

Figure 3: Email notification about successful Batch Mode analysis

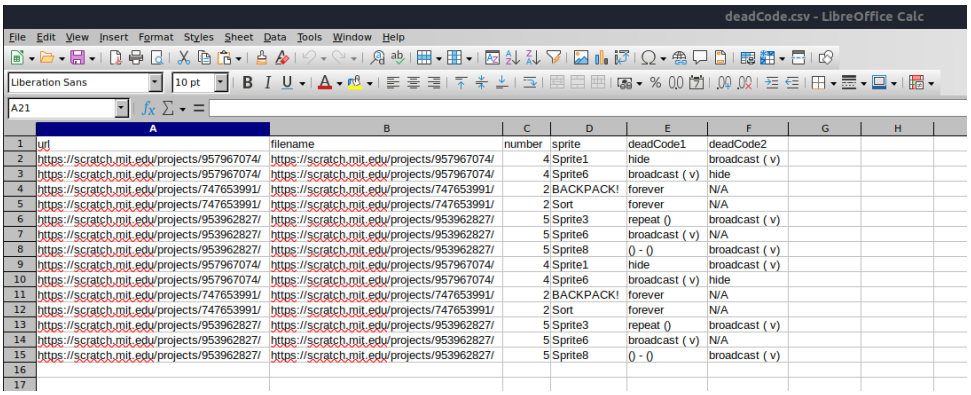
In order to download the *CSV files*, you will need to click on the link labeled **HERE**, which will redirect you to a page where you can download them as a *ZIP folder*. Inside, you will find the *CSV files* formatted as shown in the following images:



main.csv - LibreOffice Calc

	filename	points	Abstraction	Parallelism	Logic	Synchronization	Flow control	User interactivity	Data representation	Math operators	Motion operators	DuplicateScripts	DeadCode
2	https://scratch.mit.edu/projects/957967074/	14	1	1	0	2	3	1	4	2	0	0	4
3	https://scratch.mit.edu/projects/747653991/	24	4	3	2	2	3	2	4	2	2	0	2
4	https://scratch.mit.edu/projects/882093984/	22	2	3	2	1	3	2	4	1	4	0	0
5	https://scratch.mit.edu/projects/953962827/	27	4	4	1	4	3	1	4	4	2	6	5
6	https://scratch.mit.edu/projects/965221739/	23	3	1	0	2	4	1	4	4	4	0	0
7	https://scratch.mit.edu/projects/957967074/	14	1	1	0	2	3	1	4	2	0	0	4
8	https://scratch.mit.edu/projects/747653991/	24	4	3	2	2	3	2	4	2	2	0	2
9	https://scratch.mit.edu/projects/882093984/	22	2	3	2	1	3	2	4	1	4	0	0
10	https://scratch.mit.edu/projects/953962827/	27	4	4	1	4	3	1	4	4	2	6	5
11	https://scratch.mit.edu/projects/965221739/	23	3	1	0	2	4	1	4	4	4	0	0

Figure 4: View of the *main.csv* file



deadCode.csv - LibreOffice Calc

	url	filename	number	sprite	deadCode1	deadCode2
2	https://scratch.mit.edu/projects/957967074/	https://scratch.mit.edu/projects/957967074/	4	Sprite1	hide	broadcast (v)
3	https://scratch.mit.edu/projects/957967074/	https://scratch.mit.edu/projects/957967074/	4	Sprite6	broadcast (v)	hide
4	https://scratch.mit.edu/projects/747653991/	https://scratch.mit.edu/projects/747653991/	2	BACKPACK!	forever	N/A
5	https://scratch.mit.edu/projects/747653991/	https://scratch.mit.edu/projects/747653991/	2	Sort	forever	N/A
6	https://scratch.mit.edu/projects/953962827/	https://scratch.mit.edu/projects/953962827/	5	Sprite3	repeat ()	broadcast (v)
7	https://scratch.mit.edu/projects/953962827/	https://scratch.mit.edu/projects/953962827/	5	Sprite6	broadcast (v)	N/A
8	https://scratch.mit.edu/projects/953962827/	https://scratch.mit.edu/projects/953962827/	5	Sprite8	() - ()	broadcast (v)
9	https://scratch.mit.edu/projects/957967074/	https://scratch.mit.edu/projects/957967074/	4	Sprite1	hide	broadcast (v)
10	https://scratch.mit.edu/projects/957967074/	https://scratch.mit.edu/projects/957967074/	4	Sprite6	broadcast (v)	hide
11	https://scratch.mit.edu/projects/747653991/	https://scratch.mit.edu/projects/747653991/	2	BACKPACK!	forever	N/A
12	https://scratch.mit.edu/projects/747653991/	https://scratch.mit.edu/projects/747653991/	2	Sort	forever	N/A
13	https://scratch.mit.edu/projects/953962827/	https://scratch.mit.edu/projects/953962827/	5	Sprite3	repeat ()	broadcast (v)
14	https://scratch.mit.edu/projects/953962827/	https://scratch.mit.edu/projects/953962827/	5	Sprite6	broadcast (v)	N/A
15	https://scratch.mit.edu/projects/953962827/	https://scratch.mit.edu/projects/953962827/	5	Sprite8	() - ()	broadcast (v)

Figure 5: View of the *dead_code.csv* file